Invitation for Public Comment on the List of Nominated Candidates for the EPA Science Advisory Board Panel for the Review of Hydraulic Fracturing Study Plan

September 10, 2010

The EPA SAB Staff Office announced in a *Federal Register* Notice (Volume 75, Number 138, Pages 42087-42088) published on July 20, 2010 that it was forming an *ad hoc* Panel under the auspices of the SAB to provide independent expert advice on EPA's draft Hydraulic Fracturing Study Plan to investigate the potential public health and environmental protection research issues that may be associated with hydraulic fracturing. To form the Panel, the SAB Staff Office sought public nominations of nationally recognized and qualified experts in the following areas: petroleum (including natural gas) engineering and petroleum geology, particularly with experience in hydraulic fracturing and well testing / mechanical integrity; hydrology and hydrogeology; geophysics; water quality; chemistry and geochemistry, particularly with experience in chemical fate and transport, oxidation-reduction reactions, gas-liquid exchange, and solubility; analytical chemistry, particularly regarding trace organics and environmental monitoring; statistics, particularly regarding experimental design of field studies; human health effects and risk assessment; civil and environmental engineering; chemical engineering; drinking water treatment systems; wastewater treatment systems; and social, behavioral, and decision sciences.

Below is the list of nominated candidates that is based solely on relevant expertise and willingness to serve on the Panel. We hereby invite comments on the attached List of Candidates that the SAB Staff Office should consider in the formation of this Panel. Comments should be submitted to the attention of Mr. Edward Hanlon, Designated Federal Officer, no later than October 1, 2010. E-mailing comments (hanlon.edward@epa.gov) is the preferred mode of receipt.

The SAB Staff Office Director will make the final decision about who will serve on the Panel based on all relevant information. This includes a review of the confidential disclosure form (EPA Form 3110-48) and information gathered by staff and public comments. For the EPA SAB Staff Office, a balanced Panel is characterized by inclusion of candidates who possess the necessary domains of knowledge, the relevant scientific perspectives (which, among other factors, can be influenced by work history and affiliation), and the collective breadth of experience to adequately address the general charge. Specific criteria to be used in evaluating a candidate include: a) scientific and/or technical expertise, knowledge, and experience; b) availability and willingness to serve; c) absence of financial conflicts of interest; d) absence of appearance of a lack of impartiality; e) skills working in committees, subcommittees, and advisory panels; and, for the panel as a whole, f) diversity of scientific expertise and viewpoints.

Alshawabkeh, Akram

Northeastern University

Dr. Akram Alshawabkeh is a Geoenvironmental Engineering Professor at the Department of Civil and Environmental Engineering, Northeastern University. He holds a B.E. in Civil Engineering from Yarmouk University, Irbid, Jordan (1988), an M.Sc. in Civil Engineering from Jordan University of Science and Technology (JUST), Irbid, Jordan (1990), and a Ph.D. in Civil and Environmental Engineering from Louisiana State University, Baton Rouge, LA (1994). Dr. Alshawabkeh's areas of expertise include soil behavior, geochemistry, geomechanics, soil remediation, electrokinetic/electrolytic processes and modeling contaminant fate and transport in soil. He co-authored more than 100 publications, including 48 peer-reviewed journal papers, with more than 1700 citations. Dr. Alshawabkeh served as Principal Investigator (PI) or Co-PI on research projects sponsored by the National Science Foundation (NSF), U.S. Army Corps of Engineers, U.S. Department of Energy, the National Institute of Environmental Health Sciences (NIEHS) and industry and is a recipient of the prestigious NSF CAREER award. He is the PI of a new multi-million dollar Program Project sponsored by the Superfund Research Program of the NIEHS. Dr. Alshawabkeh developed and directed the SoilBED facility for the Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems (Gordon-CenSSIS). He has a strong service record, participated in many research workshops and organized several technical conference sessions and activities. Dr. Alshawabkeh is a former chair of Committee AFP40 "Physiochemical and Biological Processes in Soil" of the Transportation Research Board of the National Academies and is a member of several national and international committees. He is an editorial board member for several journals and was a co-chair of the technical program of 2008 Annual Congress of the Geo-Institute of American Society of Civil Engineers on "GeoCongress 2008: The Challenge of Sustainability in the Geoenvironment". Dr. Alshawabkeh has a track record of collaboration with government laboratories and industry.

Arthur, Daniel

ALL Consulting

Mr. Daniel Arthur is a founding member and President of ALL Consulting, Tulsa, OK. Mr. Arthur holds a B.S. in Petroleum Engineering from the University of Missouri-Rolla. Mr. Arthur is currently serving as a sub-committee chair to the National Petroleum Council study on North American Gas and Oil Resources requested by the Secretary of Energy. He has been nominated to be a Special Government Employee serving on the Unconventional Resources Technology Advisory Committee of the U.S. Department of Energy (DOE) that was established pursuant to Section 999D of the Energy Policy Act of 2005. He has served as the lead researcher on numerous projects involving unconventional resources; environmental considerations pertaining to shale gas development; produced water management and recycling; underground injection control (UIC) programs in multiple states and nationally for the U.S. Environmental Protection Agency (EPA); access to federal lands; and low impact natural gas and oil development. He has also managed DOE-funded research projects involving the development of best management practices for efficient environmental protection of unconventional resource development and production; research to develop a national primer on coal bed methane (CBM) and a primer for modern shale gas development; research to develop a handbook on the preparation and review of environmental documents for CBM development; and research with the Ground Water Protection Research Foundation (GWPRF) funded by DOE and BLM involving analysis of produced water management alternatives and beneficial uses of coal bed methane produced water. Mr. Arthur has published many articles and reports and has made numerous presentations on environmental, energy, and technology issues related to oil and gas resource development. While employed with EPA in Region V, Mr. Arthur was a member of the National Mechanical Integrity Test (MIT) Workgroup. As a member of the workgroup, he was responsible for witnessing and evaluating numerous alternative mechanical integrity (MI) testing methods for various types of wells throughout the country. During Mr. Arthur's tenure in the MIT workgroup, he reviewed over twenty (20) proposed alternate MI testing methods and took a lead role in ultimate approval of several tests, including the Oxygen Activation log and the Dual-Completion test. He is a Professional Engineer credentialed in MT, OK, TX, and WY, as well as Certified by the Society of Petroleum Engineers (SPEC).

Ballestero, Thomas P.

University of New Hampshire

Dr. Ballestero is an Associate Professor of Civil Engineering at the University of New Hampshire, where he teaches in hydrology and water resources engineering. Dr. Ballestero holds B.S. and M.S. degrees in Civil Engineering from the Pennsylvania State University and a Ph.D. in Civil Engineering from Colorado State University. His teaching and research interests are broadly in the field of water resources computer simulation and field measurement of parameters. His current and past research projects include: surface water-groundwater interactions; instream flow; artificial recharge; movement, monitoring and biodegradation characteristics of organic contaminants in soils and ground water; innovative drilling and field techniques for characterization of contaminated sites and investigating environmentally sensitive locations; bedrock hydrogeology; hydrofracturing; landfill leachate recirculation; ground water mounding under community septic systems; land application of biosolids; evaluation of new drilling and ground water monitoring techniques; and groundwater flow into coastal and estuarine systems. By Request, Dr. Ballestero taught a bedrock hydrogeology course for the National Groundwater Association and also taught groundwater short courses for professionals in both Brazil and Colombia and academic groundwater courses at the University of Puerto Rico Mayaguez and the Federal University of Ceará, Brazil. Dr. Ballestero peer reviews articles submitted to at least six different technical journals and he also provides peer review of proposals and serves on expert review panels for the National Science Foundation, the U.S. Environmental Protection Agency, and the U.S. Department of Agriculture. He served for ten years on the Editorial Review Board for Ground Water Monitoring and Remediation, and six years as an Associate Editor for the Journal of the American Water Resources Association. He is also active with private consulting work on a large spectrum of water resources issues.

Benjamin, Mark M.

University of Washington

Dr. Mark M. Benjamin is a Professor in the Environmental Engineering and Science Program of the Department of Civil and Environmental Engineering at the University of Washington, where he has been on the faculty since 1977. He holds a B.S. in Chemical Engineering from Carnegie-Mellon University (1972), an M.S. in Chemical Engineering from Stanford University (1973), and a Ph.D. in Environmental Engineering from Stanford University (1978). Dr. Benjamin is an expert in physical/ chemical treatment processes in general, with long-term research interests in the behavior of natural organic matter (NOM) and its removal from potable water sources, and in the development of adsorption-based processes for removal of metals, NOM, and other contaminants from solutions. For the past 13 years, a major focus of Dr. Benjamin's work has been membrane treatment of drinking water, and in particular, approaches for interfering with membrane fouling by NOM. In addition to the topics noted above, he has published research on conventional coagulation and filtration processes, diffusion dialysis, and mineral dissolution kinetics. Dr. Benjamin's work has been recognized by a Fulbright fellowship and several awards for best publications in various journals, and three of his students have won awards for best doctoral thesis in environmental engineering. In addition to his research activities, he has served on the Board of Directors of the Association of Environmental Engineering and Science Professors (AEESP), has written a widely adopted graduate-level textbook on Water Chemistry (McGraw-Hill, 2002), and is preparing another text on Physical-Chemical Treatment of Water with Professor Desmond Lawler of the University of Texas. Dr. Benjamin has twice held five-year appointments to endowed Chairs, and was recently selected as the AEESP Distinguished Lecturer for 2009-10.

Bishop, Ronald E.

State University of New York, Oneonta

Dr. Ronald E. Bishop is currently a Lecturer in Chemistry and Biochemistry at SUNY Oneonta, in Oneonta, New York. He holds a B.A. in Chemistry from Youngstown State University and a Ph.D. in Biochemistry from the West Virginia University School of Medicine. Across 17 years of full-time research, his projects focused on chemical carcinogenesis, cancer biology and biosafety. Over the last 11 years, Dr. Bishop has taught a variety of courses (biology, genetics, general and organic chemistry, biochemistry and environmental sciences) in high schools and colleges. Dr. Bishop has presented widely on technical aspects of the natural gas extraction industry, including to the New York State Department of Environmental Conservation and the Delaware River Basin Commission. Ron also has an extensive construction background and over two years of investigative journalism experience. He is a nationally certified chemical hygiene officer, and actively maintains interests in chronic diseases, environmental challenges and national security issues.

Boufadel, Michel

Temple University

Dr. Michel Boufadel is a Professor of Environmental Engineering and the Chair of the Department of Civil and Environmental Engineering at Temple University. He holds a B.S. in Civil Engineering (Hydraulics) from the Jesuit University at Beirut, Lebanon (1988), and an M.S. (1992) and a Ph.D. (1998) in Environmental Engineering from the University of Cincinnati. He is a Professional Engineer (Environmental Engineering) in the Commonwealth of Pennsylvania, and a Professional Hydrologist (hydrogeology) as accredited by the American Institute of Hydrology. Dr. Boufadel's area of expertise is Environmental Hydrology and Hydraulics, where he develops methods to understand the behavior of complex hydrologic and environmental systems. He has been the lead researcher on various projects funded by the Oil Spill Research program within the U.S. Environmental Protection Agency (USEPA). Dr. Boufadel is currently investigating the lingering of the Exxon Valdez oil (1989) in the beaches of Prince William Sound. He has conducted floodplain delineation studies for the Federal Emergency Management Agency (FEMA) using hydrologic and hydraulic models developed by the U.S. Army Corps of Engineers and Geographic Information System (GIS). Dr. Boufadel also conducted vulnerability studies of watersheds. He is Associate Editor of the Journal of Water Quality, Exposure and Health. He is author of numerous articles in publications such as Nature Geoscience, Environmental Science and Technology, and Journal of Geophysical Research.

Boyer, Elizabeth

Pennsylvania State University

Dr. Elizabeth Boyer is an Associate Professor of Water Resources in the School of Forest Resources at the Pennsylvania State University. She serves as the Director of the Pennsylvania Water Resources Research Center, and as Assistant Director of Penn State Institutes of Energy & the Environment. Prior to her current position, Dr. Boyer was on the faculty at the State University of New York at Syracuse (assistant professor) and at the University of California at Berkeley (associate professor). She holds a B.S. in Geography from The Pennsylvania State University, and an M.S. and Ph.D. in Biology from the University of Virginia. Dr. Boyer's research explores hydrological and ecological processes that affect water quality (e.g., nutrients, major & trace elements, and sediments) and water quantity (e.g., streamflow and water yield) issuing from watersheds. She is particularly interested in how human activities and environmental variability influence conditions and trends in streams, rivers, and estuaries. Students and staff in Dr. Boyer's Lab typically conduct projects that involve field sampling, laboratory analyses, or modeling to identify the important processes operating in watersheds. The Lab's work aims to provide a scientific basis for design and implementation of land management programs and policies to mitigate the effects of pollution, and to protect, conserve, and restore surface waters. Dr. Boyer is a member of the American Geophysical Union, American Water Resources Association, American Society of Limnology and Oceanography, and the Ecological Society of America. She has served as the Chair of the international Gordon Research Conference on Catchment Science: Interactions of Hydrology, Biology and Geochemistry.

Brownawell, Bruce J.

State University of New York, Stony Brook

Dr. Brownawell is an Associate Professor at the School of Marine and Atmospheric Sciences at Stony Brook University, and is a member of the University's Groundwater and Waste Reduction and Management Institutes. He also directs the Trace Organic Chemical Mass Spectrometry Laboratory. He received his B.S. in Chemistry at DePaul University and his Ph.D. from the MIT/Woods Hole Oceanographic Institution in Chemical Oceanography, and has experience serving on scientific technical advisory committees related to Superfund site assessments and remediation, and on multi-disciplinary review panels for a variety of programs, including the NIEHS Superfund Research Program. Dr. Brownawell is an environmental organic chemist, with expertise in the detection, and sources and fate of organic contaminants in natural waters and wastewater treatment systems. Much of his research in recent years has involved development and application of new HPLC-MS methods to characterize the trace level occurrence and fate of more polar contaminants such as steroidal estrogens, pharmaceuticals, and metabolites of personal care products. Brownawell is an expert on the analysis and fate of surfactants, with current work on the fate of cationic, nonionic, anionic surfactants and their metabolites in wastewater treatment plants, sewage sludge, biosolids, receiving waters and sediments. He has developed and taught graduate level courses on Organic Contaminant Hydrology, Groundwater Hydrology, Bioremediation, and Organic Geochemistry.

Burken, Joel

Missouri University of Science and Technology

Dr. Joel Burken is a Professor in the Department of Civil, Architectural, & Environmental Engineering at Missouri University of Science and Technology in Rolla, MO. He holds a B.S. (1991), M.S. (1993), and Ph.D. (1996) in Civil & Environmental Engineering from the University of Iowa. Dr. Burken's research and service efforts have focused upon natural treatment systems since 1991. His research in phytoremediation of organic contaminants and pioneering work in PhytoForensics have lead to numerous publications and international recognition. Dr. Burken has also initiated research into the financial benefits of carbon credit trading and the water footprint of biofuels that are being developed. While at Missouri S&T he initiated the environmental engineering program as well as the green campus committee and the sustainability minor. Dr. Burken was active in the formation of the International Phytotechnologies Society. He served on the founding team and as the inaugural Vice President and served on the founding team and Editorial Board of the International Journal of Phytoremediation, and is currently an Associate Editor. Dr. Burken also serves as an Associate Editor for the Journal of Environmental Engineering. He was the conference chair and host for the 6th International Phytotechnologies Conference in St. Louis in 2009. Dr. Burken was elected to the board of director and then to serve as the Vice President of the Association of Environmental Engineering and Science Professors, and will serve as President in 2011-2012. He has also held research position at EAWAG, a research institution in Zurich Switzerland (research intern), and at the National Environment Research Institute (NERI) in Denmark (visiting researcher – OECD Fellow). He has been at Missouri University of Science and Technology (formerly University of Missouri – Rolla) since 1997, reaching the rank of Professor in 2008 and serving at the Environmental Research Center Interim Director from 2008 – 2010.

