

Invitation for Comment on the EPA Science Advisory Board Short List Candidates for the SAB Hypoxia Advisory Panel

As announced in the February 17, 2006 Federal Register Notice (Volume 71, Number 33, pages 8578-8580, available at <http://www.epa.gov/fedrgstr/EPA-SAB/2006/February/Day-17/sab2323.htm>), the EPA Science Advisory Board (SAB) Staff Office is forming an SAB Expert Panel to conduct a scientific evaluation of the causes, location, magnitude and duration of the hypoxic zone in the Northern Gulf of Mexico, as well as the priority and feasibility of management and control options in the Mississippi River Basin. The SAB Staff Office sought nominations of experts in the following areas:

- (a) Chemistry--with emphasis on analyses, sources, fate, transport, dynamics and interactions of nitrogen, phosphorus, carbon, silicon, and oxygen in aquatic, estuarine, wetland, and marine systems;
- (b) Engineering--with emphasis on:
 - (1) Agricultural engineering (implementation of management practices for agricultural runoff, fertilization, and alternative cropping);
 - (2) Environmental engineering (point and non-point mitigation and control practices for nitrogen, phosphorus, and carbon from industrial, municipal, septic, urban stormwater, and agricultural sources); and/or
 - (3) Ecological engineering (constructed wetlands);
- (c) Biological Oceanography and Coastal, Estuarine and Marine Ecology--with emphasis on:
 - (1) Nutrient sources and dynamics (N, P, C, Si) associated with primary secondary and tertiary production, microbial ecology, and the development and control of algal blooms in wetlands, estuaries, near coastal, and marine environments;
 - (2) Studies involving nutrient (N, P, C, Si) removal, transformation, and export;
 - (3) Energy and essential element flux through ecosystems, especially marine microbial food webs;
 - (4) Hypoxia and related oxygen depletion phenomena;
 - (5) Land use change, watershed dynamics, land-sea coupling, global ecology;
 - (6) Organic and inorganic geochemistry, biogeochemical dynamics of aquatic food chains; biochemical markers of colloidal and particulate organic carbon; and/or
 - (7) Bio-optics; fine-scale pigment distributions; microbial dynamics.
- (d) Limnology, Wetlands and Riverine Ecology--with emphasis on:
 - (1) Nutrient sources and dynamics (N, P, C, Si) associated with primary production, eutrophication, microbial ecology, and algal blooms in the Mississippi River Basin, or other freshwater streams, rivers, reservoirs, lakes and wetlands; and/or
 - (2) Water quality studies involving nutrient (N, P, C, Si) removal,

- transformation, and downstream export;
- (e) Groundwater and Soil Hydrology--with emphasis on:
 - (1) Nutrient dynamics (N, P, C, Si) and wetlands as nutrient sinks and sources in the Mississippi River Delta;
 - (2) Estuarine physical oceanography; and/or
 - (3) Septic systems as sources of nutrients and carbon;
 - (f) Chemical, Physical, And Coastal Oceanography--with emphasis on:
 - (1) Freshwater discharge and stratification;
 - (2) Estuarine and coastal shelf transport, mixing and circulation;
 - (3) Global and regional nutrient cycles and their interactions;
 - (4) Biogeochemical cycling in estuaries, lagoons, wetlands;
 - (5) Dissolved oxygen, carbon, nitrogen and phosphorus dynamics, especially in hypoxic zones;
 - (6) Energy and essential element flux through ecosystems, especially marine microbial food webs; and/or
 - (7) Potential for altered salinities at the estuary/shelf boundary from proposed Mississippi River redistribution and its importance for stratification on the shelf;
 - (g) Coastal Paleoecology--with emphasis on interpretation of benthic foraminifera as indicators of historical ecological conditions;
 - (h) Economics--with emphasis on:
 - (1) Agricultural economics of row crops, animal feeding operations and their management;
 - (2) Natural resource, ecological or environmental economics; and/or
 - (3) Fisheries economics;
 - (i) Modelling--with emphasis on:
 - (1) Hydrologic models;
 - (2) Riverine, estuarine, and marine water quality models;
 - (3) Nutrient models (N, P, C, Si); and/or
 - (4) Systems ecology models;
 - (j) Statistics--with emphasis on designing, conducting and interpreting complex, multivariate, predictive studies over large spatial and temporal scales; and
 - (k) Decision Sciences--with emphasis on collaborative decision-making for natural resource, environmental, or watershed planning and management in the Mississippi River Basin, the Gulf of Mexico or other aquatic, estuarine, wetland, and marine systems.

The SAB Staff Office reviewed all nominations and have identified a “Short List” of 91 experts who have the relevant expertise and willingness to serve on the SAB

Hypoxia Advisory Panel. Brief biographical sketches (“biosketches”) of the candidates are provided below. The SAB Staff Office invites the public to provide information pertinent to these candidates’ potential service on the Panel and/or expert workgroups of the Panel.

The SAB Staff Office will review all the information provided by the candidates, along with any information that the public may provide and information gathered by SAB staff independently on the background of the candidates. The SAB Staff Office will consider the following criteria in forming the Expert Panel: (a) appropriate balance and breadth of expertise needed to address the charge; (b) absence of financial conflicts of interest; (c) absence of an appearance of impartiality; (d) experience on scientific advisory committees; and (e) availability and willingness to serve.

Please e-mail your comments to Dr. Holly Stallworth, Designated Federal Officer at stallworth.holly@epa.gov no later than June 23, 2006.