Burnett, David

Texas A&M University

Mr. David Burnett is the Director of Technology for the Global Petroleum Research Institute (GPRI) and Research Project Coordinator for the Department of Petroleum Engineering at Texas A&M University. He holds a B.S. and an M.S. in Chemistry from Sam Houston State University and an MBA from Pepperdine University, Los Angeles California. He recently served as the Managing Partner for a U.S. Department of Energy Project on Field Testing of Environmentally Friendly Drilling Systems. This is a multi-million dollar joint partnership among university/industry and government organizations dedicated to reducing the impact of oil and gas operations in environmentally sensitive areas. For the past 10 years, Burnett has led Texas A&M's integrated research program on desalination and reuse of produced water and hydraulic fracturing flowback brine from gas shale operations. He received the 2006 Hearst Energy Award for Technology in the oil industry and his research team received Gulf Publishing's 2008 World Oil Awards (environmental, health and safety).

Colborn, Theo

President of TEDX (The Endocrine Disruption Exchange)

Dr. Theo Colborn is the President of TEDX (The Endocrine Disruption Exchange), Paonia CO and a Professor Emeritus at the University of Florida, Gainesville. She holds a B.S. in Pharmacy from Rutgers University (1947), an M.A. in Science (fresh water ecology) from Western State College of Colorado (1981) and a Ph.D. in Zoology (distributed minors in epidemiology, toxicology, and water chemistry) (1985). In 1985 she was awarded a Congressional Fellowship with the Office of Technology Assessment and in 1987 accepted a position with the Conservation Foundation that merged with World Wildlife Fund where she ran the wildlife and contaminants program until moving to Colorado in 2002. Dr. Colborn's research that focuses on the results of low level exposure to environmental contaminants in wildlife and humans eventually led to the discovery of endocrine disruption. Her research has led to changes in public policy at the state, federal and international levels. In 2004, in response to western Colorado citizens' perception that natural gas activity in their neighborhoods was affecting their health, Dr. Colborn began to gather data about the products and chemicals used during natural gas production and their known health effects. Her data provides a cornerstone from which public health issues can be addressed objectively. Through an EPA environmental justice grant she produced a DVD to educate citizens and grass roots organizations in western Colorado about natural gas operations that now has been adapted for use across the nation.

Connor, Edward F.

San Francisco State University

Dr. Edward F. Connor is Professor of Biology at San Francisco State University. He holds a B.S. in Biology from New College Florida (1974), and an M.S. (1977) and Ph.D. (1979) in Ecology from Florida State University. Dr. Connor's research focuses on quantitative inference in ecology including issues in experimental design and population monitoring, population dynamics and community ecology, and insect-plant interactions. He is broadly interested in population and community ecology and statistical ecology and biogeography. His field research employs insect communities and insect-host plant systems test systems to answer basic questions about the population dynamics of pest insects and the structure of insect communities. Dr. Connor's interests in statistical ecology and biogeography lie in developing probabilistic statistical procedures for the analysis of biogeographic data and in developing a framework for rigorous hypothesis testing and statistical inference using both experimental and non-experimental evidence in ecology.

Davis, Charles

EnviroStat

Dr. Charles Davis is President and Principal Statistician of EnviroStat in Las Vegas, NV. He holds an M.A. in Mathematics and Statistics (1973) and a Ph.D. in Statistics (1976) from the University of New Mexico. He was an Associate Professor in the Mathematics Department of the University of Toledo in 1985 when a colleague introduced him to issues in the application of statistics in environmental regulation. Dr. Davis wrote papers, including the chapter "Environmental Regulatory Statistics" in the Handbook of Statistics 12: Environmental Statistics (1994). He then spent a sabbatical year (1990-91) in Las Vegas as a visiting scientist with Lockheed Environmental Systems and Technologies, which at the time provided research support to the U.S. Environmental Protection Agency's (EPA) Environmental Monitoring Systems Laboratory. Shortly thereafter Dr. Davis established EnviroStat and left academia for the free-lance consulting world. Since 1999 he has been providing statistical support for environmental and industrial hygiene monitoring and characterization efforts at the Nevada Test Site and elsewhere for the U.S. Department of Energy (DOE). In addition, during recent years he has contributed to projects related to the development and validation of improved characterization and monitoring technologies and systems funded by DOE, U.S. Departments of Defense and Homeland Security, and EPA. Dr. Davis' research interests are motivated by problems arising in these areas; these include balancing false positive and negative decision rates while taking into account the numbers of measurements involved in an event and, most recently, developing statistical treatments for censored data ("nondetects") using realistic distributional assumptions rather than those commonly used.

Davis, Thomas

Colorado School of Mines

Dr. Tom Davis is Professor of Geophysics at the Colorado School of Mines. He is also Director of the Reservoir Characterization Project, a research consortium on leading edge technologies for modeling complex reservoirs. He holds a B.E. in Geological Engineering, Geophysics option, from the University of Saskatchewan, an M.S. in Geophysics from the University of Calgary, and a Ph.D. in Geophysical Engineering from the Colorado School of Mines. Author of over 200 professional papers, Dr. Davis is a world-renowned expert with world-wide teaching and consulting experiences. His research in remote sensing of reservoir characteristics also involves fracture propagation investigation and modeling. Finally, Dr. Davis is internationally renowned, with experience in basins around the world - and is headed to Poland this fall to consult on their shale gas development plans.

Deeley, George

Shell Upstream Americas

Dr. George Deeley is currently a Science/Technical Support Specialist with Shell Upstream Americas in Houston, TX. He holds a B.S. in Mathematics from the University of Wisconsin, College of Letters and Science (1977), an M.S. in Natural Resources - Water Chemistry from the University of Wisconsin, College of Letters and Science (1980), and a Ph.D. in Environmental Science with a Minor in Geology from the University of Oklahoma, School of Civil Engineering and Environmental Science (1984). Dr. Deeley applies science and technical expertise to evaluate and interpret existing and proposed onshore regulations involving water, air, and waste. He takes an active role in industry wide research efforts towards improving environmental performance though groups such as the American Petroleum Institute (API). Dr. Deeley's core knowledge includes inorganic and organic chemical reaction mechanisms, transport in soil and groundwater, risk assessment, and remedial methods. He performed fundamental laboratory and field research on the fate and transport of chemicals in soils and the subsurface, and explored organic chemical degradation pathways such as hydrolysis and clay mediated reactions in natural systems. Dr. Deeley studied the behavior or metals in heterogeneous matrices in the field, laboratory, and through chemical equilibrium modeling, and developed and applied risk-based corrective action methodologies to sites. He assessed potential or existing situations involving point or non-point sources of chemicals which might impact groundwater, and evaluated groundwater treatment alternatives based on current understanding and original research. Dr. Deeley also provided global training assistance in all areas of soil and groundwater chemistry, risk-based corrective action, and training, and provided environmental workshops in Europe, South America, North America, and Africa. He has worked with every part of the business: retail, pipeline, catalysts, mining, wind energy, former agricultural chemicals, former polymers, and chemical. Dr. Deeley has applied chemical specific models to evaluate inorganic chemical equilibrium (Minteq), risk-based corrective action, and site-specific transport analysis (Domenico analysis), and has rapidly developed site-specific tools or approaches (colloidal transport, emulsion effects, pH/dissociation). He participated in developing API guidance documents on topics such as: salt water impacts of produced water releases to plants, soil, and groundwater; risk-based screening levels for the protection of livestock exposed to petroleum hydrocarbons; metals criteria for land management of exploration and production wastes; risk-based methodologies for evaluating petroleum hydrocarbon impacts at oil and natural gas E&P sites; and modeling to simulation surface chloride release and potential impacts to groundwater.

Dillon, David K.

David K. Dillon, LLC

Mr. David K. Dillon is the Principle of David K. Dillon PE, LLC, a petroleum engineering consulting firm located in Centennial, CO. He holds a B.S. in Civil Engineering from the University of Colorado at Boulder (1974). He is a licensed professional engineer in Colorado and Wyoming and he has been a member of the Society of Petroleum Engineers for over 35 years. Prior to working as a consulting engineer, Mr. Dillon was the Engineering Manager for the Colorado Oil and Gas Conservation Commission, the regulating body for oil and gas drilling and production in the State of Colorado. As the Engineering Manager, he was instrumental in the drafting and adoption of rules by the Commission requiring the proper financial bonding of oil and gas wells, the monitoring of hydraulic fracturing stimulations, allowable noise levels from oil and gas activity, and the monitoring and testing of coal bed methane wells throughout the state. Mr. Dillon also worked closely with land owners and oil companies trying to resolve complaints and mediate disagreements. Before working for the Colorado Oil and Gas Conservation Commission, he worked in the private oil and gas industry for 20 years as a drilling engineer and a production engineer. Mr. Dillon has designed over 150 hydraulic fracturing stimulations and personally supervised approximately 80 hydraulic fracturing procedures throughout his career. He continues to have a personal interest not only in the strong regulation of oil and gas activities but also the practical oversight of the oil and gas industry in order to protect public health, safety, and welfare and the environment.

Ducoste, Joel

North Carolina State University

Dr. Joel Ducoste is a Professor in the Civil, Construction, and Environmental Engineering Department at North Carolina State University. He holds a B.S. (1988) and M.Eng. (1989) in Mechanical Engineering from Rensselaer Polytechnic Institute, and a Ph.D. in Environmental Engineering (1996) from the University of Illinois at Urbana-Champaign. Dr. Ducoste is a national and international recognized expert in modeling water and wastewater treatment processes using Computational Fluid Dynamics (CFD). His current research interests include physico-chemical processes in water treatment, computational fluid dynamics modeling, solid/liquid separation processes, chemical and UV disinfection, advance oxidation, water/wastewater process optimization, and wastewater sewer collection system sustainability. Dr. Ducoste has served on advisory committees such as the American Water Works Association (AWWA) Particulate committee, AWWA project advisor for research projects funded by AWWA, and International Population Balance Model scientific and organizing committees. He has also served on the North Carolina House of Representatives Special Committee on Offshore Energy Exploration Study. Dr. Ducoste currently serves as an Associate Editor for American Association of Civil Engineers (ASCE) Journal of Environmental Engineering and is a board member of the North Carolina Fulbright Association and the U.S. Environmental Protection Agency Science Advisory Board Drinking Water Committee. He also serves on the Water Environment Federation (WEF) FOG Sewer Collection sub-committee. Dr. Ducoste is a member of AWWA, International Ultraviolet Association (IUVA), and Association of Environmental Engineering and Science Professors.

Dugan, Brandon

Rice University

Dr. Brandon Dugan is an Assistant Professor in the Department of Earth Science at Rice University. He holds a B.GeoE in Geological Engineering from the University of Minnesota (1997) and a Ph.D. in Geosciences from Pennsylvania State University (2003). At Rice, Dr. Dugan leads a research group that integrates Earth science and engineering to understand how fluids migrate through porous sediments at granular-to-regional scales and how this influences deformation and stability. In the laboratory he examines how stress, grain size, and composition affect elastic and plastic properties and permeability of sediments. He uses experimental data as inputs to numerical models that simulate sediment deposition (or erosion), fluid migration, and sediment deformation at scales up to hundreds of kilometers and millions of years. Dr. Dugan tests these forward (hydro)geologic models against field observations and geophysical interpretations. Questions he is currently investigating are: (1) how and when do landslides occur in ocean settings?; (2) what controls the distribution of freshwater aquifers in offshore environments?; (3) how do fractures initiate in fine-grained sediments and how does this alter flow fields and fluid composition?;(4) how can we use hydrogeologic models to understand natural gas hydrate systems?; and (5) how does biochar amendment to soils affect surface and subsurface hydrology? Within his research and teaching endeavors, Dr. Dugan has been involved in multiple external service and advisory committees. In the Integrated Ocean Drilling Program (IODP), he has served on the Science Technology Panel to evaluate the needs of the science community to meet science goals and to provide advice on the infrastructure that exists and that is necessary to meet these goals. Dr. Dugan also served as a steering committee member for the IODP CHART workshop to gauge community desires for the future of scientific ocean drilling and for the IODP Geohazards workshop to evaluate the need for drilling to understand geohazards and risks. He also serves on the editorial board for Geofluids and has been a session chair at meetings for the Geological Society of America and for the American Geophysical Union. Dr. Dugan has also served as an academic advisor on drilling and logging programs for the Department of Energy, Chevron, and Shell for various gas hydrate and geohazard projects.

Dunn-Norman, Shari

Missouri University of Science and Technology

Dr. S. Dunn-Norman is Associate Professor and Head of Petroleum Engineering at Missouri University of Science and Technology. She holds a B.S. in Petroleum Engineering from the University of Tulsa, Tulsa, Oklahoma (1978), and a Ph.D. in Petroleum Engineering from Heriot-Watt University, Edinburgh, Scotland (1990). After working a number of years in both domestic and international assignments for the Atlantic Richfield Companies (ARCO), Dr. Dunn-Norman joined Herriot-Watt University to finish her PhD, developing a computational model of well completion design. Since that time, her research has focused on well construction and offshore operations. In this effort, Dr. Dunn-Norman has secured several grants from both government agencies and private companies. She is currently serving as a consultant for well completion of tight gas reservoirs and is completing a multi-year project with Chevron on well completion design methods. Dr. Dunn-Norman has active research examining the incorporation of statistics in hydraulic fracturing and wellbore construction for CO2 injection.

Dzombak, David A.

Carnegie Mellon University

Dr. David Dzombak is the Walter J. Blenko, Sr. Professor of Environmental Engineering in the Department of Civil and Environmental Engineering at Carnegie Mellon University, Pittsburgh, PA. He is also Faculty Director of the Steinbrenner Institute for Environmental Education and Research at Carnegie Mellon. Dr. Dzombak holds a B.S. in Civil Engineering from Carnegie Mellon University, a B.A. in Mathematics from Saint Vincent College in Latrobe, PA, an M.S. in Civil-Environmental Engineering from Carnegie Mellon University, and a Ph.D. in Civil-Environmental Engineering from Massachusetts Institute of Technology. The emphasis of his research and teaching is on water quality protection and restoration. Dr. Dzombak's professional interests include: aquatic chemistry; fate and transport of chemicals in surface and subsurface waters; water and wastewater treatment; soil and sediment treatment; hazardous waste site remediation; abandoned mine drainage remediation; river and watershed restoration; deep geologic CO2 sequestration; and public communication of environmental science and technology. He has published numerous articles in leading environmental engineering and science journals; book chapters; articles for the popular press; and two books (Surface Complexation Modeling: Hydrous Ferric Oxide, Wiley-Interscience, 1990; Cyanide in Water and Soil, CRC/Taylor&Francis, 2006). Dr. Dzombak also has a wide range of consulting experience. He has served on the Environmental Engineering Committee of the U.S. Environmental Protection Agency's (EPA) Science Advisory Board since 2002 and as its Chair since 2007. In addition, he has served on the EPA National Advisory Council for Environmental Policy and Technology, Environmental Technology Subcommittee (2004-2008), chaired the National Research Council's Committee on the Mississippi River and the Clean Water Act (2005-2007), and serves as an Associate Editor of Environmental Science & Technology (2005-present). He is a registered Professional Engineer in Pennsylvania, a Diplomate of the American Academy of Environmental Engineers, a Fellow of the American Society of Civil Engineers and a member of the National Academy of Engineering. This past year, Dr. Dzombak served as Chair of the EPA SAB Environmental Engineering Committee (EEC) Panel that provided advice to EPA on its draft Hydraulic Fracturing Research Scoping Study Plan.

Economides, Michael J.

University of Houston

Dr. Michael J. Economides is a Professor at the Cullen College of Engineering, University of Houston, teaching both Chemical and Petroleum Engineering. He holds a B.S. (1974) and M.S. (1976) in Chemical Engineering from the University of Kansas, and a Ph.D. in Petroleum Engineering from Stanford University (1984). Dr. Economides' areas of interest include petroleum production and petroleum management, a particular emphasis on natural gas, natural gas transportation, LNG, CNG and processing, advances in process design of very complex operations, economics and geopolitics. His works on hydraulic fracturing, horizontal, directional and multi-lateral wells are considered pioneer and are referenced by most major practitioners in the field. Dr. Economides is considered to be one of the world's authorities on natural gas from the technical to the economic to the geopolitical. From 1984 to 1989 he worked in a variety of senior technical and managerial positions with the Schlumberger companies, including Europe Region Reservoir Engineering and Stimulation Manager (1984-86) and Dowell Schlumberger Senior Staff Engineer, North America (1986-1989). Dr. Economides' publications include authoring/co-authoring of 15 textbooks and over 200 journal papers and chapters in books. His texts are used in almost all of the Petroleum Engineering departments in the United States, several overseas universities, and in the training programs of most of the major companies in the petroleum industry.

Ehlig-Economides, Christine

Texas A&M University

Dr. Ehlig-Economides is currently full Professor of Petroleum Engineering at Texas A&M University in the Albert B. Stevens Endowed Chair. She holds a BA in Math-Science from Rice University, 1971, an M.S. in Chemical Engineering from the University of Kansas, 1977, and a Ph.D. in Petroleum Engineering from Stanford University (1979). Dr. Ehlig-Economides worked for Schlumberger for 20 years in well test design and interpretation, integrated reservoir characterization, modern well construction design, and well stimulation. She is internationally recognized for her expertise in reservoir engineering, pressure transient analysis, integrated reservoir characterization, complex well design, and production enhancement. Dr. Ehlig-Economides' recent research interests include shale gas production engineering and CO2 sequestration. She was a member of the NAE Committee on America's Energy Future, and is currently a member of the National Academy Board of Energy and Environmental Systems (BEES). Dr. Ehlig-Economides is a member of the National Academy of Engineering. She established the Center for Energy, Environment, and Transportation Innovation (CEETI) is currently working to introduce degree programs and research in Energy Engineering. She has worked in more than 30 countries, published more than 60 papers, and received numerous awards from the Society of Petroleum Engineers.

Grant, Stanley

University of California, Irvine

Dr. Stanley Grant is currently a Professor in the Departments of Chemical Engineering and Materials Science (primary) and Civil and Environmental Engineering (courtesy) at the University of California, Irvine. In addition, Dr. Grant is a Visiting Chair of Hydrology and Water Resources in the Department of Civil and Environmental Engineering at the University of Melbourne (Australia) for summer periods from 2010 through 2013. Dr. Grant holds a B.S. with distinction in Geology from Stanford University in 1985, and an M.S. and Ph.D. in Environmental Engineering and Science in 1990 and 1992, respectively, from California Institute of Technology. Dr. Grant was Assistant Professor at UCI from 1991-96, Associate Professor at UCI from 1996-2001, Professor at UCI from 2001 to present, and Chair of the Department of Chemical Engineering and Materials Science from 2002 to 2009. His professional interests include environmental engineering, coastal water quality, colloidal contaminants, and environmental microbiology. Dr. Grant has published 46 peer-reviewed journal articles in the water quality area that have been collectively cited over 1000 times, and supervised eight Ph.D. students, many of whom have gone on to successful careers in academia as professors at Stanford University, University of Mississippi, Ohio State University, California State University Long Beach, and Gwangju Institute of Science and Technology (S. Korea). He served on the U.S. Environmental Protection Agency's Science Advisory Board (Drinking Water Panel) from 2000 to 2009, and actively serves as a reviewer and panelist for research journals and research funding agencies.

Griffiths, Jeffrey

Tufts University

Dr. Jeffrey Griffiths is currently Director of Global Health, in the public health program at Tufts University School of Medicine. He is Associate Professor of Public Health, Medicine, Nutrition, and Civil and Environmental Engineering at Tufts University, with a primary appointment in the Department of Public Health and Family Medicine at Tufts University School of Medicine. Clinically, he is an Associate Physician, Division of Geographic Medicine and Infectious Diseases, New England Medical Center; Physician, Department of Infectious Diseases, St. Elizabeth's Medical Center, and Consulting Physician, Divisions of Infectious Diseases, Carney Hospital and Quincy Hospital. Dr. Griffiths holds an A.B. in Chemistry in 1977 from Harvard College, an M.D. from Albert Einstein College of Medicine, and a MPH & TM in Public Health and Tropical Medicine from Tulane University (both in 1982). His major research interests lie in the study of waterborne diseases (especially cryptosporidiosis) and their relationship to environmental factors; respiratory infections and their linkage to malnutrition and air pollution; and the development of an ultrastable measles vaccine for use where refrigeration is not present. He has served on numerous national committees or advisory groups including: the U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Drinking Water Committee, the National Drinking Water Advisory Council of the EPA; the National Academies' Committee on Drinking Water Contaminants and the Public Interest Advisory Forum of the American Water Works Association, Public Health Subgroup. Other service has included being the Federal representative for the National Association of People with AIDS (NAPWA) to the EPA Drinking Water Microbial Disinfection and Byproducts Committee, and a member of multiple National Institutes of Health (NIH) AIDS Clinical Trials Groups dealing with enteric infections. He is a 2008 American Society of Microbiology International Professor, and is co-editor of the Communicable Diseases section of the International Encyclopedia of Public Health (8th edition, published by Elsevier). He completed residencies in both Internal Medicine and Pediatrics at Yale-New Haven Hospital during 1982-1986. This past year, Dr. Griffiths served as an ad hoc member of the EPA SAB Environmental Engineering Committee (EEC) Panel that provided advice to EPA on its draft Hydraulic Fracturing Research Scoping Study Plan.

Gschwend, Phillip M.

Massachusetts Institute of Technology

Dr. Philip Gschwend is a Professor in Civil and Environmental Engineering at Massachusetts Institute of Technology where he joined the Department of Civil and Environmental Engineering in 1981. He holds a B.S. in Biology from the California Institute of Technology (1973), and a Ph.D. in Chemical Oceanography from the Woods Hole Oceanographic Institution (1979). Dr. Gschwend joined the Department of Civil and Environmental Engineering at MIT in 1981. Dr. Gschwend's research interests include environmental organic chemistry, volatilization, sorption, transformation processes, modeling fates of organic pollutants, and roles of colloids and black carbons. His research seeks to learn what happens to organic chemicals in natural and engineered environments. Recently published papers of Dr. Gshwend include "Evaluating activated carbon-water sorption coefficients of organic compounds using a linear solvation energy relationship (LSER) approach and sorbate chemical activities" and "Measurement of freely dissolved PAH concentrations in sediment beds using passive sampling with low density polyethylene strips". He is one of the authors of Environmental Organic Chemistry, Wiley-Interscience (2nd edition, 2003). Dr. Gschwend has received several teaching awards for excellence from MIT, as well as MIT's Frank E. Perkins Award for excellence in graduate student mentoring.

Haas, Charles

Drexel University

Dr. Charles Haas is the L.D. Betz Professor of Environmental Engineering and Head of the Department of Civil, Architectural & Environmental Engineering at Drexel University. He holds a B.S. (Biology, 1973) from the Illinois Institute of Technology; an M.S. (Environmental Engineering, 1974) from the Illinois Institute of Technology; and a Ph.D. (Environmental Engineering, 1978) from the University of Illinois at Urbana-Champaign. Dr. Haas' research interests center around the assessment of risk from and control of risks (by treatment interventions) from human exposure to infectious agents. He has extensive experience in water and wastewater treatment processes, especially disinfection, and in risk assessment. Dr. Haas also has prior experience with hazardous waste treatment, particularly heavy metals. He has served on a number of National Research Council and World Health Organization committees. Dr. Haas is past chairman of American Water Works Association and Water Environment Federation Disinfection Committees. He is a past member of the National Academies Water Science & Technology Board, and the U.S. Environmental Protection Agency Board of Scientific Counselors Executive Committee. Dr. Haas has served on numerous National Academies committees, including the Committee to Review the New York City Watershed Management Strategy. He is a member of the augmented SAB EPEC Subcommittee reviewing issues concerning Ballast Water Management. Dr. Haas is a fellow of the American Academy of Microbiology, the Society for Risk Analysis, and the American Association for Advancement of Sciences, and is a Board Certified Environmental Engineering Member of the American Academy of Environmental Engineers.

Hammack, Richard

U.S. Department of Energy

Mr. Richard Hammack is a leading Project Manager for the U.S. Department of Energy (DOE)/National Energy Technology Lab (NETL) within DOE's Office of Research & Development. He holds a B.S. (1976) and M.S. (1981) in Geology from West Virginia University. He holds a B.S. (1976) and an M.S. (1981) in Geology from West Virginia University. As the Research Group Leader (since 2007), Mr. Hammack implements projects to analyze Environmental Impacts of Oil and Gas Exploration and Production Activities (Energy Policy Act of 2005, Subchapter J) and has duties that include technical planning and oversight of research activities performed by NETL, URS (NETL onsite contractor), and the Research University Alliance (University of Pittsburgh, Carnegie Mellon University, West Virginia University, Penn State University, and Virginia Tech University). His knowledge relevant to hydraulic fracturing includes: a) Knowledge of all current and emerging methods for the treatment and/or beneficial use of produced/flowback water; b) Knowledge of current best management practices for limiting air emissions from oil and gas production activities; c) Knowledge of methods used to locate abandoned wells (most likely contaminant pathway from hydrofractured formation to potable groundwater); d) Knowledge of airborne and ground-based geophysical methods for mapping contaminant plumes from leaking fracture ponds, and e) Knowledge of most likely ecological impacts of oil and gas production activities in the central Appalachian hardwood forests. Mr. Hammack has been the Principle Investigator for 14 high-risk projects that have won numerous awards and national recognition focusing on areas like innovative technologies of electromagnetic surveys that can detect sources and pathways of groundwater contamination. His project "SEQURE Well Finding Technologies" received DOE's Research and Development 100 award in 2007. As a research geochemist for the U.S. Department of Interior's former Bureau of Mines, Mr. Hammack conducted research pertaining to environmental impacts of mining including: a) investigation of morphological factors and crystal defects that control pyrite reactivity; b) development of rapid methods (evolved gas analysis, corrosion voltammetry, and Mossbauer spectroscopy) to determine pyrite reactivity; c) development of water treatment technologies that use biogenic sulfide; and d) investigation of methods for selectively recovering metals (as metal sulfide concentrates) during water treatment to offset treatment cost. He has authored more than 85 scientific publications, and also has served on numerous advisory committees including, but not limited to: EPA Technical Advisory Committee for the Iron Mountain Superfund Site, CA, 1989-1992; EPA Committee on Prediction of Acid Mine Drainage, Las Vegas, NV, 1993; EPA Committee on Water Treatment Using Bacterial Sulfate Reduction, Cincinnati, OH, 1994; and the Mine Void Forum, Lexington, KY, 2003. Mr. Hammack has also work for many diverse organizations within various federal and state governments and industry.

Hanson, Gary

Hanson Consulting

Mr. Gary Hanson is a Professional Geologist and Hydrologist at Hanson Consulting in Shreveport LA, and a Professor and Resident Hydrologist at Louisiana State University (LSU) in Shreveport, LA where he holds the Don and Earlene Coleman Red River Watershed Management Institute Professorship. He holds a B.S. in Geology from Louisiana Tech University (1966), an M.S. in Earth Sciences from the University of New Hampshire (1973), and post graduate studies in Environmental Dynamics at the University of Arkansas. After leaving the U.S. Navy in 1976, Mr. Hanson began his oil and gas career with Pennzoil in Shreveport and was later transferred to Houston as exploration geologist and project leader for a large Mississippi Salt Basin play. He has since served in various management/technical positions in Shreveport where he continued development of primarily salt-related (salt and turtle) prospects/fields throughout the salt dome basins North Louisiana, East Texas and Mississippi. He gained extensive experience hydraulically fracturing tight gas sands. While serving as Baton Rouge manager of a national environmental firm, he conducted technical reviews of numerous environmental sites throughout the U.S including Cape Canaveral in Florida, has conducted ground water modeling at Savannah River Site in South Carolina, as well as studies of the interaction of subsurface oil field brines with shallow aquifers in Oklahoma. He serves on the Governor's Ground Water Advisory Task Force, which is in the process of developing the state's first comprehensive water plan. Mr. Hanson worked closed with the Department of Natural Resources and Lt. Governor Angelle in the development of the state's new surface water Act. He has worked closely with federal and state regulators as well as gas industry representatives to find practical ways to properly protect the environment while allowing the industry to have water resources necessary to continue operating. Mr. Hanson has worked with Ohio State University and LSU Baton Rouge to develop a basin-wide plan for nutrient reduction in the Mississippi River watershed and was recently selected to serve on the Environmental Advisory Committee of the Community Foundation of Shreveport-Bossier and chairs the Water Resources Committee of Northwest Louisiana. He is a former president of the Shreveport Geological Society where he worked to develop unique approaches for community outreach utilizing member professional geologists. Mr. Hanson served on the original technical advisory committee for Sci-Port Discovery Center where he developed the Red River Gallery concept. He was recently selected by a team of his peers to serve on an expert workshop organized to study gas shale drilling, hydraulic fracturing and multiple aspects of the industry that could produce unforeseen environmental impacts. He is a sought after speaker because of his technical knowledge, on a national scale, of both environmental and petroleum topics, as well as having the ability to successfully bring together multiple stakeholder groups and work through to practical solutions.

Hawkins, Charles

Utah State University

Dr. Charles Hawkins is a Professor in the Department of Watershed Sciences and Director of the Western Center for Monitoring and Assessment of Freshwater Ecosystems at Utah State University. He holds a B.A. in Biology (Biochemistry emphasis/Chemistry minor) from California State University, Sacramento (1973), an M.A. in Biology (Aquatic Biology emphasis) from California State University, Sacramento (1975), and a Ph.D. in Entomology (Aquatic Ecology emphasis/Statistics and Philosophy of Science minor) from Oregon State University (1982). Dr. Hawkins has been on the faculty of Utah State University since 1983 following completion of his Ph.D. work. His teaching responsibilities include graduate-level courses in general ecology, stream ecology, and a professionalism course that addresses practical aspects of oral and written communication skills, issues related to publication, and ethical issues related to peer review, advocacy, and scientific misconduct. Dr. Hawkins' research focuses on the role that landscape setting plays in controlling community composition and richness in aquatic ecosystems; survey designs; predictive modeling of community composition; use of aquatic biota to assess and monitor ecological integrity; cumulative effects of watershed alteration on the physical, chemical, and biotic condition of aquatic and riparian ecosystems; and the biology and ecology of freshwater invertebrates, amphibians, and fishes. He has worked extensively with state and federal agencies to develop scientifically defensible indices of ecological condition and criteria for freshwater ecosystems and ways to simply and directly communicate the results of these technical analyses to the public. Dr. Hawkins' research has been supported by grants from, among others, the National Science Foundation, U.S. Environmental Protection Agency (EPA), United States Geological Survey, U.S. Forest Service, and the U.S. National Park Service. He served two terms on the editorial board of the Journal of the North American Benthological Society and served a 4-year term as Vice-Chair and Chair of the Aquatic Ecology section of the Ecological Society of America. Dr. Hawkins served two terms (2001-2005) on the Ecological Processes and Effects Committee of the EPA's Science Advisory Board (SAB), currently serves on the EPA-Science Advisory Board's Report on the Environment Committee, and served on the Community Condition Indicators Committee for the H. John Heinz III Center for Science, Economics and the Environment. He has also served on several expert panel committees charged with evaluating federal environmental research laboratories, national monitoring needs, and State water monitoring programs. Dr. Hawkins is a key member of the technical team that is developing and interpreting biological indices that support EPA's national assessments of ecological condition of the U.S.'s streams, rivers, lakes, and wetlands.

Hayes, Kim

University of Michigan

Dr. Kim Hayes is a Professor of the Environmental and Water Resources Engineering (EWRE) in the Department of Civil and Environmental Engineering at the University of Michigan. He served as Program Director of the EWRE program from 2001- 2007. Dr. Hayes holds a B.S. in Chemistry (1980), M.S.E. in Environmental Engineering (1980), M.S.E. in Chemical Engineering (1982), and a Ph.D. in Environmental Engineering (1987) from Stanford University. His primary field of specialization is environmental chemistry as it pertains to water quality and water purification. Dr. Hayes' research focuses on the use of solid phase adsorbents for the treatment of water contaminated by organic (e.g., chlorinated organic compounds) and inorganic pollutants (e.g., heavy metals such as Cadmium, Lead and Mercury; metalloids such as Arsenic; and radioactive materials such as Uranium). His work also focuses on applications of green chemistry and sustainability engineering principles for creating environmentally benign processes or products and sustainable water supplies. Dr. Hayes' current research includes: development of nanoscale particles for surface-catalyzed reductive dechlorination and metal ion or radionuclide sequestration for groundwater remediation, reformulation and production of environmentally sustainable metal working fluidic systems for lubrication and cooling, the development of a bioreactor system that produces reduced iron sulfide to remove arsenic as part of an overall process for simultaneous removal of nitrate, perchlorate, and arsenic, and evaluation of the long term effectiveness of biogenic reduction of Uranium under sulfate reducing conditions at contaminated field sites. He has more than 100 publications in peer-reviewed manuscripts, book chapters, technical reports, and proceedings detailing work on environmental chemistry and interfacial processes for contaminant remediation. Dr. Hayes was an elected member of the Board of Directors of the Association of Environmental Engineering and Science Professors (2000-2003), a past member of the Technical Advisory Board of the Great Lakes Protection Fund (2000-2006), and has participated on a variety other workshop and review panels for the U.S. Environmental Protection Agency, National Science Foundation, and U.S. Department of Energy related to metal ion speciation, sequestration and mobility.