Shortlist Nominees for SAB Hypoxia Advisory Panel

Allee, Rebecca

National Oceanic and Atmospheric Administration Gulf Services Center

Dr. Rebecca Allee currently serves as the Habitat Program Manager and Senior Scientist for the National Oceanic and Atmospheric Administration's (NOAA) Gulf Services Center (GSC), a division of the National Ocean Services' Coastal Services Center. As program manager, Dr. Allee provides guidance and technical support to Gulf of Mexico Alliance members to identify priority objectives of ecosystem assessment and characterization in the Gulf of Mexico (GoM) region. She provides scientific consultation on proposed activities for coastal resource management, ecosystem and habitat program and project development. On behalf of the GSC, Dr. Allee explores and advocates partnership opportunities for joint programs in coastal resource management, ecosystem and habitat science, and science applications in the GoM region. She also promotes collaboration among partners in the development of regional landscape restoration and conservation strategies. Dr. Allee is the project lead in NOAA's efforts to develop a national coastal and marine habitat classification system. She serves as a US delegate to the International Exploration of the Seas habitat working group and is active in other international habitat mapping and classification efforts. Dr. Allee joined NOAA's Coastal Services Center with over eight years habitat policy experience from the headquarters perspective of NOAA. Most recently, she served as the Deputy Director of the Restoration Center within NOAA Fisheries' Office of Habitat Conservation. Prior to that position, she served as Executive Assistant to the Acting Administrator and Deputy Under Secretary for Oceans and Atmosphere, Department of Commerce. She has been employed with NOAA since receiving her doctorate in biological sciences from the University of Arkansas where she studied the hypoxic effects on fisheries distributions within several Arkansas reservoirs. Dr. Allee also holds a Master of Science degree in aquatic biology from Stephen F. Austin State University.

Ammerman, James

Rutgers University Institute of Marine and Coastal Sciences

Dr. James W. Ammerman is an Associate Research Professor in the Institute of Marine and Coastal Sciences at Rutgers University. He holds a B.A. in Biology from Grinnell College (1973) and a Ph.D. in Marine Biology from Scripps Institution of Oceanography (1983) of the University of California, San Diego. He is a Fellow of the American Association for the Advancement of Science (1996) and was formerly an editor of the journal *Aquatic Microbial Ecology*. He previously served as an Associate Program Manager in the Biological Oceanography Program at the National Science Foundation (NSF) and as the Science Director of the Rutgers' Mid-Atlantic Bight Center of the Undersea Research Program of the National Oceanic and Atmospheric Administration (NOAA). In addition he has served on numerous grant proposal review panels for the National Science Foundation, the Department of Energy, the Environmental Protection Agency, and the National Oceanic and Atmospheric Administration. His research focuses on microbial enzyme activities and nutrient cycling, particularly phosphorus cycling. These studies have been conducted in numerous coastal and estuarine systems (the Southern California Bight, Hudson River, Chesapeake Bay, and the Mississippi plume and Louisiana shelf) as well as the open ocean Bermuda time-series station. He has conducted studies in the Mississippi River plume region during both the NOAA Nutrient Enhanced Coastal Ocean

Productivity program (1990-93) and more recently with both NSF and NOAA support (2000-present).

Amon, Rainer

Texas A&M University Marine Sciences Department

Dr. R.M.W. Amon is an Assistant Professor in the Marine Sciences Department at Texas A&M University at Galveston with a joint appointment in the Oceanography Department in College Station. He holds a B.S. (1986) and M. S. (1990) from the University of Vienna, Austria where he concentrated on biology and zoology, respectively, and a Ph.D. from the UT Marine Science Institute, University of Texas at Austin (1995) focusing on microbial ecology and organic biogeochemistry in aquatic environments. After his Ph.D. Dr. Amon spend 8 years at the Alfred Wegener Institute for Polar and Marine Research in Germany before accepting his current position. Dr. Amon's research is highly interdisciplinary applying organic geochemistry to other fields of oceanography in order to address specific questions. One focus area is the relationship between the chemical composition of organic matter and bacterial activity in aquatic environments. Other areas of interest include the use of organic matter as a tracer for environmental processes such as pollution and organic matter fluxes in coastal settings and water mass modification. Most recent work focused on the Arctic Ocean and the use of organic geochemistry to trace environmental change on a basin wide scale. Funding for Amon's research comes entirely from the National Science Foundation. He is currently funded in 3 projects, a river project looking at the 6 largest Arctic rivers to identify seasonal changes in discharge of organic and inorganic materials, a tracer project in the Arctic Ocean to link river discharge to the biogeochemistry and oceanography of the Arctic Ocean, and an instrumentation grant to support undergraduate research in the coastal Gulf of Mexico.

Benner, Ronald

University of South Carolina Marine Sciences Program

Dr. Ronald Benner received his Ph.D. in microbiology from the University of Georgia and a BS in Biology from Florida International University. He is currently a Professor of Marine and Biological Sciences at the University of South Carolina. Dr. Benner's expertise is in Aquatic Biogeochemistry and Microbial Ecology and his research focuses on the carbon, nitrogen, phosphorus and oxygen cycles in rivers and the ocean. Dr. Benner has conducted research in the Mississippi River and northern Gulf of Mexico, the Amazon River system, the Atlantic, Pacific and Arctic oceans and numerous smaller rivers and lakes. Dr. Benner has published over 125 peer-reviewed articles on these topics. Dr. Benner is a member of several professional societies, has served on national committees and as a journal editor.

Benson, Verel

University of Missouri Food and Agriculture Policy Research Institute

Dr. Verel W. Benson holds a B.S. in Agricultural Economics from South Dakota State University, an M.S. in Agricultural Economics from University of Maryland and a Ph.D. in Agricultural Economics from the University of Maryland. Dr. Benson is currently an Environmental Program Director for the Food and Agriculture Policy Research Institute (FAPRI) at the University of Missouri. Dr. Benson's career has exposed him to many facets of agriculture and the environment. He has helped compile a database of the energy use in all phases of agriculture and was the team leader of the evaluation of the Small Watershed Program. Dr.