Hetrick, Lloyd

Newfield Exploration

Mr. Lloyd Hetrick is an Operations Engineering Specialist with Newfield Exploration, Houston, TX. He holds a B.S. in Ocean Engineering from Texas A&M University (1979). Mr. Hetrick's areas of expertise and current job duties include well failure analysis and prevention, well design and well operations. He provides technical support to drilling and completion operations regarding water issues, develops company wide best practices for water protection and zonal isolation during hydraulic fracturing, and analyzes well failures for root causes and assist with appropriate corrective actions. Mr. Hetrick previously served as a Senior Well Integrity Engineer, implementing integrity management initiatives for onshore wells across twelve operating centers. He developed predictive failure methods and preventative strategies for approx 14,500 wells, provided guidance on well design and maintenance, and performed hazard analyses, risk rankings, incident investigations, failure analyses, planning, and budgeting. He is a Registered Professional Engineer and a Certified Safety Professional with over thirty one years in the exploration and production industry, with experience in production operations, drilling, completions (this includes hydraulic fracturing), and Health, Safety and Environmental issues (HSE).

Hicks, Randall

R.T. Hicks Consultants, Ltd.

Mr. Randall Hicks is the President of R.T. Hicks Consultants, Ltd., an environmental consulting firm with offices in Albuquerque, New Mexico and Midland, Texas. He holds a B.S. in Geology from Beloit College and an M.S in Geology from the University of New Mexico. His professional experience includes several years as a uranium exploration geologist, a supervising hydrogeologist with the New Mexico Environment Department, and more than 25 years as an environmental consultant. Since founding R.T. Hicks Consultants in 1996, about half of his projects involved investigations of oil and gas exploration and production sites in New Mexico, Colorado and Texas. His clients are small and large independent producers, surface owners and trade organizations. The remainder of his work involves environmental due diligence programs for the real estate industry, remedial action consulting on Superfund sites, and permitting and regulatory compliance assistance to manufacturers and refiners. In addition to the design and implementation of field programs that include the installation of monitoring wells, soil and waste sampling and determining the hydraulic properties of aquifers, he evaluates the data and forms conclusions. Because of his early experience with sedimentary uranium deposits, one of his areas of expertise is rock-water interactions – be they natural processes that occurred in the Jurassic or recent events caused by leakage from the oil well drilling pit. Mr. Hicks served as a regulatory and technical expert on two technical review panels formed by Sandia National Laboratories (Red Teams). One team reviewed the technical and management approach used by the DOE Uranium Mill Tailings Remedial Action project and the other team studied the efficacy of a ground water remedial action operated by the Lawrence Livermore Laboratory. He also facilitated two independent technical reviews of environmental programs for the State of Wyoming and the State of New Mexico. These state review panels engaged several stakeholders with different philosophies.

Holditch, Stephen A.

Texas A&M University

Dr. Stephen A. Holditch has been the Head of the Harold Vance Department of Petroleum Engineering at Texas A&M University since January 2004. He holds a B.S. (1969), M.S. (1970) and Ph.D. (1976) in Petroleum Engineering from Texas A&M University. Dr. Holditch joined the faculty at Texas A&M in 1976 and has taught both undergraduate and graduate courses. In supervising more than 100 MS and Ph.D. students, his research has focused on unconventional resources. Dr. Holditch is a recognized industry leader in the evaluation and stimulation of low permeability reservoirs, including fracture treatment design evaluation, and optimization, coalbed methane developments, and well completions and workovers. His more than 150 publications include contributions to two textbooks and 100 plus presentations on advances in fracture technology. Dr. Holditch's petroleum-engineering consulting firm, S. A. Holditch & Associates Inc., acquired by Schlumberger in 1997, was well known in the industry for its groundbreaking work in the analyses of low-permeability gas reservoirs and designs of hydraulic-fracture treatments. He was the Society of Petroleum Engineers, International (SPE) President 2002, SPE Vice President-Finance and a member of the Board of Directors for the SPE from 1998-2003. In addition, Dr. Holditch served as a Trustee for the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) from 1997-1998. He is currently the Chair of the Research Partnership to Secure Energy for America (RPSEA) and Vice President and President-Elect of the Academy of Medicine, Engineering and Science of Texas (TAMEST). He has received numerous awards in recognition of his technical achievements and leadership. In 1995, Dr. Holditch was elected to the National Academy of Engineering (NAE) and in 1997 to the Russian Academy of Natural Sciences. In 1998, he was elected to the Petroleum Engineering Academy of Distinguished Graduates, and in 2006 was elected as an SPE and AIME Honorary Member. In 2010 Dr. Holditch was honored as an Outstanding Graduate of the College of Engineering at Texas A&M University.

Howarth, Robert W.

Cornell University

Dr. Robert Howarth is the David R. Aktinson Professor of Ecology & Environmental Biology at Cornell University, where he also directs the Agriculture, Energy & Environment Program, and he is an Adjunct Senior Scientist at the Ecosystems Center of the Marine Biological Laboratory in Woods Hole, MA. He earned a B.A. in Biology from Amherst College in 1974 and a Ph.D. jointly from Massachusetts Institute of Technology and the Woods Hole Oceanographic Institution in 1979. Dr. Howarth's research focuses on the sources and effects of nutrient pollution in coastal marine ecosystems, the interactions of biogeochemical cycles from ecosystem to regional to global scales, and the environmental effects of energy systems (including biofuels and fossil fuels, with an emphasis on water quality and on greenhouse gas emissions). He is the Founding Editor of the journal Biogeochemistry and was Editor-in-Chief of the journal from 1983 to 2004. Dr. Howarth has served on 11 committees and panels of the National Academy of Sciences, including serving as chair for two of these: the Committee on Causes and Consequences of Coastal Marine Eutrophication from 1998-2000, and the Working group on Scientific Studies in Pristine Areas in 1995. He also served on the Panel on Fluxes of Trace Gases from Terrestrial Ecosystems of the Committee on Global Change (1989-1990) and the Panel on Ecological Effects, Committee on Fate and Effects of Oil in the Sea (1981-1984) of the Academy of Sciences. Dr. Howarth co-chaired the International SCOPE Nitrogen Project from 1992 to 2002, directed the North American Nitrogen Center of the International Nitrogen Initiative from 2003-2006, and has been chair of the International SCOPE Biofuels Project on environmental effects of biofuels since 2007. From 1989-1990, he was the lead consultant for the Attorney General of Alaska on the Exxon Valdez oil spill. Dr. Howarth also served as an expert witness in two federal court trials on pollution from oil and gas drilling. From 2000 to 2002, he directed the Oceans Program at Environmental Defense. Dr. Howarth was the co-lead author of the chapter on responses to nutrient pollution for the Millennium Ecosystem Assessment in 2005 and served as a consultant to the Pew Oceans Commission on nutrient pollution from 2002-2003. From 2006-2008, Dr. Howarth served as a member of the EPA's Science Advisory Board Panel on Hypoxia in the Northern Gulf of Mexico. From 2007 to 2008 he served as President of the Coastal & Estuarine Research Federation. From 2008-2010, Dr. Howarth served on the Board of Directors of the Council of Scientific Society Presidents (CSSP), an umbrella group representing 1.5 million scientists. He co-chaired the CSSP Committee on Energy & Environment in 2009 and 2010. Dr. Howarth also represents the State of New York on the Science and Technical Advisory Committee of the Chesapeake Bay Program. He has edited 7 books and authored more than 180 papers.

Ingraffea, Anthony

Cornell University

Dr. Anthony Ingraffea is the Dwight C. Baum Professor of Engineering and Weiss Presidential Fellow at Cornell University's School of Civil and Environmental Engineering. He holds a B.S. in Aerospace Engineering, Magna Cum Laude, from the University of Notre Dame (1969), an M.S. in Civil Engineering from the Polytechnic Institute of New York (1971), and a Ph.D. in Civil Engineering from the University of Colorado at Boulder (1977). Dr. Ingraffea has taught structural mechanics, finite element methods, and fracture mechanics at Cornell since 1977. His research concentrates on computer simulation and physical testing of complex fracturing processes. Dr. Ingraffea and his students performed pioneering research in the use of interactive computer graphics in computational mechanics. His areas of expertise include Structural Engineering, Structural Mechanics, Computational and Experimental Fracture Mechanics, and Microstructural Simulation of Fatigue and Fracture Mechanisms. Dr. Ingraffea is a Founding Member and past member of the board of the American Rock Mechanics Association/Foundation, and he is a member of the International Society for Rock Mechanics. Dr. Ingraffea has conducted extensive research, has numerous publications, and received important awards in rock mechanics. He has twice won the National Research Council/U.S. National Committee for Rock Mechanics Award for Research in Rock Mechanics (1978, 1991), the latter of these for work in simulation of hydraulic fracturing. Dr. Ingraffea was named Co-Editor-in-Chief of the Engineering Fracture Mechanics journal in 2005, received the ASTM Irwin Award for meritorious contributions to the practice of fracture mechanics in 2006, and was named a Fellow of the International Congress on Fracture in 2009. He has authored with his students over 200 papers in these areas. He has been a principal investigator on over $35M in R&D projects from the NSF, NASA Langley, Nichols Research, NASA Glenn, AFOSR, FAA, Kodak, U. S. Army Engineer Waterways Experiment Station, U.S. Department of Transportation, IBM, Schlumberger, Digital Equipment Corporation, the Gas Research Institute, Sandia National Laboratories, the Association of Iron and Steel Engineers, General Dynamics, Boeing, Caterpillar Tractor, and Northrop Grumman Aerospace.

Istok, Jonathan

Oregon State University

Dr. Jonathan ("Jack") Istok is a Professor of Civil Engineering at Oregon State University where he has taught courses in groundwater, groundwater modeling, fluid mechanics, hydrology and hydraulics for 30 years. He holds a B.S. in Geology from Ohio State University (1978), an M.S. in Soil Science from Oregon State University (1981), and a B.S. (1986) and a Ph.D. (1986) in Civil Engineering from Oregon State University. Dr. Istok's research and consulting practice specializes in conducting field tests for waste site characterization, remedial technology pilot testing, and full-scale remedial design. He is the author of two textbooks "Groundwater Modeling by the finite element method" and "Aquifer testing" and is the developer of the "push-pull" test widely used to quantify physical, chemical, and biological processes in the subsurface. Dr. Istok has conducted field experiments with this method at over 50 sites nationwide and internationally. He has served on technical and review boards and panels for the Department of Energy and several local and state governments.

Kaback, Dawn

AMEC Geomatrix

Dr. Dawn Kaback is currently a Principal Geochemist with AMEC Geomatrix, Denver CO. She holds a Ph.D. and M.S. in Geological Sciences from University of Colorado (1977 and 1972) and a B.S. in Earth and Space Sciences from State University of New York at Stony Brook. Dr. Kaback has more than 30 years of experience in technical and management roles with emphasis on applied research and technology development for environmental and energy issues. Her research has involved 1) development and implementation of innovative solutions for a wide range of environmental problems focused on investigation and remediation of contaminated groundwater and soil; 2) understanding of oil and gas reservoirs and methods for resource extraction, 3) regional aquifer characterization; and 4) mining impacts to surface water, groundwater, soils, flora, and fauna. Dr. Kaback's expertise includes 1) aqueous geochemistry, involving fate and transport of organics, trace metals, and radionuclides; 2) geology and hydrogeology; 3) innovative subsurface access methods including horizontal drilling and fracturing; 4) innovative technologies for subsurface characterization and remediation, including geophysical methods; 5) petroleum geology, including sedimentary petrography and diagenesis to enhance resource extraction methods; 6) stakeholder involvement to promote acceptance of innovative technologies, and; 7) decision science. She has significant experience leading and participating on more than 35 independent technical panels to review: 1) research programs (e.g., National Academy of Science's Committee on USGS Water Resources Research and Department of Energy's (DOE) Office of Environmental Management Technology Innovation), 2) research proposals (e.g., small business innovative research), and 3) DOE environmental cleanup projects. Dr. Kaback has also conducted numerous reviews of innovative environmental technologies for U.S. Environmental Protection Agency's Technology Innovation Office and DOE's Technology Innovation Office. She has dedicated significant efforts to transfer of innovative technologies from government laboratories to commercial practice, has worked with the Interstate Technology and Regulatory Council to promote innovative technologies through state regulatory agencies, and holds four patents for innovative remediation systems based upon horizontal drilling for in situ groundwater treatment and subsurface desiccation for immobilization of radionuclides in the unsaturated zone. Dr. Kaback works closely with the National Ground Water Association: serving as a Board member, a Committee Chair for the Horizontal Drilling Interest Group, Technical Editor for Ground Water Monitoring and Remediation Journal and a newsletter in Ground Water Journal; has taught numerous workshops at national conferences; and received the Keith Anderson Award for service to the organization.

Kim, Nancy

Health Research, Inc.

Dr. Nancy Kim is affiliated with Health Research Incorporated (HRI), which is a not-for-profit corporation affiliated with the New York State Department of Health (DOH) and the Roswell Park Cancer Institute (RPCI). She held a number of positions in the Center for Environmental Health in the New York State Health Department before retiring in April 2009, and continues to work there post retirement, part time, on several priority projects. She is also an adjunct associate professor in the Department of Environmental Health Sciences in the School of Public Health at the State University of New York at Albany. Dr. Kim holds a B.A. in Chemistry from the University of Delaware (1964), and an M.S. (1966) and Ph.D. (1969) in Chemistry from Northwestern University. Her primary professional interest is in chemical risk assessment and exposure assessment. Dr. Kim was Interim Director of the Center that provides environmental epidemiological, toxicological, and risk assessment expertise in support of environmental health and protection programs. Most of her tenure at the Department of Health involved serving as the Director of the Division of Environmental Health Assessment. This Division has the primary responsibility for assessing the potential risk for adverse health effects from exposure to toxic substances and to study, monitor and evaluate the effects of exposure to them in homes and communities. Dr. Kim's recent panel memberships include: a) The National Academies, Board on Environmental Studies and Toxicology, Member of the Committee on Assessment of the Health Implications of Exposure to Dioxins, September 2004 to summer 2006, b) The National Academies, Water Science and Technology Board, Member of the Committee on Water System Security Research, December 2004 to December 2006, c) The National Academies, Water Science and Technology Board, Member of the Committee on USGS Water Resources Research, Committee on the United States Geological Survey's National Water-Quality Assessment (NAWQA) Program, March 2009 to February 2011, and d) U.S. Environmental Protection Agency's Scientific Advisory Board, 2009-2012.

King, David S.

Independent Consultant

Prior to retiring in April 2010, Mr. David S. King served as President, Completion and Production Division, at Halliburton, where he was responsible for focusing on industry leadership in pumping services and completion tools. He also was a member of the Company's Executive Committee. Mr. King holds a B.S. in Engineering from the University of Alabama, where he was recognized in 2007 as a Distinguished Fellow of the College of Engineering. Previously, he was Senior Vice President, Completion and Production Division, and, prior to that, Senior Vice President, Production Optimization. Mr. King joined Halliburton in 1978 and held many engineering, sales and operations positions. He served Halliburton's Energy Services Group as Senior Vice President, Eastern Hemisphere, and as Vice President, Global Operations. Before that, he was Vice President of Production Optimization, Vice President of Production Enhancement and Division Vice President of the Well Completions product service line. Mr. King has also held the positions of Director of Emerging Markets for Halliburton Energy Services and Director of the North America Region for Halliburton Energy Development. He has great familiarity with all aspects of hydraulic fracturing, possessing practical field experience with fracturing as well as experience with the design and technical application of hydraulic fracturing technology. Mr. King also has worked previously on hydraulic fracturing issues with the U.S. Environmental Protection Agency. He is a member of the Society of Petroleum Engineers and was a registered petroleum engineer in Louisiana.

Klecka, Gary

The Dow Chemical Company

Dr. Gary Klecka is a Senior Fellow with the Toxicology and Environmental Research Laboratory of The Dow Chemical Company. He holds B.A. and Ph.D. degrees in Microbiology from the University of Texas at Austin. He has been a research scientist and technical consultant with Dow since 1980. His research is focused on the fate, transport, effects, and risks of organic chemicals in the environment. He has conducted research on the mechanism and kinetics of organic chemical degradation in wastewater treatment systems, the fate and transport of chemicals in surface waters and sediments, and extensive work on the microbial transformations and bioremediation of organic compounds in groundwater. As a leader on EPA's Remediation Technologies Development Forum Bioremediation of Action Committee, he led a research program examining the importance of natural attenuation of chlorinated solvents in groundwater conducted at Dover AFB. For over 15 years, he has applied these concepts to the remediation of groundwater contaminants at industrial facilities around the world. Dr. Klecka has considerable experience in the evaluation of environmental persistence and transport potentials of persistent, bioaccumulative and toxic substances (PBTs), and he has served as Chairman or Co-chair of two SETAC Pellston Workshops on the Evaluation of Persistent Bioaccumulative and Toxic (PBT) chemicals and Persistent Organic Pollutants (POPs). Among his current interests include the biological fate and effects of endocrine active compounds and other chemicals of emerging concern in wastewater treatment systems and receiving waters. As a member of the International Joint Commission's Science Advisory Board, he has served as co-chair of the Chemicals of Emerging Concern Workgroup for the past two priority cycles. In addition to the assessment of environmental exposures to chemicals of emerging concern in the Great Lakes basin, he is currently leading a project to assess the performance of wastewater treatment facilities in the watershed.

Korrick, Susan

Harvard University

Dr. Susan Korrick is an Environmental Epidemiologist with particular expertise in studies of the relation of exposure to environmental chemicals (from multiple sources) with cognitive and behavioral function and with reproductive health and development. She is an Assistant Professor of Medicine at the Channing Laboratory, Harvard Medical School, and Assistant Professor in the Department of Environmental Health at the Harvard School of Public Health, Boston, MA. In addition, she is a physician with specialty training in Environmental and Occupational Medicine and an Associate Physician in the Department of Medicine at Brigham and Women's Hospital, Boston, MA. Dr. Korrick holds a B.A. from Harvard University, an M.D. from Yale University School of Medicine, and an M.P.H. from Harvard University School of Public Health. She is responsible for the training and supervision of doctoral students and post-doctoral trainees in environmental and occupational epidemiology and taught for many years as an invited lecturer in public health graduate courses in toxicology and environmental and occupational epidemiology. Her research spans studies of the toxicities of a range of environmental contaminants including metals (lead, mercury, manganese, and arsenic), organochlorine pesticides, PCBs, and dioxins among populations ranging in age from newborns to elderly adults. Dr. Korrick has been an invited speaker and/or expert panelist on a number of panels important to environmental health. She has been an invited expert panelist in several Centers for Disease Control (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR) workshops concerning prenatal chemical exposure hazards and an invited speaker at various National Institutes of Environmental Health Sciences (NIEHS) and U.S. Environmental Protection Agency (EPA)-sponsored forums. Dr. Korrick has been asked to participate in special emphasis NIH peer review panels. Over the past year, she served on an Institute of Medicine, National Academy of Sciences panel assessing an ATSDR report on contaminants in the Great Lakes. This past year, Dr. Korrick served as an ad hoc member of the EPA SAB Environmental Engineering Committee (EEC) Panel that provided advice to EPA on its draft Hydraulic Fracturing Research Scoping Study Plan.

Lawler, Desmond

University of Texas – Austin

Dr. Desmond F. Lawler is a Professor in the Environmental and Water Resources Engineering Program within the Department of Civil, Architectural and Environmental Engineering at the University of Texas at Austin. He holds a B.S. in Civil Engineering from the University of Notre Dame (1968) and M.S. and Ph.D. degrees in Environmental Engineering from the University of North Carolina at Chapel Hill (1975 and 1980). Dr. Lawler has been at the University of Texas since 1980 and is now the W.A. Cunningham Professor of Engineering and a member of the University's Distinguished Teaching Academy. He was recognized in 1999 by the American Water Works Association with the A.P. Black Award for sustained contributions to drinking water research. His paper on flocculation with M.Y. Han was recognized with the 2005 Association of Environmental Engineering and Science Professors *(*AEESP*)* Outstanding Publication Award as one that that has withstood the test of time and influenced environmental engineering practice. Dr. Lawler has served on the Board of Directors of the Association of Environmental Engineering Professors, has been on several committees within AWWA, and is now on the Board of Trustees of the Water Science and Research Division of AWWA. Along with Dr. Mark Benjamin of the University of Washington, he is currently writing a graduate textbook on Physical/Chemical Treatment Processes for Water and Wastewater to be published by McGraw-Hill.

Lee, Cindy M.

Clemson University

Dr. Cindy M. Lee is a Professor of Environmental Engineering and Earth Sciences and of Environmental Toxicology at Clemson University. She holds a PhD in Geochemistry from the Colorado School of Mines. She joined the faculty at Clemson in 1990. Dr. Lee's major teaching and research interests are the chemistry of environmentally significant organic compounds and environmental sustainability. Her specific research interests involve the use of chiral chemistry as a tool for investigating the fate and transport of pesticides, pharmaceuticals, and persistent organic pollutants (POPs) in the environment; the bioremediation of chlorinated contaminants; and the role of black carbon and natural organic matter in the fate of contaminants. From July 2006 to July 2007, Dr. Lee served at the National Science Foundation as the founding Program Director of the Environmental Sustainability Program in the Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET), Directorate of Engineering. She has a national perspective on engineering and science research and research needs in environmental sustainability. Dr. Lee served as a member of the Energy and Environment Coordinating Group for development of the National Aeronautical R & D Plan under the auspices of the Office of Science and Technology Policy (OSTP). She participated on the Feedstocks Task Force of the U. S. Department of Energy's Biofuels Action Plan. Dr. Lee is an editor for Environmental Chemistry for the journal Environmental Toxicology and Chemistry. This past year, Dr. Lee served as a member of the EPA SAB Environmental Engineering Committee (EEC) Panel that provided advice to EPA on its draft Hydraulic Fracturing Research Scoping Study Plan.

Maest, Ann S.

Stratus Consulting

Dr. Ann Maest is a Managing Scientist and Aqueous Geochemist specializing in the fate and transport of natural and anthropogenic contaminants in groundwater, surface water, soil, and sediment at Stratus Consulting, Boulder CO. She holds a B.A. in Geology from Boston University, and an M.A. in Geochemistry and Sedimentology and a Ph.D. in Geochemistry and Water Resources from Princeton University. Dr. Maest's major work over the last 18 years has been on the effects of mining on water quality. As a consultant, she has designed, conducted, and managed groundwater and surface water hydrogeochemistry studies at mining and other sites and worked on independent monitoring and community capacity building projects in the United States and Latin America. Dr. Maest was a research geochemist at the U.S. Geological Survey for six years, where she conducted research on metal and metalloid speciation in surface water and groundwater. As a senior scientist at Environmental Defense Fund, she designed pollution prevention approaches for mining and manufacturing facilities. Dr. Maest has published numerous articles on the fate and transport of metals in natural waters, testified as an expert in large environmental trials, and served on several National Academy of Sciences committees related to mining and minerals research issues and on international committees on mining and sustainable development. Dr. Maest works internationally with indigenous groups on mining and oil and gas development projects. The results of her research have been published in books and in peer-reviewed journals, including Applied Geochemistry, Chemical Geology, Applied and Environmental Microbiology, and Environmental Science and Technology. Dr. Maest has served on a number of national and international committees, including several National Academy of Sciences committees related to earth resources. She has provided expert testimony to the U.S. Congress, at various State boards and hearings, and as an expert in U.S. federal courts. Dr. Maest has been a member of several national committees, many of them National Academy of Science (NAS)/National Research Council (NRC) committees. These include: Committee on Earth Resources, 2007 an oversight committee in NRC (3-yr term, ending soon); Committee on Coal Bed Methane Production Water, 2008; Committee on Technologies for the Mining Industries, 2000; Committee on Hardrock Mining on Federal Lands, 1999; Committee on Bureau of Mines Research, 1995; and Committee to Review the Mineral Resource Surveys Program Plan of the U.S. Geological Survey, 1995.

Martin, John

New York State Energy Research and Development Authority

In 1993, Dr. John Martin joined the New York State Energy Research and Development Authority to manage the hydrocarbon and geothermal resources research program. He is now the Senior Technical Staff Person in charge of subsurface research and development. In addition to managing various research projects, Dr. Martin is now the state's expert on the areas of shale gas development and completion methods. He holds a B.S. in Geology, an M.S. in Economics, and a Ph.D. in Urban and Environmental Studies, all from Rensselaer Polytechnic Institute. Dr. Martin also holds an M.B.A. from Miami University and completed graduate work in mineral economics at West Virginia University. In June, 2008, New York Governor David Patterson directed a review of high volume, hydraulic fracturing regulation to be completed. The New York State Energy Research and Development Authority (NYSERDA) was asked to provide technical assistance to this effort. Dr. Martin is NYSERDA's point person on a series of technical studies looking at all aspects of hydraulic fracturing and multiwell pad development. He has served on various state and national panels including the National Petroleum Council Operations and Environment Task Group (2010-), the National Energy Technology Laboratory's 2009 Expert Peer Review Panel, co-directing the Governor's Carbon Capture and Sequestration Working Group (2007-2009), the Stripper Well Consortium's Executive Council (2001-), the Gas Technology Institute's Underground Gas Storage Steering Committee (1998-2003), the Gas Technology Institute's Natural Gas Supply Advisory Board (1998-2002), and the AAPG Division of Environmental Geosciences Environmental Issues Subcommittee (1998-2002).

Meehan, D. Nathan

Baker Hughes Inc.

Dr. D. Nathan Meehan is currently Senior Executive Advisor for Reservoir and Geosciences at Baker Hughes Inc., Houston, TX. He holds a B.S. in Physics from Georgia Institute of Technology (1975), an M.S. in Petroleum Engineering from Oklahoma University (1976), and a Ph.D. in Petroleum Engineering from Stanford University (1989), with a Dissertation on: "Hydraulically Fractured Wells in Heterogeneous Reservoirs: Interaction, Interference, and Optimization." Dr. Meehan has worked in the oil and gas industry since 1976, and his expertise includes interdisciplinary projects in reservoir characterization and technology development, horizontal well applications, thermal and compositional reservoir simulation, waterflooding and hydraulic fracturing. His experience includes worldwide leadership of reservoir, well construction, HES, and facilities engineering teams. Dr. Meehan is previously served as the Vice President of the Company's reservoir and consulting organization. He founded CMG Petroleum Consulting, Ltd., and was Vice President-Engineering for Occidental Petroleum and General Manager, Exploration and Production for Union Pacific Resources. Dr. Meehan has published scores of papers and is a Director of JOA Oil and Gas B.V., a member of the Interstate Oil and Gas Compact Commission and serves on the Advisory Board of the University of Houston's Petroleum Engineering Department. Dr. Meehan is the recipient of Society of Petroleum Engineers (SPE)'s Lester C. Uren Award and Degolyer Distinguished Service Medal and has served as an SPE Distinguished Lecturer. He has also served on the Board of Directors of the Computer Modelling Group, Pinnacle Technologies, Vanyoganeft Oil Company and the Society of Petroleum Engineers.

Moe, Christine

Emory University

Dr. Christine Moe is the Eugene J. Gangarosa Professor of Safe Water and Sanitation and the Director of the Center for Global Safe Water at Emory University. Her primary appointment is in the Hubert Department of Global Health at the Rollins School of Public Health of Emory University, and she holds joint appointments in the Department of Environmental Health and the Department of Epidemiology. Dr. Moe holds a B.S. in Biology from Swarthmore College and an M.S. and Ph.D. from the Department of Environmental Sciences and Engineering at the University of North Carolina School of Public Health. Her research focuses primarily on the environmental transmission of infectious agents, in particular; foodborne and waterborne disease. Dr. Moe works on international water, sanitation and health issues and has conducted research in the Philippines, El Salvador, Bolivia and Kenya. Her laboratory research program includes studies of viral persistence in the environment, methods to detect enteric viruses in water and wastewater, and studies of norovirus infectivity and inactivation. Dr. Moe's field research focuses on dry sanitation systems and drinking water distribution systems and associated health risks. In 2006, her research team received the Infrastructure Award and the Development Marketplace Award in The Development Marketplace Global Competition of The World Bank for their project on "Pro-poor Sanitation Demand Creation in Bolivia". Dr. Moe currently serves on the U.S. Environmental Protection Agency Science Advisory Board and has been a consultant on water and sanitation issues for the World Health Organization and The Bill and Melinda Gates Foundation.

Moo-Young, Keith

California State University – Los Angeles

Dr. H. Keith Moo-Young is Dean of the College of Engineering, Computer Science and Technology at California State University-Los Angeles. He holds an M.S. and Ph.D. in Civil-Environmental Engineering from the Rensselaer Polytechnic Institute, and a Masters of Technology Management from the University Pennsylvania, and is a licensed professional engineer (Environmental Engineering) in Pennsylvania. Dr. Moo-Young was formerly the Interim Dean and Associate Dean for Research and Graduate Studies at Villanova University, and has served as a Professor at Lehigh University and Villanova University. The emphasis of his research is on hazardous and solid waste management and technologies, such as the remediation of inorganic contaminants in acid mine drainage and groundwater, manufactured gas plant and coal tar, recycling and reuse of industrial co-product materials, and corrective strategies for contaminated sediments. Dr. Moo-Young has served as a member of the Water Environmental Research Foundation Exploratory Team on Solids Reduction, National Science Foundation Committee of Visitors for Civil and Mechanical Systems Division from 2001-2003, the Department of Energy's Workshop on Monitoring of Metals and Radionuclide Contaminated Sites in 2004 and Workshop on Containment Technologies in 2002. He also served as the session leader on Sediment Stability for the Department of Defense's SERDP-ESTCP Workshop on Contaminated Sediment in 2004. Dr. Moo-Young co-chaired the First International Conference on Environmental Research, Technology, and Policy on Africa in Accra, Ghana in 2007. He has received numerous national awards including service as an American Association for the Advancement of Science Policy Fellow at the U.S. Environmental Protection Agency from 2001-2002 and Black Engineer of the Year in 2001. Dr. Moo-Young has published over 120 papers in peer-reviewed journals, books and conference proceedings, and has delivered over 80 presentations at conferences, workshops and invited lectures. He is also the co-inventor of one patent.

Murdoch, Lawrence C.

Clemson University

Dr. Lawrence C. Murdoch is a Professor in the Department of Environmental Engineering and Earth Sciences at Clemson University. He holds a B.S. in Geology from Penn State University (1980), an M.S. in Geology (1983) and an M.S. in Environmental Science (1987) from the University of Cincinnati, and a Ph.D. in Geology from the University of Cincinnati (1991). Dr. Murdoch's research activities have included projects in environmental remediation, aquifer characterization, geomechanics, and ground water flow and transport. He has more than 20 years of research experience in methods for creating, monitoring, analyzing and using hydraulic fractures for environmental applications. He is President of FRx Inc., a company specializing in environmental hydraulic fracturing. His publications include: "Remediation of organic chemicals in the vadose zone." "Forms and sand transport in shallow hydraulic fractures in residual soil," "Effects of skin and hydraulic fractures on the performance of an SVE well", "Mechanical analysis of an idealized hydraulic fracture at shallow depths", and "Forms of hydraulic fractures in shallow, fine-grained formations."

Olson, Jon E.