Benson worked with the team of scientists that built the EPIC, APEX, ALMANAC, SWRRB and SWAT models and has conducted nearly 100 workshops on the EPIC, SWRRB, SWAT or APEX models in the U.S., Canada, France and Austria. In recent years, Dr. Benson's work has been supported by the Missouri Department of Natural Resources, EPA and U.S. Department of Agriculture. Dr. Benson's current focus as an environmental unit leader at FAPRI is to work with interdisciplinary teams to find solutions that address the joint objectives of environmental enhancement and economic sustainability.

Bianchi, Thomas

Texas A&M University Department of Oceanography

Dr. Thomas Bianchi is presently full professor in the Dept. of Oceanography at Texas A&M University, College Station, Texas. Dr. Bianchi received his B.S. degree in 1978 in Biology at Dowling College, Oakdale, NY, a M.S. degree in 1981 at State University of New York at Stony Brook in Ecology and Evolution, and a Ph.D. in Marine science at the University of Maryland in 1987. Dr. Bianchi's general areas of expertise are Organic Geochemistry, Biogeochemical dynamics of aquatic food chains, Carbon cycling in estuarine and coastal ecosystems, and Biochemical markers of colloidal and particulate organic carbon. Dr. Bianchi serves on advisory committees and professional societies and has been as a reviewer for following journals: Journal of Marine Research, Limnology and Oceanography, Nature, Organic Geochemistry, Marine Chemistry, Estuarine Coastal Shelf Science, Ambio, Continental Shelf Research, Estuaries; and the funding agencies: National Sea Grant Program, Hudson River Foundation, NOAA, National Science Foundation. Dr. Bianchi's research is supported by the National Science Foundation and has served as an Associate Editor for the journals Estuaries and Marine and Freshwater Systems.

Bierman, Victor

Limno-Tech, Inc.

Dr. Victor Bierman is a Senior Scientist at Limno-Tech, Inc. He received an A.B. in Science from Villanova University (1966), and an M.S. in Physics (1971) and a Ph.D. in Environmental Engineering (1974) from the University of Notre Dame. He is a former U.S. Environmental Protection Agency National Expert in Environmental Exposure Assessment, and a former Associate Professor in the Department of Civil Engineering at the University of Notre Dame. Dr. Bierman is a leading expert in the assessment and solution of problems related to nutrients, nuisance algal blooms, hypoxia, nitrogen fixation, exotic species, and ecosystem processes. He has conducted modeling studies of hypoxia in the northern Gulf of Mexico since 1990. He is also a leading expert in toxic chemical transport, fate, partitioning and bioaccumulation.

Blumberg, Alan

Stevens Institute of Technology Civil, Environmental and Ocean Engineering Department

Dr. Alan F. Blumberg is George Meade Bond Professor of Ocean Engineering, Director of the Civil, Environmental and Ocean Engineering Department and Deputy Director of The Center for Maritime Systems at Stevens Institute of Technology. Dr. Blumberg received a doctorate in ocean physics from The Johns Hopkins University and did post-doctoral work with Princeton University in their Geophysical Fluid Dynamics Program. The main focus of Dr. Blumberg's research is in environmental and geophysical fluid dynamics involving the application of fluid mechanics principles to the analysis of circulation and pollutant transport processes operating in rivers, lakes, estuaries and the coastal ocean. Dr. Blumberg has worked in almost every major

estuary in the United States, many coastal environments around the world and the coastal waters offshore of the US Gulf Coast and around the island of Oahu. He is recognized as one of the pioneer and leading experts in modern estuarine and coastal ocean prediction and has contributed significantly to the creation of integrated modeling and observing systems. Presently, he leads the New York Harbor Observation and Prediction System, which facilitates an assessment of ocean, weather, and environmental conditions throughout the New York Harbor region. Dr. Blumberg is the recipient of the 2001 American Society of Civil Engineers (ASCE) Karl Emil Hilgard Hydraulic Prize. He serves as a member of the organizing committee of ASCE's prestigious biannual Estuarine and Coastal Modeling Conference and is an associate editor of their leading journal, the Journal of Hydraulic Engineering. He is past chairman of the Standing Committee on Computational Hydraulics and has also served on several other task committees and as technical session chairman and expert panel participant at many ASCE national conferences. In recent years, Dr. Blumberg's work has been supported by US Navy Office of Naval Research, NJ Dept of Environmental Protection, NJ Dept of Transportation, Defense Advanced Research Projects Agency, U.S. Department of Homeland Security, Paulus, Sokolowski and Sartor, Inc., and the NOAA /National Weather Service. Dr. Blumberg is also active with the Estuarine Research Federation (ERF) as an Associate Editor of Estuaries and through frequent presentations at ERF conferences.