University of Texas - Austin

Dr. Jon E. Olson is an Associate Professor in Petroleum & Geosystems Engineering at the University of Texas at Austin. He holds a B.S. in Earth Sciences and a B.S. in Civil Engineering (1984) from the University of Notre Dame and a Ph.D. in Geomechanics & Engineering Geology (1991) from Stanford University. Dr. Olson spent 6 years as a research engineer with Mobil Oil Corporation before joining the faculty at UT-Austin in 1995. He specializes in the applications of rock fracture and continuum mechanics to petroleum engineering and structural geology problems, and teaches courses in reservoir geomechanics, petroleum geology and general petroleum engineering. Dr. Olson's current research projects, conducted in collaboration with researchers from the Bureau of Economic Geology in the Jackson School of Geosciences at UT-Austin, include the design of hydraulic fracture treatments in tight gas sandstones and shales, the interaction of propagating hydraulic fractures with natural fractures, shear-enhanced permeability in heavy oil reservoirs, and the characterization of naturally fractured oil and gas reservoirs. He has also published on topics including hydraulic fracturing from deviated and horizontal wells, the interpretation of hydraulic fracture geometry from surface deformation using tiltmeters, compaction and subsidence modeling, in situ stress determination, and geologic rock fracture processes.

Owen, Christine

Tampa Bay Water

Dr. Christine Owen is the Water Quality Assurance Officer for Tampa Bay Water, a regional water utility in southwest Florida. She is responsible for integrating research and water quality into the operation of regional groundwater, surface water and desalination facilities. Dr. Owen holds a B.S. in Biology from Shippensburg State College (1980) and a Ph.D. in Biology from the University of California, Santa Cruz (1991). She has worked in drinking water treatment for 19 years; prior to that, she taught ecology and biology at the University of California at Santa Cruz. Dr. Owen's research interests range from the development of novel taste and odor detection methods to cutting edge water treatment technologies and management of distribution system water quality. Her work focuses on integrating research efforts, water quality, treatment technology and public policy. Dr. Owen has presented or published more 50 papers and is active in the water industry as a member of the American Water Works Association, the Water Research Foundation and the American Membrane Technology Association (AMTA). She served on the U.S. Environmental Protection Agency (EPA) Science Advisory Board Drinking Water Committee and the EPA National Advising Council for Environmental Policy and Technology Environmental Technologies Subcommittee. Dr. Owen also served on the American Water Works Research Foundation Research Advising Committee for High Quality Water. Presently she is on the Board of Directors for AMTA and the Editorial Advising Board for the Journal of the American Water Works Association.

Paque, Michael

Ground Water Protection Council

Mr. Michael Paque is Executive Director of the Ground Water Protection Council (GWPC) in Oklahoma City, OK. He holds a B.S. and M.S. in Urban, Regional, and Environmental Analysis from the University of Wisconsin. The GWPC Mission is to promote the protection and conservation of ground water resources for all beneficial use, recognizing ground water as a critical component of the ecosystem. As Executive Director of the GWPC for over 25 years, Mr. Paque has overseen the implementation of the GWPC Mission Statement through a variety of initiatives including "The Ground Water Report to the Nation", presentations on ground water and related issues before Congressional Committees and Federal Agencies, and promotion of a source water and watershed approach to water related issue resolution. Mr. Paque has been involved in, and supervised, a myriad of ground water technical studies, served on numerous federal panels involving ground water related topics and issues such as chemical fate and transport of Class I UIC injection waste, contaminant impacts of onsite waste disposal systems for industrial uses, geologic and water well standards for ground water based public water supplies, development of public information reporting systems related to the injection and disposal of oil and gas produced water, among others. He has overseen technical studies related to conjunctive/beneficial use of produced water, was editor of the recent and highly acclaimed "Modern Shale Gas Development in the United States: A Primer", developed cooperatively with the US Dept of Energy, as well as a study of "State Oil and Gas Regulations Designed to Protect Water". Mr. Paque has overseen the construction and implementation of a 25 state "Risk Based Data Management System" (RBDMS) for oil and gas agency use in production and water areas, and most recently, state water agencies working on acid mine drainage remediation and source water protection. The GWPC is currently adding a hydraulic fracturing module to the RBDMS system as well. Mr. Paque has served on Federal Advisory Committee Act (FACA) Committees addressing various aspects of the national underground injection control program and ground water protection. He has served as a member on public boards and commissions including the Oklahoma Dept of Environmental Quality's Environmental Board, the Water Quality Monitoring Advisory Committee, a committee of the Oklahoma Department of Environmental Quality (ODEQ) Board, Interstate Oil and Gas Compact Commission, Governor's appointee to the Environment, Health and Safety Committee, United States Geological Survey Advisory Committee on Water Information (Appointment by the State of Oklahoma Secretary of Interior) and others.

Patten, Duncan

Montana State University

Dr. Duncan Patten is Research Professor with the Department of Land Resources and Environmental Sciences and affiliate faculty with the Big Sky Institute at Montana State University. He is also Professor Emeritus of Plant Biology and past director of the Center for Environmental Studies at Arizona State University. Dr. Patten holds an A.B. degree from Amherst College, an M.S. from the University of Massachusetts at Amherst, and a Ph.D. from Duke University. His research interests include arid and mountain ecosystems, especially the understanding of ecological processes of riparian, wetland, and riverine ecosystems. Dr. Patten's research has also involved studies of ecosystem indicators of watershed condition including remote sensing of indicators, biocomplexity of natural and human system interactions in western rangelands, and conceptual modeling of national park ecosystems. He was Senior Scientist of the Bureau of Reclamations Glen Canyon Environmental Studies, overseeing the research program evaluating effects of operations of Glen Canyon Dam on the Colorado River riverine ecosystem. Dr. Patten was founding president of the Arizona Riparian Council, president of the Society of Wetland Scientists, and Business Manager of the Ecological Society of America. He is a Fellow of the American Association for the Advancement of Science, has been a member of eleven National Academy of Science/National Research Council committees, chairing two; the National Academy of Sciences (NAS) Board on Environmental Studies and Toxicology; and the NAS Commission on Geoscience, Environment and Resources. He also has served on the National Science Foundation Environmental Biology/Ecological Sciences Panel. Dr. Patten presently serves on the U.S. Environmental Protection Agency Science Advisory Board. He was involved with the Heinz Center's "State of the Nation's Ecosystems" project and served on an Independent Science Board guiding restoration and science for the California Bay Delta Authority river/water/levee programs. This past year, Dr. Patten served as an ad hoc member of the EPA SAB Environmental Engineering Committee (EEC) Panel that provided advice to EPA on its draft Hydraulic Fracturing Research Scoping Study Plan.

Przybylowicz, Edwin P.

Independent Consultant

Dr. Edwin P. Przybylowicz retired in 1991 after over 35 years with the Eastman Kodak Company the last 7 years as Senior Vice President and Director of Research. He received his B.S. in Chemistry from the University of Michigan and a Ph.D. in Chemistry from Massachusetts Institute of Technology. In retirement Dr. Przybylowicz has served as a Commissioner of the U.S.-Polish Joint Fund for Cooperation in Science and Engineering (U.S. State Department with Polish Ministry of Foreign Affairs), a program that fostered collaborative projects between Polish and U.S. scientists, chairing conferences and workshops on technology transfer in Poland, the Czech Republic and Russia. From 1994 to 1996, he was Director of the Center for Imaging Science at the Rochester Institute of Technology. Dr. Przybylowicz has extensive scientific, engineering and topical expertise that is relevant to the EPA study on hydraulic fracturing. For the past year, Dr. Przybylowicz has served on the Board of Directors of the Seneca Lake Pure Waters Association and chaired is Marcellus Shale Committee. In this role he and his committee have provided advice to the community, community leaders, legislators and government officials on drilling in the Marcellus Shale and the potential risks that it poses for the water quality of the Finger Lakes and in particular, Seneca Lake. His service with the National Academy of Engineering has included the chairmanship of a number of study panels, the most recent (2009) which provides expertise relevant to hydraulic fracturing, was a study of the cleanup of legacy nuclear wastes at the four major production facilities of DOE: Hanford, WA, Idaho Falls, ID, Oak Ridge, TN and Savannah River, SC. Dr. Przybylowicz was elected to the National Academy of Engineering in 1990 and has served on and chaired numerous National Research Council (NRC) committees. He currently chairs two NRC study committees. Dr. Przybylowicz recently completed 12 years as an elected member of the International Union of Pure and Applied Chemistry (IUPAC) Bureau and Executive Committee, Chairman of the Finance Committee and is Past-chair of the U.S. National Committee for IUPAC.

Randtke, Steve

University of Kansas

Dr. Steve Randtke is a Professor in the Department of Civil, Environmental, and Architectural Engineering at the University of Kansas in Lawrence, KS. He holds a B.S. degree in Civil Engineering from Loyola University of Los Angeles and M.S. and Ph.D. degrees in Civil & Environmental Engineering from Stanford University. Dr. Randtke is a licensed professional engineer in Kansas and Illinois, and a diplomate in the American Academy of Environmental Engineers. Professor Randtke's teaching and research activities focus primarily on water quality and drinking water treatment. He is a member of the American Association for the Advancement of Science, the American Water Works Association (AWWA), the Association of Environmental Engineering and Science Professors, the North American Lake Management Society, the Water Environment Federation, and the International Water Association. Dr. Randtke has served as a member of the Research Advisory Council of the AWWA Research Foundation (1986-1988), as President of the Association of Environmental Engineering and Science Professors (1994-95), and as chair of the Research Division of the American Water Works Association (1995-1998). He is currently serving as a technical editor for the 5th edition of Water Treatment Plant Design a design handbook prepared under the auspices of AWWA and the American Society of Civil Engineers.

Rao, Vikram

Research Triangle Energy Consortium

Dr. Vikram Rao is Executive Director, Research Triangle Energy Consortium (RTEC), a non-profit organization in energy founded by Duke University, North Carolina State University, RTI International and University of North Carolina at Chapel Hill. He holds a B.S. in Engineering from the Indian Institute of Technology in Madras, India, and an M.S. and Ph.D. in Engineering from Stanford University. Dr. Rao recently retired as Senior Vice President and Chief Technology Officer for Halliburton Company. He serves in a technical advisory capacity to energy companies, technology companies, non-governmental organizations and universities, in the U.S. and elsewhere. Dr. Rao is the author of more than 40 publications and has been awarded 26 patents. In keeping with RTEC priorities, his current interests include means to reduce oil usage for transportation, including electrification of transportation and associated enablers such as improved storage. Dr. Rao also focuses on reducing the carbon footprint of power production. Most recently, in support of an NGO, he has studied the environmental issues related to shale gas production, and will co-author a report on shale gas to be distributed at the World Energy Congress.

Reible, Danny

University of Texas – Austin

Dr. Danny Reible is the Bettie Margaret Smith Chair of Environmental Health Engineering at the University of Texas and Coordinator of Environmental and Water Resources in the Department of Civil, Architectural and Environmental Engineering. In 2004 he joined the University of Texas after 23 years in the Department of Chemical Engineering at Louisiana State University (LSU). Dr. Reible holds a B.S. in Chemical Engineering from Lamar University, and an M.S. and Ph.D. in Chemical Engineering from California Institute of Technology. His research career has been focused on understanding the fate and transport of contaminants in the environment, evaluating the risks posed by these contaminants, and devising effective measures for risk mitigation. Dr. Reible has been active in technical and policy issues associated with the assessment and in-situ remediation of contaminated sites. He has coauthored four National Research Council committee reports on risk assessment and remediation of contaminated sites, is the author of the textbooks “Fundamentals of Environmental Engineering” and “Diffusion Models of Environmental Transport”, and has authored more than 100 refereed technical papers. Dr. Reible currently serves on the National Research Council Board of Environmental Studies and Toxicology. He is an Associate Editor of the Journal of the Air and Waste Management Association, the Journal of Environmental Forensics, and the Journal of Environmental Engineering. Dr. Reible is a Fellow of the American Institute of Chemical Engineers and the American Association for the Advancement of Science. He is a Board Certified Environmental Engineer, a Professional Engineer (LA) and in 2005 was elected to the National Academy of Engineering for the “development of widely used approaches for the management of contaminated sediments”. This past year, Dr. Reible served as a member of the EPA SAB Environmental Engineering Committee (EEC) Panel that provided advice to EPA on its draft Hydraulic Fracturing Research Scoping Study Plan.

Roy, Sujoy

Tetra Tech Inc.

Dr. Sujoy Roy is a Director of Tetra Tech Inc., located in Lafayette, CA. He holds a B. Tech. in Civil Engineering from Indian Institute of Technology, New Delhi, India (1990), and an M.S. and Ph.D. in Civil and Environmental Engineering from Carnegie Mellon University (1992, 1995). Dr. Roy is an environmental engineer with extensive experience studying water quality and water resources in applied research and regulatory contexts. He has been involved in studies at the local, regional and national levels and participated in or directed studies with significant modeling, monitoring, and pilot testing components. Dr. Roy's particular areas of interest include the modeling and development of management plans to address water quantity and quality concerns for drinking water source protection and for addressing ecological impacts. In most instances, his work is motivated by current impairment, or anticipation of future growth and climate change. Dr. Roy's recent studies include the evaluation of water withdrawal sustainability across the US at a county level, under climate change scenarios. He has provided support to the U.S. Environmental Protection Agency in the development of nutrient standards in surface waters in the states of California, Nevada, Arizona, and Hawaii. Dr. Roy also leads a multidisciplinary team of climate researchers evaluating climate change impacts to municipal water supplies from the Owens Valley watershed to Los Angeles. Various projects completed by Dr. Roy over the last five years include: modeling of contaminants of drinking water concern in California's Central Valley and Sacramento-San Joaquin Delta, the development of a detailed master plan to manage land uses in the Mokelumne River watershed, and multiple studies evaluating the fate and transport of mercury in aquatic systems. He currently serves on a National Academy of Sciences panel on Missouri River Basin restoration. This past year, Dr. Roy served as a member of the EPA SAB Environmental Engineering Committee (EEC) Panel that provided advice to EPA on its draft Hydraulic Fracturing Research Scoping Study Plan.

Salazar, Mario

Independent Consultant

Mr. Mario Salazar worked for the U.S. Environmental Protection Agency (EPA) from August 1980 to January 2005. He holds a B.S. (1973) and an M.S. (1983) in Civil Engineering from the University of Maryland, College Park. All of Mr. Salazar's elective courses were in Environmental and Geo Physical Engineering. While in graduate school he did research in the development of methodology for Environmental Impact Assessments. While at the EPA, Mr. Salazar worked in all technical aspects of the Underground Injection Control Program, including technical guidance for permitting deep injection wells; research into injection well failures, effects and corrections; environmental and geophysical parameters for the granting of aquifer exemptions; quality assurance for the performance of test to monitor and prevent corrosion, injectivity tests methodology, instrumentation; and participation in regulatory technical review panels. He was the main author of the Report to Congress on Injection of Hazardous Waste (1985). Mr. Salazar also worked internationally with the Agency for International Development in the Environmental Pollution Prevention Program. He was inducted into two honorary professional societies, Phi Theta Kappa and Chi Epsilon.

Schneiderman, Jill

Vassar College

Dr. Jill Schneiderman is Professor of Earth Science and Geography at Vassar College in Poughkeepsie, NY. She holds a B.S. in Geology from Yale University (1981), and an A.M (1985) and Ph.D. in Geology from Harvard University (1987). Dr. Schneiderman 's expertise is in sedimentology, metamorphic petrology, and the intersections between surfaces processes and environmental issues. During a postdoctoral fellowship at the U.S. National Museum of Natural History, she examined Nile delta sediments for their record of climate change in the Sahara Desert. Dr. Schneiderman served as co-Principal Investigator on a U.S. Environmental Protection Agency grant that assembled a GIS-based environmental inventory of the mid-Hudson valley. Funded with a National Science Foundation grant, she teaches at Vassar a first-in-the-nation course on earth science and environmental justice. Dr. Schneiderman has a long-standing commitment to bringing geological research to public policy-making. She has served as a Smithsonian Postdoctoral Fellow and a Congressional Science Fellow in the Senate Minority Leader's office during the 104th Congress where she worked on issues involving the Missouri River and the U.S. Army Corps of Engineers. Dr. Schneiderman is editor of The Earth Around Us: Maintaining a Livable Planet (Westview Press, 2003).

Schreppel , Connie K.