Boesch, Donald

University of Maryland Center for Environmental Science

Dr. Donald F. Boesch a Professor in and President of the University of Maryland Center for Environmental Science. He earned his BS in biology at Tulane University and PhD in oceanography at the College of William and Mary. Prior to moving to Maryland in 1990 he was the first Executive Director of the Louisiana Universities Marine Consortium and Professor of Marine Science at Louisiana State University. Originally focusing on community ecology of soft-bottom benthos, Dr. Boesch has also conducted research on the evolution of estuarine endemic species, marine sedimentary processes, salt marshes, fishery food chains, and ecosystem responses to eutrophication in coastal and continental shelf environments along the Atlantic Coast, and in the Gulf of Mexico, eastern Australia and the East China Sea. Dr. Boesch is a member of both the Scientific and Technical Advisory Committee of the Chesapeake Bay Program and the Maryland Governor's Bay Cabinet. He has served as a member of the Marine Board and the Ocean Studies Board of the National Research Council (NRC), chairing four study panels, and on numerous federal agency and regional advisory committees. He also led the coastal sector team of the U.S. National Assessment of the Potential Consequences of Climate Variability and Change and served as a science advisor to both the Pew Oceans Commission and the U.S. Commission on Ocean Policy. Dr. Boesch is currently serving on the NRC committee evaluating the Everglades restoration, an expert panel on eutrophication for the Swedish EPA, and the Science Board for the Louisiana Coastal Area Ecosystem Restoration.

Borey, Roland

Chevron Energy Technology Co.

Dr. Roland Borey is the Technical Team Leader of Ecological Services and a Sr. Staff Scientist for Chevron Energy Technology. Dr. Borey received his BS in Zoology from Texas A&M University, and his MA and PhD in Biology from Rice University where he studied the ecology and hydrology of coastal marshes and completed his dissertation on the export of organic carbon

from a Gulf Coast marsh. He has over 30 years of technical and research experience in estuarine and marine ecology, environmental assessment and restoration, eco-toxicology, and wastewater treatment. Dr. Borey has served on the Industry Panel of the DOE National Oil and Gas Partnership, the Environmental Quality Action Group of the European Petroleum Industry Association, the Task Force for Risk-Based Assessment of the Conservation of Clean Air and Water in Europe, the Environment Committee and the Oil Dispersants Sub-Committee of the Institute of Petroleum (London, UK), the Industry Advisory Board of the Gulf Coast Hazardous Substance Research Center (Beaumont, TX), and the Task Force on Environmental Science of the Offshore Operator's Committee (New Orleans, LA). For the American Petroleum Institute, he has served on the National Resource Damage Assessment Task Force and the Drilling Fluid Rapid Bioassay Task Force.

Boynton, Walter

University of Maryland Center for Environmental Science

Dr. Walter Boynton is currently a Professor at the University of Maryland Center for Environmental Science (UMCES), one of the 13 institutions of the University System of Maryland. Dr. Boynton grew up in coastal Massachusetts and earned his BS degree in biology from Springfield College, MS degree in Marine Science from the University of North Carolina and a PhD degree in Environmental Engineering from the University of Florida. He has been a member of the faculty of the Center for Environmental Science, Chesapeake Biological Laboratory since 1975 and was promoted to Professor in 1988. A marine and estuarine ecologist, Dr. Boynton has conducted research for 31 years in the Chesapeake Bay region as well as in the Baltic Sea, Mexican coastal waters and other coastal environments of the United States. He has published about 100 papers in professional journals and books and has been active as well in writing articles for the general public. Dr. Boynton has emphasized writing of technical documents for environmental management agencies on subjects ranging from nutrient enrichment of coastal waters and the effects this has on water quality, sea grasses and estuarine food webs to issues related to estuarine fish communities. Dr. Boynton has also been active in developing large reviews of estuarine processes that are of particular utility to both scientists and environmental managers. Dr. Boynton has served in a number of professional leadership and advisory roles. He was the co-leader and later the leader of long-term studies of Chesapeake Bay funded by the National Science Foundation. He was a member of the team that designed and implemented the Chesapeake Bay Monitoring Program, he authored the key report on which the Maryland Coastal Bays Program is based, was a member of the Maryland Governors Oil Spill Prevention Advisory Commission, was the treasurer of the Estuarine Research Federation, a recent member of the Patuxent River Commission, and received the first UMCES Presidents award for Excellence in Science Application. Dr. Boynton's funding sources in recent years include National Science Foundation (NSF), NOAA, Maryland Department of Natural Resources, Maryland Department of Environment and US Army.

Brown, Arthur

University of Arkansas Department of Biological Sciences

Dr Arthur V. Brown is currently an Associate Professor of Biological Sciences at the University of Arkansas (UA) where he has been since earning a Ph.D. in biology from the University of North Texas in 1974. He majored in ecology and minored in physiology. At the UA he teaches ecology, limnology, stream ecology, and participates in introductory biology courses. Dr Brown

has published 48 papers (+1 in press, 4 in review) in peer-reviewed journals, most of which address population, community, and ecosystem level studies of rivers and caves. Often his research has emphasized responses to disturbances in these systems (e.g., gravel mining, forestry, sedimentation, pollution, flooding). Dr. Brown's research has been funded by the National Science Foundation (Ecology Panel), US Environmental Protection Agency (Region 6), US Department of Agriculture Forest Service, US Fish & Wildlife Service, and a large variety of state agencies from Arkansas, Oklahoma, and Missouri. Several publications relate to respiratory acclimation to temperature change and energetics. Two book chapters (invited) holistically address riverine ecosystems of the Central US and the lower Mississippi River and its tributaries. The latter contains a hypothesis about causes of the development of hypoxia in the Gulf of Mexico. Dr Brown has served on several advisory committees for the NSF, United States Geological Survey (USGS), United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS), National Park Service (NPS), EPA, and various state agencies and nongovernmental organizations. These include the Ozark and Mississippi Embayment National Water Quality Assessment Program steering committees. He is a member of several professional societies including the Ecological Society of America, North American Benthological Society, and American Fisheries Society.