Mohawk Valley Water Authority

Dr. Connie K. Schreppel is the Water Quality Director for the Mohawk Valley Water Authority (MVWA), a water utility serving urban and rural areas of upstate central New York State. She holds a B.S. in Laboratory Technology from Syracuse University, an M.S. in Environmental Science from Greenwich University, and a Ph.D. in Environmental Engineering from Kennedy Western University. Prior to employment in the water industry, Dr. Schreppel was trained as a clinical microbiologist. She has over thirty three years experience in the water industry and heads a team of well-qualified scientists who engage in water quality research studies and investigate emerging concerns to the water industry. The research initiatives of the MVWA Water Quality Laboratory concerning water quality monitoring techniques, contaminate warning systems and water system security has been recognized nationwide by the water industry. As a result of this pro-active initiative, Dr. Schreppel has been invited to provide leadership on committees and working groups addressing the issues of water quality monitoring, water treatment techniques, contaminate warning systems, and water system security on national, New York State and regional levels.

Schwager, Steven J.

Cornell University

Dr. Steven J. Schwager is Associate Professor of Biological Statistics at Cornell University. He is a faculty member in the Department of Biological Statistics and Computational Biology and the Department of Statistical Science, and a member of the Graduate Fields of Statistics, Biometry, and Epidemiology. Dr. Schwager holds an A.B. in Mathematics from Dartmouth College (1967), an M.A. in Mathematics from Columbia University (1968), and the M.A. (1972), M.Phil. (1973), and Ph.D. (1979) in Statistics from Yale University. His research addresses problems in ecological statistics, epidemiology, experiment design, modeling, multivariate analysis, sampling design, statistical computing, and statistical data analysis. Dr. Schwager teaches students with a wide variety of applied and theoretical interests, and he has consulted with faculty and students from similarly diverse fields. Much of his work has involved the development and application of statistical methods appropriate for problems in these and other areas. Dr. Schwager has published many articles and reports and has made numerous presentations on these issues.

Shah, Subhash

University of Oklahoma

Dr. Subhash Shah is a Stephenson Chair Professor in the Mewbourne School of Petroleum and Geological Engineering and also the Director of Well Construction Technology Center, The University of Oklahoma. He holds a B.S. degree from the University of Baroda, India, and M.S. and Ph.D. degrees from the University of New Mexico, all in Chemical Engineering. Prior to joining OU sixteen years ago, Dr. Shah worked for 18 years in the oil and gas industry working in the area of stimulation/completions – hydraulic fracturing. He enjoys teaching at undergraduate and graduate levels and supervises students' research leading to masters and doctoral degrees in petroleum engineering. Dr. Shah has graduated/served on graduate committees of over 120 graduate students. He directs a well-established center to conduct hydraulic fracturing and drilling related research and collaborates with several industry partners. Dr. Shah sponsors visiting scholars and post-doctoral fellows at the center. He travels world-wide to deliver invited lectures and to provide consulting services to the Oil and Gas Industry. Dr. Shah has authored over 240 technical papers in more than 20 international journals and chapters in four books. He has been well-recognized by his peers and is a recipient of numerous academic and industry awards, including Mid-Continent North America Region "Completions Optimization and Technology" award. Dr. Shah areas of expertise include onshore/offshore drilling, stimulation, well completions, the emerging technology of horizontal well drilling/stimulation and coiled tubing technology. He is a member of the Petroleum Society, the American Institute of Chemical Engineers, and the Society of Rheology. Dr. Shah serves on technical editorial boards of several technical journals. He is a registered professional engineer in the State of Oklahoma.

Sharma, Mukul M.

University of Texas – Austin

Dr. Mukul M. Sharma is Professor and holds the "Tex" Moncrief Chair in the Department of Petroleum and Geosystems Engineering at the University of Texas at Austin where he has been for the past 23 years. He holds a Bachelor of Technology in Chemical Engineering from the Indian Institute of Technology and an M.S. and Ph.D. in Chemical and Petroleum Engineering from the University of Southern California. Dr. Sharma served as Chairman of the Department from 2001 to 2005. His current research interests include improved oil recovery, injection water management, hydraulic fracturing, formation damage and petrophysics. Dr. Sharma has published more than 200 journal articles and conference proceedings and has 9 patents. Among his many awards, Dr. Sharma is the recipient of the 2009 Lucas Gold Medal, the 2004 SPE Faculty Distinguished Achievement Award, the 2002 Lester C. Uren Award and the 1998 SPE Formation Evaluation Award. He served as an SPE Distinguished Lecturer in 2002, has served on the Editorial Boards of many journals, and taught and consulted for industry worldwide.

Smith, Darren

Devon Energy Company

In 2006, Mr. Darren Smith joined Devon Energy Company, and serves in Devon's corporate Environmental Health and Safety Department as Environmental Manager where he is responsible for the company's environmental program. He holds a B.S. in Biology from the University of Western Ontario, London, Ontario, Canada (1990) and an M.S. in Environmental Toxicology and Chemistry from the University of Wyoming, Laramie, WY (1995). Among his duties at Devon, Mr. Smith serves as the technical lead for the evaluation of wastewater treatment technologies and is recognized as the company's water quality expert. Throughout his career, he has held positions in government in Water Quality Division of the Ontario Ministry of the Environment, in Academia as a Graduate Research Assistant at the University of Wyoming, as a Principal at an environmental consulting firm and currently as an Environmental Health and Safety professional in the oil and gas industry. Mr. Smith's research at the University of Wyoming involved investigating how water quality, organic and inorganic organic additives affected the bioavailability and subsequent toxicity of various environmental contaminants to aquatic biota. He began his career in the oil and gas industry as an environmental consultant and from 1995 to 1999 he provided groundwater and soil remediation services and clean air act / clean water act environmental compliance support to oil and gas exploration and production companies operating in the Rocky Mountains.

Steele, Edward J.

Independent Consultant

Until April of 2010, Mr. Steele was BP's Senior Environmental Advisor for North American onshore Operations, with overall responsibility for strategic direction, building and overseeing programs, and providing technical advice on water and hydraulic fracturing management issues. He holds a B.S. and an M.S. in Geology from the University of California in Pennsylvania. Mr. Steele was at the forefront of hydraulic fracturing environmental issues and helped lead the compilation of several American Petroleum Institute (API) guidance documents on this subject. He represented BP with several external committees and organizations including: API Committees on Oil Sands and Hydraulic Fracturing, the Ground Water Protection Council, the Barnett Shale Water Conservation and Management Committee, the Center for Multiphase Flow Phenomena, the Global Petroleum Research Institute, and the Industry Advisory Council for the RPSEA-sponsored effort to develop An Integrated Framework for the Treatment and Management of Produced Water at the Colorado School of Mines. Mr. Steele also served on the company's Environmental Technology Steering Committee. His previous roles within the company included managing and advising on environmental issues in 36 different countries and multiple environments. Mr. Steele started his career as a hydrogeologist for the State of Pennsylvania. Following this, he spent a number of years as an environmental consultant and also worked in the chemical manufacturing industry in an environmental position. Mr. Steele's previous role at BP included managing and advising on environmental issues in 36 different countries and multiple environments. The range of company operations he has addressed have included: both onshore and offshore E&P activities, power plant construction, LNG processing and re-gasification projects, natural gas liquids fractionation plants, coal bed methane extraction, oil sands operations, and remediation of contaminated sites. Mr. Steele also had responsibility for evaluating and testing new environmental technologies of interest. He has written a significant number of professional publications and two technical manuals.

Steingraber, Sandra

Independent Consultant

Dr. Sandra Steingraber is an independent consultant, and an author and biologist. She holds a B.A. in Biology from Illinois Wesleyan University, Bloomington, IL (1981), an M.S. in English/Creative Writing from Illinois State University, Normal, IL (1982), and a Ph.D. in Biological Sciences from the University of Michigan, Ann Arbor. Dr. Steingraber researches and writes about environmental health issues, particularly those mediated by water contamination and air pollution and particularly as they affect children. She is currently researching and writing about the public health effects of hydrofracking and the need to model those risks based on cumulative and interactive effects. Dr. Steingraber's background in systems ecology (University of Michigan, 1989) allows her to bring ecological systems theory--with its focus on direct and indirect effects organized in causal webs--to public health ecosystems. She has served on the following advisory committees: science advisor to the California Breast Cancer Research Program, Special Research Initiative (2006-2008); breast cancer etiology working group member, National Action Plan on Breast Cancer (1998-2001). Dr. Steingraber provided invited testimony to the President's Cancer Panel (2008) and has made presentations and briefings before Congressional staff (2008, 2010), to the White House Office on Science and Technology Policy (2010), and before United Nations delegates and in the European Parliament. She serves on the board of the Science and Environmental Health Network.

Stern, Paul C.

National Academies of Science

Dr. Paul C. Stern is a Principal Staff Officer of the National Research Council (NRC) of the National Academies of Science and Director of its Standing Committee on the Human Dimensions of Global Change. He holds a B.A. from Amherst College and M.A. and Ph.D. degrees from Clark University, all in Psychology. At the NRC, Dr. Stern has directed or played other major staff roles in many studies in the areas of risk communication, risk management, environmental decision making, and environmental decision support, including Improving Risk Communication (1989), Global Environmental Change: Understanding the Human Dimensions (1992), Understanding Risk (1996), Making Climate Forecasts Matter (1999), New Tools for Environmental Protection: Education, Information, and Voluntary Measures (2002), Decision Making for the Environment: Social and Behavioral Science Priorities (2005), Public Participation in Environmental Assessment and Decision Making (2008), Informing Decisions in a Changing Climate (2009), and the ongoing set of studies of America's Climate Choices. He is coauthor of the textbook Environmental Problems and Human Behavior (2nd ed., 2002). Dr. Stern's research interests link the environmental and social sciences and include the determinants of environmentally significant behavior, particularly at the individual level; processes for understanding risks and informing environmental decisions; and institutional aspects of managing environmental resources and risks. His articles have been published in Science, Proceedings of the National Academy of Sciences, Environmental Science and Technology, Bioscience, Environment, and many other scientific and scholarly journals. Dr. Stern was lead author of a 2009 study prepared for the U.S. Department of Energy's Office of Science on "Generic Lessons Learned about Societal Responses to Emerging Technologies Perceived as Involving Risks." He has served on various review panels for the National Science Foundation, the National Oceanic and Atmospheric Administration, and the U.S. Department of Energy. Dr. Stern coauthored the article "The Struggle to Govern the Commons", which was published in Science in 2003 and won the 2005 Sustainability Science Award from the Ecological Society of America. He is a fellow of the American Association for the Advancement of Science and the American Psychological Association.

Stolz, John

Duquesne University

Dr. John Stolz is a Professor in the Department of Biological Sciences and Director of the Center for Environmental Research and Education at Duquesne University in Pittsburgh, Pennsylvania. He holds a B.S. from Fordham University, Bronx, NY (1977) and a Ph.D. in Ecology from Boston University, Boston, MA (1984). Dr. Stolz has extensive experience in microbial ecology and environmental microbiology, specializing in microbial metabolism of metals and metalloids. Over the past thirty years he has studied microbial community composition in microbial induced sedimentary structures (e.g., stromatolites), microbial transformation of arsenic (both inorganic and organic), selenium, nitrate, iron, and chromium, as well as the microbial formation of magnetite. Dr. Stolz's additional applied applications include studies on the biodegradability of biodiesel, the efficacy of phenolic-based microbial biocides, and microbial enhanced immobilization of chromium in the subsurface. He is currently applying his expertise to several aspects of hydraulic fracturing including the stimulation of in situ microbial populations resident in the Marcellus and associated subsurface environments and the impact of used hydraulic fracturing fluids (e.g., flowback water) on freshwater ecology (e.g., direct discharge into streams, rivers, and ponds), as well as the microbial communities of municipal waste water treatment plants processing flowback water.

Subra, Wilma

Subra Company

Mrs. Wilma Subra founded Subra Company after years of research experience in biochemistry, chemistry and microbiology. Subra Company is a chemistry lab and environmental consulting firm in New Iberia, Louisiana. She holds a B.S. and M.S. in Microbiology and Chemistry from the University of Southwestern Louisiana. Mrs. Subra provides technical assistance to citizens across the United States and in some foreign countries concerned with their environment by combining technical research and evaluation. Mrs. Subra has served on numerous state, local and federal advisory committees, and has particular expertise in oil and gas activities through her experience with the Interstate Oil and Gas Compact Commission and the State Review of Oil and Natural Gas Environmental Regulations (STRONGER), where she is a member of the Board. She served as an environmental representative on the STRONGER Hydraulic Fracturing work group that developed Hydraulic Fracturing Guidelines (2009-2010) and served as the environmental representative on the State of Pennsylvania regulator program review based on the STRONGER Hydraulic Fracturing Guidelines in July, 2010.

Teitelbaum, Daniel Thau

Colorado School of Mines

Dr. Daniel Thau Teitelbaum is Adjunct Professor of Occupational and Environmental Health at the Colorado School of Public Health, and Adjunct Professor of Environmental Sciences at the Colorado School of Mines. He holds a B.A. from Hamilton College (1956), a Masters of Hebrew Letters from the Jewish Theological Seminary (1960), an M.D. from the Albert Einstein College of Medicine of Yeshivah University (1964), and completed an internship in Medicine at Montefiore Hospital in New York, a residency in Internal Medicine at the University of Colorado, and a fellowship in Toxicology and Medicine at the University of Colorado. Dr. Teitelbaum also received further training in Occupational Medicine at the University of California, San Francisco. His expertise includes groundwater and air pollution, occupational toxic disease and workplace toxics management, and toxic disease diagnosis and management in persons in the general environment, and he has worked in the diagnosis and management of toxic disease in workers and the general environment for more than forty years. Dr. Teitelbaum has frequently consulted for United States Occupational Safety and Health Administration, and participated in the development of many of the current Occupational Safety and Health Administration (OSHA) Standards including the Hazard Communication Standard, the Lead Standard, the Benzene Standard and others. He has also consulted for the Environmental Protection Agency and the State of Colorado. Dr. Teitelbaum has been involved in research on the health impacts of hydraulic fracturing at the University of Colorado School of Public Health and has testified before Congress on the health impacts of hydraulic fracturing. He is a Fellow of the Collegium Ramazzini, an independent, international academy comprised of internationally renowned experts in the fields of occupational and environmental health. Dr. Teitelbaum is Board certified in Occupational Medicine and Medical Toxicology.

Thyne, Geoffrey

University of Wyoming

Dr. Geoffrey Thyne is Senior Research Scientist at the Enhanced Oil Recovery Institute at the University of Wyoming and a registered Professional Geologist. He holds a B.A. in Zoology and Chemistry from the University of South Florida (1975), an M.S. in Oceanography from Texas A&M University (1980), and a Ph.D. in Geology from University of Wyoming (1991). Dr. Thyne was a Research Geochemist at Arco Oil and Gas (1979-1986), Assistant Professor at California State University-Bakersfield in the department of Physics and Geology (1991-1996) and Research Associate Professor at Colorado School of Mines, department of Geology and Geological Engineering (1996-2008). He also served as project manager for the Colorado Energy Research Institute (2005 to 2006) and served on the National Research Council's Committee on Management and Effects of Coalbed Methane Development and Produced Water in the Western United States (2008-2010). Dr. Thyne works on the geochemistry of petroleum and hydrologic systems, contaminant remediation, carbon sequestration and statistical analysis of hydrochemical data. Over the past ten years he has focused much of his research on impacts to water resources from human activities including work on projects in western Colorado involving the impacts of petroleum activities. Dr. Thyne is the author or co-author of over 50 peer-reviewed scientific papers and technical reports.