Brown, Otis

University of Miami Rosenstiel School of Marine and Atmospheric Science

Dr. Otis Brown is the Dean of the Rosenstiel School of Marine and Atmospheric Science, University of Miami; and a professor in the Division of Meteorology and Physical Oceanography. He is one of the world's experts in studying the ocean through observations obtained from instruments aboard earth-orbiting satellites. Dr. Brown has participated in research cruises throughout the world including the Atlantic and Indian Oceans and the Arabian Sea. He has over 100 scientific publications and has received national recognition from organizations such as the American Association for the Advancement of Science, the American Meteorological Society, the National Research Council and the National Aeronautics and Space Administration. As a professor at the Rosenstiel School Dr. Brown has mentored students, fellows and faculty and built one of the Nation's leading programs in remote sensing. Dr. Brown serves as a member of the NOAA's Science Advisory Board, the Southeastern Universities Research Association Board of Trustees, and other high-level scientific steering committees.

Bucks, Dale A.

USDA Agriculture Research Service

Dr. Dale Bucks completed 37 years of Federal service with the United States Department of Agriculture (USDA) Agricultural Research Service (ARS) in 2006. He is currently a Consultant to the National Program Staff for the USDA-ARS in Beltsville, Maryland. He served as National Program Leader for Water Quality and Management (1990-2006). He received a B.S. degree from South Dakota State University in Agricultural Engineering (1966); a M.S. degree from South Dakota State University in Agricultural Engineering (1968); and a PhD from the University of Arizona in Soil and Water Science (1979). He conducted pioneering research on drip irrigation, crop water requirements, salinity management, and arid-land crop production. He provided planning, resource allocation, and coordination for the ARS Water Quality and Management National Program (250 scientists and 38 locations). He served on more than 60 national and international committees and boards. He represented USDA on the Coordinating

Committee for the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force (1997-2005). He is well known for his collaborative efforts with Federal and State agencies, universities, private industry, and environmental groups.

Burton, G. Allen

Wright State University Institute for Environmental Quality

Dr. G. Allen Burton is Professor of Environmental Sciences and Director of the Institute for Environmental Quality at Wright State University. He holds a B.S. in biology and chemistry from Ouachita Baptist University, an M.S. in microbiology from Auburn University, and a Ph.D. in environmental science from the University of Texas at Dallas. His areas of expertise and research interests include: methods to identify significant effects and stressors in contaminated aquatic systems; ecosystem risk assessments evaluating multiple levels of biological organization; and integrating laboratory and in situ toxicity tests with habitat characterizations and physicochemical profiles to determine the role of chemical contaminants among multiple stressors. Dr. Burton was the Brage Golding Distinguished Professor of Research. His research funding has been provided by industry and government. He has served on numerous national and international scientific committees, review panels and editorial boards and will serve as President of the World Council of the Society of Environmental Toxicology and Chemistry. Dr. Burton's full CV may be found at <http://www.wright.edu/~allen.burton/>.

Carpenter, Steve

University of Wisconsin Center for Limnology

Dr. Stephen R. Carpenter is the Stephen Alfred Forbes Professor of Zoology at the University of Wisconsin-Madison Center for Limnology. He directs the North Temperate Lakes Long-Term Ecological Research site as well as a diverse program of whole-ecosystem experiments. He is co-Editor in Chief of *Ecosystems*, Chair of the Science Board for the Resilience Alliance, and Chairman of the Board of the Beijer Institute of Ecological Economics. Dr. Carpenter is a member of the U.S. National Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, and a foreign member of the Royal Swedish Academy of Sciences. He has received many awards for distinguished research. These include a Pew Fellowship in Conservation and Environment, the G. Evelyn Hutchinson Medal of the American Society of Limnology and Oceanography, the Robert H. MacArthur Award from the Ecological Society of America, the Excellence in Ecology Prize for Limnetic Ecology, many honors from the University of Wisconsin-Madison campus, and election to the Ralf Yorke Society. The Institute for Scientific Information has recognized him as one of the world's most highly cited researchers in Environmental Science. He served as co-chair of the Scenarios Working Group of the Millennium Ecosystem Assessment and he is an ecosystem ecologist known for his leadership of large-scale experiments and adaptive ecosystem management. His work has addressed trophic cascades and their effects on production and nutrient cycling, contaminant cycles, freshwater fisheries, eutrophication, nonpoint pollution, ecological economics of freshwater, and resilience of social-ecological systems. Dr. Carpenter has published 4 books and about 300 scientific papers. Carpenter received a B.A. from Amherst College (1974), M.S. from University of Wisconsin-Madison (1976), and Ph.D. from U.W. Madison (1979). From 1979-1989 he served as Assistant and then Associate Professor at the University of Notre Dame. He joined the University of Wisconsin-Madison faculty in 1989. A full biographical sketch and publication list may be viewed on the Internet at <http://limnology.wisc.edu/personnel/carpenter/>.

Conley, Daniel Joseph**Aarhus University (Denmark) Department of Marine Ecology**

Dr. Daniel Conley is Senior Scientist, Department of Marine Ecology, National Environmental Research Institute (Denmark); Professor, Department of Marine Ecology, Aarhus University (Denmark), and Visiting Professor, Institute for Ecosystems Studies (New York, USA). Dr. Conley's educational background includes a Ph.D. in Chemical Oceanography from the Department of Atmospheric and Oceanic Science, University of Michigan (1987); M.S., Environmental Studies, University of Wisconsin - Green Bay (1983), and B.S., Chemistry, Tulane University (1979). Dr. Conley's research interests include: biogeochemical cycles of nutrients and organic material in aquatic systems; silicon (Si) cycling and the role of Si in structuring phytoplankton communities and primary production; the biogeochemical cycle of Si in terrestrial ecosystems and its linkage with aquatic ecosystems; eutrophication of aquatic systems and the use of paleoecological techniques to assess historical changes in productivity; use of monitoring data to increase our understanding of aquatic ecosystems; management of aquatic ecosystems. Dr. Conley is a member of the American Geophysical Union, American Society for Limnology and Oceanography, and the Estuarine Research Federation. Most of his funding has been from the European Union, through the National Environmental Research Institute (Denmark).