Tickner, Joel

University of Massachusetts, Lowell

Dr. Joel Tickner is Associate Professor in the Department of Community Health and Sustainability at the University of Massachusetts Lowell where he also directs the Chemicals Policy and Science Initiative at the Lowell Center for Sustainable Production. He holds an M.S. in Environmental Studies from the University of Montana and a Ph.D. from the Department of Work Environment at University of Massachusetts Lowell, and for three years was an Environmental Protection Agency STAR Fellow. Dr. Tickner is a leading expert on chemicals regulation, regulatory science, and application of the precautionary principle and safer materials in science and policy. He has served as an advisor and researcher for several government agencies, international agencies, non-profit environmental groups and trade unions both in the U.S. and abroad during the past twelve years. Dr. Tickner teaches and conducts trainings in a variety of environmental health topics including risk assessment, toxic substances policy, children's environmental health and pollution prevention. He was co-coordinator of the Wingspread Conference on the Precautionary Principle, co-editor of the book Protecting Public Health and the Environment: Implementing the Precautionary Principle and editor of the book Precaution, Environmental Science, and Preventive Public Policy. Dr. Tickner has over 100 publications and conference presentations on the topics of chemicals policy, pollution prevention, risk assessment, and uncertainty and the precautionary principle. He serves on the editorial boards of several journals, is a peer reviewer for journals and government documents and served on the EPA's National Pollution Prevention and Toxics Advisory Committee. Dr. Tickner also directs the undergraduate environmental health B.S. program at the University of Massachusetts Lowell.

VanBriesen, Jeanne

Carnegie Mellon University

Dr. Jeanne VanBriesen is a Professor of Civil and Environmental Engineering at Carnegie Mellon University, and Director of the Carnegie Mellon Center for Water Quality in Urban Environmental Systems (WaterQUEST). She holds a B.S. in Education (Chemistry) from Northwestern University (1990), and an M.S. (1993) and Ph.D. (1998) in Civil Engineering (Environmental) from Northwestern University. Her expertise is in water quality engineering, and in particular environmental biotechnology. Dr. VanBriesen is leading a study of the impacts of hydraulic fracturing flowback water on surface water sources of drinking water. In particular, she is examining the potential for increased production of brominated organic compounds in drinking water systems due to increases in bromide concentrations in source water. Dr. VanBriesen is also participating in design and implementation of a real-time water quality monitoring system in the Monongahela River, to monitor for impacts of shale gas development and other activities.

Veil, John

Argonne National Laboratory

Mr. John Veil is the Manager of the Water Policy Program for Argonne National Laboratory in Washington, DC, where he holds the rank of Senior Scientist. He holds a B.A. in Earth and Planetary Science from Johns Hopkins University, and an M.S. in Zoology and an M.S. in Civil Engineering from the University of Maryland. Mr. Veil analyzes a variety of energy industry water and waste issues for the U.S. Department of Energy. He is an internationally recognized expert in management of produced water and drilling waste from oil and gas wells, and is nationally known for his work relating to thermal discharges and cooling water intakes at power plants and in geological sequestration of carbon dioxide. Before joining Argonne, Mr. Veil managed Maryland's programs for industrial water pollution control permitting through the National Pollutant Discharge Elimination System (NPDES) and Underground Injection Control (UIC). He also served as a faculty member of the University of Maryland, Department of Zoology for several years. Mr. Veil has been recognized by the Society of Petroleum Engineers (SPE) as a Distinguished Lecturer in 2008-2009, and as the recipient of the 2009 international award for Health, Safety, Security, Environment and Social Responsibility. He has served on Advisory Committees and workgroups with the Ground Water Protection Council and the SPE, on a U.S. Environmental Protection Agency (EPA) project to inject biosolids into a deep formation in Long Beach, CA, and on an EPA/State work group to evaluate national guidelines for slurry injection of drilling wastes. Mr. Veil has served as peer reviewer for several scientific journals, for a National Academy of Sciences report, and was invited to testify to Congress on the value of produced water in 2007. He has published many articles and reports and is frequently invited to make presentations on environmental and energy issues.

Vengosh, Avner

Duke University

Dr. Avner Vengosh is a Professor of Geochemistry and Water Quality and Chair of the Water and Air Resources Program at the Nicholas School of Environment, Duke University. He has also a secondary appointment at the Department of Civil and Environmental Engineering at Duke University. Dr. Vengosh holds a B.S. from Hebrew University of Jerusalem, Israel (1982), an M.S. in Isotope Geology from Hebrew University of Jerusalem (1984), and a Ph.D. in Environmental Geochemistry from the Australian National University, Canberra, Australia (1990). He is an Associate Editor for the international journal Applied Geochemistry, member of the Environmental Surveillance Committee of the North Carolina Radiation Protection Commission, and member of the Geochemical Society, American Geophysical Union (AGU), Geological Society of America (GSA). In 2009, Dr. Vengosh gave testimony to the Subcommittee on Water Resources and Environment, U.S. House of Representatives, regarding: "The Tennessee Valley Authority's Kingston Ash Slide: Potential Water Quality Impacts of Coal Combustion Waste Storage". His research aims to integrate environmental geochemistry, advanced isotope geochemistry, and environmental health in order to delineate the sources and pathways of contaminants in the environment and their possible impacts on human health. Dr. Vengosh's current research involves studying the quality of water resources and impact on human health in Tennessee (the affect of coal combustion products on the environment), North Carolina (arsenic, radium, radon, coal ash), Morocco (salinity, fluoride, radium), Jordan (radium), Israel (radium, salinity), and Ethiopia (fluoride, arsenic).

Vepraskas, Michael J.

North Carolina State University

Dr. Michael J. Vepraskas is the William Neal Reynolds Distinguished Professor of Soil Science at North Carolina State University. He is also an Adjunct Professor of Geology at the University of Tennessee at Knoxville, and an Adjunct Professor of Soil Science at Virginia Tech University. He holds a B.S. in Geology (1973), an M.S. in Soil Science (1975), an M.S. in Water Resources Management (1975) from the University of Wisconsin in Madison, and a Ph.D. in Soil Science from Texas A&M University (1980). Dr. Vepraskas's current research evaluates the long-term (40-yr) hydrology of wetland soils, and uses soil color patterns to estimate probabilities that wetland hydrology conditions will occur in a given year at wetland sites. To connect wetland hydrology to soil color, he conducts studies of oxidation-reduction chemistry of wetlands to determine the rates at which iron oxides are reduced and moved through the soil. Such information is used by wetland delineators to identify jurisdictional wetland boundaries. Dr. Vepraskas' prior research includes evaluating the hydraulic conductivity of quartz veins in saprolite to determine if the veins were capable of conducting sewage from septic drainlines to groundwater. He showed that the veins were partially plugged and conducted water at rates similar to the saprolite matrix. Dr. Vepraskas' research findings from both the wetlands research and saprolite research have been incorporated into federal and state regulations.

Vidic, Radisav D.

University of Pittsburgh

Dr. Radisav D. Vidic is William Kepler Whiteford Professor of Environmental Engineering and Chairman of the Department of Civil and Environmental Engineering at the Swanson School of Engineering, University of Pittsburgh. Dr. Vidic holds a B.S. in Civil Engineering from the University of Belgrade (1987), an M.S. in Civil and Environmental Engineering from the University of Illinois (1989), and Ph.D. in Civil and Environmental Engineering from University of Cincinnati (1992). His research efforts focus on advancing the applications of surface science by providing fundamental understanding of molecular-level interactions at interfaces, development of novel physical/chemical water treatment technologies, water management for Marcellus shale development, and reuse of impaired waters for cooling systems in coal-fired power plants. Dr. Vidic published over 150 journal papers and conference proceedings on these topics. He received 2000 Professional Research Award from the Pennsylvania Water Environment Federation for his research accomplishments and dedication to the profession, was a Fulbright Scholar in 2003/04 and a was elected by the Pittsburgh section of American Society of Civil Engineers as 2008 Professor of the Year.

Vieira, Verónica

Boston University

Dr. Verónica Vieira is Associate Professor of Environmental Health at Boston University School of Public Health. She holds a B.S. in Environmental Engineering from Massachusetts Institute of Technology, an M.S. in Environmental Engineering from Stanford University, and a Ph.D. in Environmental Health from Boston University. Dr. Vieira's areas of expertise include exposure modeling and spatial epidemiology. Closely related, she works extensively with reconstructing historic environmental exposures using geographic information systems (GIS) and has an extensive knowledge of groundwater modeling, cluster detection methods, and on persistent environmental contaminants including tetrachloroethylene (PCE, a dry-cleaning solvent), perfluorooctanoic acid (PFOA, a perfluorinated compound (PFC) involved in the manufacturing of Teflon), and polybrominated diphenyl ethers (PBDEs, a common class of flame retardants). Dr. Vieira is currently collaborating on a large historical reconstruction of PFOA exposures among residents of the mid-Ohio valley. These communities are located near a chemical plant that emitted PFOA into the local air and Ohio River for several decades. The main route of exposure is via contaminated drinking water, and the project will examine the relationship between PFOA exposure and various health outcomes. The exposure assessment involves linking several environmental fate and transport modeling systems to simultaneously model PFOA air dispersion, transit through the unsaturated soil zone, surface water transport, and groundwater flow and transport. Dr. Vieira has also worked with colleagues on health studies in Cape Cod, MA that integrate groundwater models, residential histories, and public water distribution systems within GIS to examine the association between exposure to drinking water contaminated by wastewater effluent and breast cancer risk. She is a member of the Commonwealth of Massachusetts' Toxics Use Reduction Institute Science Advisory Board (TURI SAB), a government appointed position. The goal of the TURI SAB is to reduce the use of substances or the generation of hazardous by-products that may present unreasonable risk to the public health and environment. Dr. Vieira is also a member of the Society for Epidemiologic Research, the International Society of Environmental Epidemiologists, and the International Society of Environmental Analysis/Science.

Walles, Frank

Devon Energy Company

Mr. Frank Walles is a Senior Geological Advisor with Devon Energy Company in Houston TX. He holds a B.S. in Geology and Natural Science and an M.S. in Geology from Michigan State University. Mr. Walles is highly experienced in unconventional reservoir characterization, and has the goal to improve well and field productivity of unconventional reservoirs including shale gas, coalbed methane and tight gas sands. His area-specific work experience includes extensive U.S., North America and International basins, and has experience in unconventional reservoir characterization, petroleum system analysis, and geological/geochemical characterization of reservoir/seal systems including multi-level 16 layered characterization. Mr. Walles is an active technical and keynote presenter and speaker and poster presenter at many conferences of multiple professional organizations including Society of Professional Engineers (SPE), Society of Professional Well Log Analysts (SPWLA), Oklahoma University, and the Houston Geological Society. He is an organizer and technical chair of many past and current technical conferences on unconventional reservoirs. Mr. Walles is a Certified Petroleum Geologist and Licensed Geologist in the State of Texas.

Williams, C.R. II

Shell Worldwide

C.R. (Charlie) Williams II is Chief Scientist - Well Engineering and Production Technology for Shell Worldwide. He was appointed Chief Scientist in 2005. Mr. Williams has also been serving as Well Delivery Manager for Shell's Alaska Venture since January 2010 and is Industry Task Force Chair for the Subsea Well Control and Containment Task Force. He holds a B.S. in Mechanical Engineering from the University of Tennessee. Mr. Williams recently participated in writing and reviewing American Petroleum Institute (API) HF1, Hydraulic Fracturing Operations – Well Construction and Integrity Guidelines & API HF2, Water Management Associated with Hydraulic Fracturing Guidance. From October 2005 thru June 2006, Mr. Williams was on special assignment as Vice President Gulf of Mexico Hurricane Recovery including project management for the Mars Tension Leg Platform Reconstruction & Recovery Project. This project was awarded the National Ocean Industries Association "Safety in the Seas Award", the UK Energy Institute Award for Technology, and Offshore Engineering Project of the Year. Previous to being named Chief Scientist, he was Global Vice President of Research and Development for Shell. Mr. Williams has held numerous engineering, operations, R&D, & technology positions in Shell including Offshore Engineering Manager, Operations Manager, Head Office Manager of Deep Well Engineering, Technology Manager, Head Office Technical Specialist, and Senior Consultant Well Engineering & Operations. In these capacities, he has done technical consulting and special projects for Shell around the world. Mr. Williams' work has included developing equipment, procedures, and practices for extreme environment & unconventional wells including high pressure, high temperature, H2S, & CO2 CCS wells, as well as high rate/high ultimate deepwater wells. He has worked extensively on optimizing & enhancing hydraulic fracturing in both South Texas tight gas and shale gas. He has presented on the subject three Universities/Institutes in China. He has extensive & continuing technical expertise & involvement in Shell's Deepwater developments beginning with Shell's initial DW Tension Leg Platform - Auger. Mr. Williams' professional affiliations include being a 35-year member of Society of Petroleum Engineers and the American Petroleum Institute (API). In API, he is currently Chairman of the General Committee on Special Programs, member of the Executive Committee on Standardization, and member of the U.S. Technical Advisory Group to the International Standards Organization TC67. He is former Chair of the Executive Committee on Standardization. Mr. Williams has received the API Citation for Service and the U.S. Department of Interior (DOI) - Corporate Citizenship Award. The DOI award was for managing the rapid development of new API standards to address & resolve the deepwater MODU rig mooring systems that failed during hurricanes Rita & Katrina. He is also the recipient of the Offshore Operators Committee Recognition Award, and is Honored Guest Professor at two Universities/Institutes in China. Mr. Williams has served as a member of the University of Texas External Advisory Committee for Petroleum & Geosystems Engineering, Chair of the International Standards Organization SC7 for well & production equipment standards, Executive Organizer for the Houston World Petroleum Congress, and Chair of the Society of Petroleum Engineers Forum on Artificial lift.

Yates, Marylynn V.

University of California, Riverside

Dr. Marylynn V. Yates is Professor of Environmental Microbiology and Distinguished Teaching Professor at the University of California, Riverside. She also serves as the Program Leader for Natural Resources and Animal Agriculture within the Division of Agriculture and Natural Resources of the University of California system. Dr. Yates holds a B.S. in Nursing from the University of Wisconsin, Madison, an M.S. in Chemistry from the New Mexico Institute of Mining & Technology, and a Ph.D. in Microbiology from the University of Arizona. Dr. Yates' research interests include characterizing and predicting the fate and transport of human enteric pathogenic microorganisms in soils, water, and wastewater; development of methods for rapid, sensitive detection of infective enteric viruses in water samples; human pathogen considerations associated with wastewater reuse and biosolids application to land; and the use of indicators for predicting pathogen occurrence and behavior in the environment. Dr. Yates serves as an editor for Applied & Environmental Microbiology. She currently serves on the Expert Advisory Panel for the Canadian Water Network Consortium on Pathogens and Groundwater and the Advisory Board for the United States Department of Agriculture / Cooperative State Research, Education, and Extension Service (USDA/CSREES) Southwest States & Pacific Islands Regional Water Quality Program. Dr. Yates is currently serving as the interim Director of the University of California Center for Water Resources. She is a fellow of the American Association for the Advancement of Sciences, and a National Associate of the National Academies of Science.

Yu, Mengiiao

University of Tulsa

Dr. Mengjiao Yu is an Associate Professor in the Department of Petroleum Engineering at the University of Tulsa. He holds a B.S. in Applied Chemistry from Tianjin University (1994), an M.S. in Chemical Engineering from Tsinghua University (1997), and an M.S.E. in Electrical & Computer Engineering and a Ph.D. in Petroleum Engineering from The University of Texas – Austin (2002). For his Ph.D. work, Dr. Yu worked on well bore stability of oil shales. Since joining the University of Tulsa, he has continued working on this research area and has developed a proto type cell which is mobile and can be taken to a drill site to evaluate shale stability. Dr. Yu's major area of research interest is experimental and theoretical drilling research. He is currently co-director of Tulsa University Drilling Research Projects - the longest running oil and gas well drilling consortium in the country. Dr. Yu interacts with many oil and gas companies - large and small - and helps to solve some of the vexing problems faced by the oil industry. His publication record is impressive and covers many areas in drilling research.

Zoback, Mark D.

Stanford University

Dr. Mark D. Zoback is Benjamin M. Page Professor of Earth Sciences and Professor of Geophysics in the Department of Geophysics at Stanford University. He holds a B.S. in Geophysics from the University of Arizona (1969), and an M.S. (1973) and a Ph.D. (1975) in Geophysics from Stanford University. He is the author or co-author of approximately 250 published research papers, primarily on the state of stress in the earth's crust and geomechanics. His interdisciplinary book, Reservoir Geomechanics, Zoback applies the fields of rock mechanics, structural geology and petroleum engineering to address a wide range of geomechanical problems that arise during the development of oil and gas reservoirs. He is co-author of a World Watch Institute July 2010 briefing, entitled "Addressing the Environmental Risks from Shale Gas Development".