Cooper, Charles**USDA Agricultural Research Service**

Dr. Charles M. Cooper is a Senior Research Ecologist with the Agricultural Research Service, the research arm of the U.S. Department of Agriculture. After completion of his Ph.D. at the University of Mississippi and a post-doc in aquatic ecology, he began an ARS environmental program in 1977. He served the agency as a Research Leader for 12 years and has been instrumental in development of USDA research programs in water quality, ecology, reduction of off-site damages from agriculture and stream restoration. He is currently involved in investigations in stream rehabilitation, pesticide and nutrient reduction by constructed wetlands and vegetated ditches, and watershed management as it pertains to contamination problems and solutions in agriculturally-impacted surface waters. He has authored or co-authored over 240 publications in the field of environmental science during his career. He served as lead ARS Scientist in Environmental Research and Demonstration Erosion Control Project in the Yazoo Basin - 1985 to 2003, the Mississippi Delta Management Systems Evaluation Area project, part of a seven location ARS water quality project which resulted from a Presidential directive. He was Research Leader in Water Quality and Ecology Research - 1990 to 2002. An Adjunct Full Professor at the University of Mississippi, he routinely serves on M.S. and Ph.D. committees, an Institutional Biosafety Committee, and the Chancellor's Committee on Field Station development. Dr. Cooper is a reviewer for Environmental Management; Journal of Environmental Quality, Journal of Freshwater Ecology, Environmental Auditor, Hydrobiologia, and the Water resources Bulletin. He also serves a reviewer for National Science Foundation's Center of Excellence Minority Grant Program. Dr. Cooper is the technical advisor for the National Program Staff of ARS and the USDA Under-Secretary on Mississippi River/Gulf of Mexico Nutrient Task Force. He is also a member of Gulf of Mexico Nutrient Enrichment Focus Team and the Science Advisory Board of Hypoxia Task Force. He serves on the EPA Region 4 Technical Assistance Team for the Southeast United States. Dr. Cooper's recent work has been

supported by U.S. Army Corps of Engineers and the Mississippi Soil and Water Conservation Commission. Memberships in professional Societies include the North American Benthological Society, Ecological Society of America, International Society of Limnology, and the Society of Wetland Scientists.

Cornwell, Jeffrey

University of Maryland Center for Environmental Science

Dr. Jeffrey C. Cornwell is a Research Associate Professor at the University of Maryland Center for Environmental Science, Horn Point Laboratory. He holds a B.S. in Chemistry with honors from Hobart College (1976) and a Ph.D. in Chemical Oceanography from the University of Alaska where he studied chemical cycling in arctic streams, lake water, and sediments. His post-doctoral studies at Texas A&M involved the synthesis of iron sulfide minerals, examination of their chemistry, and sulfide-related field studies in Gulf of Mexico estuaries. Dr. Cornwell's research addresses problems in basic and applied biogeochemistry. He works on system-wide budgets of sediment deposition and sediment-water exchange; the influence of redox on the cycling of nitrogen, phosphorus, sulfur and iron; environmental controls of sediment denitrification; the chemistry of dredged sediment when used for beneficial purposes; primary production and nutrient cycling of benthic microalgae; sediment biogeochemical processes in tidal marshes; the chemistry of suspended phosphorus; and the chemistry of estuarine anoxia. Recent study locations include the Chesapeake Bay and several small subestuaries; the Potomac River; Jamaica Bay (NYC); Florida Bay; Long Island estuaries; and several freshwater reservoirs.

Crumpton, William

Iowa State University Department of Ecology, Evolution and Organismal Biology

Dr. William G. Crumpton is Associate Professor in the Department of Ecology, Evolution and Organismal Biology at Iowa State University and Chair of ISU's Environmental Science Graduate Program. He obtained his B.S. in Interdisciplinary Science and M.S. in Biology from the University of West Florida and his PhD in Botany and Plant Pathology from Michigan State University. He teaches graduate courses on Environmental Systems and on Aquatic and Wetland Microbial Ecology. His research addresses wetland processes and functions, including the dynamics of energy flow and nutrient transformation in wetlands, the fate and effects of agricultural contaminants in wetlands, and the role of restored and constructed wetlands in water quality remediation. Much of his current work focuses on the development and application of performance forecast models for siting, design and assessment of wetland restorations in agricultural watersheds. This work provided much of the research foundation for the Iowa Conservation Reservation Enhancement Program, a ten-year, \$89 million program using targeted wetland restorations to reduce nitrate loads from tile-drained agricultural watersheds. His research is funded by the EPA, USDA, Iowa Department of Natural Resources, and Iowa Department of Agriculture and Land Stewardship. Over the past 5 years, he has worked extensively with state and federal agencies on water quality issues. He currently serves on the EPA Wetlands Nutrient Criteria Workgroup, the Research Technical Assistance Group for EPA Region 7, and the Iowa Department of Natural Resources Wetland Technical Advisory Committee.

Czapar, George**University of Illinois Extension Service**

Dr. George Czapar is an Extension Educator in Integrated Pest Management for the University of Illinois and an Adjunct Associate Professor in the Department of Crop Sciences. He also leads the Strategic Research Initiative in Water Quality for the Illinois Council on Food and Agricultural Research. The goal of this state-wide project is to help develop the scientific basis for water quality standards in Illinois. In 1998, he helped establish the Illinois Council on Best Management Practices (C-BMP), a coalition of agribusinesses, agricultural organizations, and University of Illinois Extension. The mission of C-BMP is to assist and encourage adoption of best management practices to protect and improve water quality in Illinois. Dr. Czapar received his B.S. and M.S. degrees in Agronomy from the University of Illinois, and a Ph.D. in Weed Science from Iowa State University. He serves on several state and regional committees including the Governor's Groundwater Advisory Council, the Illinois EPA Nutrient Criteria Scientific Advisory Committee, and the Illinois Conservation and Climate Initiative Advisory Committee. Dr. Czapar's research has been funded by the Illinois Council on Food and Agricultural Research, Illinois Council on Best Management Practices, Illinois Fertilizer Research and Education Council, EPA, Illinois Environmental Protection Agency and Illinois Department of Natural Resources. He is a member of the American Society of Agronomy, the Weed Science Society of America, and the Soil and Water Conservation Society.

Dale, Virginia**Oak Ridge National Laboratory Environmental Sciences Division**

Dr. Virginia H. Dale is a Corporate Fellow in the Environmental Sciences Division at Oak Ridge National Laboratory, where she has been a staff member since 1984. She is also an adjunct professor in the Department of Ecology and Evolutionary Biology at the University of Tennessee. She received her B.A. (1974) and M.S. (1975) in mathematics from the University of Tennessee. She obtained her Ph.D. (1980) in mathematical ecology from the University of Washington. She is on the EPA's Science Advisory Board, for which she is chair of the Ecological Processes and Effects Committee. She is chair of the US Committee on Scope Committee on Problems of the Environment. She is also on the Science Advisory Board for the Grand Canyon Monitoring and Research Center. She serves on the several committees of the National Academy of Sciences. She is Editor-in-Chief of the journal Environmental Management and is on the editorial board for two journals: Ecological Indicators and Ecological Economics. She was Chair of the US Regional Association of the International Association for Landscape Ecology, has served on the scientific review team for The Nature Conservancy, and was a member of the "Committee of Scientists" appointed by the Secretary of Agriculture to evaluate management of the National Forests and Grasslands. Dr. Dale's primary research interests are in environmental decision making, forest succession, land-use change, landscape ecology, and ecological modeling. She has worked on developing tools for resource management, vegetation recovery subsequent to disturbances; effects of air pollution and climate change on forests; tropical deforestation; and integrating socioeconomic and ecological models of land-use change. Her current research involves working closely with resource managers to identify indicators of ecological change at different scales and to design models that can project regional changes in environmental conditions. Dr. Dale has authored more than 160 published articles. Her recent research has been supported by the Strategic Environmental Research and Development Program of the Department of Defense.

David, Mark**University of Illinois Department of Natural Resources and Environmental Sciences**

Dr. Mark B. David is Professor of Biogeochemistry in the Department of Natural Resources and Environmental Sciences at the University of Illinois at Urbana-Champaign, where he has conducted research and teaching since 1985. He received his Ph.D. in environmental science/biogeochemistry from the State University of New York, College of Environmental Science and Forestry in 1983, following an M.S. from the University of Maine in 1980 (forest biogeochemistry), and B.S. from the Pennsylvania State University in 1978 (forest science). His area of expertise is the biogeochemistry of nutrients in agricultural, forested, and aquatic ecosystems. Dr. David is a member of the American Society of Agronomy, Soil Science Society of America, and the Ecological Society of America, and was recently named a Fellow of the Soil Science Society of America (the highest honor of the society). Based on the extensive citations his publications have received (about 100 peer reviewed journal articles), Dr. David is listed as an ISI Highly Cited Researcher, Ecology/Environment. His recent and current research program is focused on agricultural and aquatic biogeochemistry of nitrogen and phosphorus, including linkages between agricultural and aquatic systems. He has studied nitrogen and phosphorus transformations and export at agricultural field, watershed, and regional scales; examined the use of wetlands for reducing downstream nutrient losses; and has been evaluating the interactions of nutrients (nitrogen and phosphorus), algal growth, and dissolved oxygen with resulting impacts on biotic integrity in Illinois streams and rivers. Currently Dr. David is an associate editor for the Journal of Environmental Quality, and previously served six years as associate editor of the Soil Science Society of America Journal. He has served on numerous USDA proposal review panels, an NSF Biocomplexity panel, and has been sought out and participated in many recent national and international workshops related to nitrogen, agriculture, and stream export. National and state competitive grants have supported his recent biogeochemistry research in Illinois and the Midwest, including USDA National Research Initiative Watershed Processes and Water Resources Program, USDA 406 Water Quality program, NSF Biocomplexity in the Environment Coupled Human/Natural Cycles, and the Illinois Council for Food and Agricultural Research.

Diaz, Robert**College of William and Mary Virginia Institute of Marine Science**

Dr. Robert Diaz is currently a Professor of Marine Science with the Virginia Institute of Marine Science, College of William and Mary in Virginia. He received a Ph.D. in Marine Science from the University of Virginia in 1977 and in 1996 a Doctor Honoris Causa from Gothenburg University, Sweden. His area of expertise and research interests center around understanding the relationship between eutrophication, dissolved oxygen dynamics, and ecosystem energy flow, and the developing global patterns in hypoxia and anoxia. In 1999 he served on the Whitehouse Committee on the Environment and Natural Resources, Integrated Assessment Team, Gulf of Mexico Hypoxia and coauthored the report on ecological and economic consequences of hypoxia (http://www.nos.noaa.gov/Products/pubs_hypox.html). He is also the vice chair of the Department of Interior, Mineral Management Service, Outer Continental Shelf Science Advisory Committee.

Duce, Robert A.**Texas A & M University, Oceanography and Atmospheric Sciences**

Dr. Robert A. Duce is a Distinguished Professor of Oceanography and Atmospheric Sciences at Texas A&M University, where from 1991 to 1997 he was Dean of the College of Geosciences. From 1987 to 1991 he was Dean of the Graduate School of Oceanography and Vice Provost for Marine Affairs at the University of Rhode Island, where he also served as Associate Professor and Professor of Oceanography from 1970 to 1991. He was a member of the faculty of the Dept. of Chemistry at the University of Hawaii from 1965 to 1970. He completed a Ph.D. in inorganic and nuclear chemistry at Massachusetts Institute of Technology in 1964. Dr. Duce's principal research interests are in the chemistry of the atmosphere and ocean, focusing on the chemical cycles of pollutant and natural substances in the global atmosphere, their transport from the continents and their deposition to coastal and remote ocean regions. He has over 270 scientific publications in journals, books, and proceedings. In 1990 he was awarded the Rosenstiel Award in Marine and Atmospheric Chemistry. He is a fellow of the American Geophysical Union, the American Meteorological Society, the Oceanography Society, and the American Association for the Advancement of Science. Dr Duce is a member of the National Research Council's Ocean Studies Board, NOAA's National Sea Grant Review Panel, and the Scientific Committee of the International Geosphere/Biosphere Program (IGBP). He is currently Co-chair of the National Research Council (NRC) Committee to Review the Joint Subcommittee on Ocean Science and Technology's Research Priorities Plan for the ocean sciences for the next decade. He is the immediate Past President of Scientific Committee on Oceanic Research and Vice Chair (and Past Chair) of the United Nations Group of Experts on the Scientific Aspects of Marine Environmental Protection. He was recently Chairman of the American Geophysical Union Fall Meeting Program Committee, and co-chair of the Planning Committee for the IGBP Surface Ocean-Lower Atmosphere Study. He has served as President of the International Association of Meteorology and Atmospheric Sciences, President of The Oceanography Society, and has been a member of the Board of Governors of the Joint Oceanographic Institutions, Inc., the Board of Governors of the Consortium for Oceanographic Research and Education, the Executive Committee of the International Ocean Drilling Program, and the Board of Trustees of the University Corporation for Atmospheric Research. He served for many years as the President of the International Commission on Atmospheric Chemistry and Global Pollution and is now a life member. He has served on the editorial boards of several scientific journals. He has been a member of or chaired numerous advisory committees of the NRC, NSF, EPA, National Air and Space Administration, NOAA, the United Nations, and the World Meteorological Organization. He has served as chair of the NRC Committee on Haze in National Parks and Wilderness Areas and as a member on the NSF Advisory Committee on Geosciences, the NRC Board on Atmospheric Sciences and Climate, and the Steering Committee of the IGBP International Global Atmospheric Chemistry Program.

Elzerman, Alan**Clemson University School of the Environment**

Dr. Alan W. Elzerman is a Professor at Clemson University and Director of the School of the Environment, which includes the Department of Environmental Engineering and Science, the Department of Geological Sciences, and the campus-wide Environmental Science and Policy Program. He received his undergraduate degree in chemistry from Williams College in 1971 and his Ph.D. in Water Chemistry from the University of Wisconsin-Madison in 1976. Dr. Elzerman

has taught for over 28 years in the areas of environmental and analytical chemistry, sources, fate and distribution of chemicals in the environment, environmental engineering, environmental science and environmental policy. He is the Clemson University leader for a multi-institutional project titled the Sustainable Universities Initiative, and has been active in the Council of Environmental Deans and Directors, a national organization. Funded research projects have included sources, fate and transformation of pollutants in the environment, analytical technique development, sorption/desorption kinetics, hazardous wastes, radionuclide contamination of soils and groundwater, and acid rain geochemistry. Dr. Elzerman has been major advisor for many Ph.D. and M.S. students, authored numerous reviewed publications, book chapters, and reports for funded research, and made presentations at many universities and diverse professional society meetings. He has been active in professional societies, especially the American Chemical Society (ACS). Positions in the ACS Division of Environmental Chemistry have included being Treasurer, then Chairman, and now a Councilor, as well as many committee jobs. He has served on several ACS national committees, symposium organizing groups and advisory boards, and currently is a member of the ACS Society Committee on Education (serving as its liaison to the Committee on Environmental Improvement) as well as the Advisory Board for Environmental Science and Technology. Dr. Elzerman has also served as a consultant and frequently as a program and proposal panel reviewer. He was appointed as a member of an EPA Contaminant Candidate List workgroup reporting to the National Drinking Water Advisory Committee. In recent years, Dr. Elzerman's research has been supported by the U.S. Department of Energy, NSF and a private foundation.

Engel, Bernard

Purdue University Department of Agricultural and Biological Engineering

Dr. Bernard A. Engel is Director of the Purdue University Discovery Park Center for the Environment and Head of the Department of Agricultural and Biological Engineering. His educational background include B.S., M.S. and Ph.D. degrees in agricultural engineering with emphasis on hydrology/water quality and the use of computing technologies including geographic information systems (GIS) and modeling to address various environmental issues. Dr. Engel's work on information systems focuses on the use of GIS, expert systems, artificial intelligence and simulation to study and control agricultural non-point source pollution of surface and ground water. Dr. Engel has been a leader in the national effort to integrate GIS and information technologies with watershed modeling to produce very usable, powerful tools that dramatically reduce preparation time from weeks and months to a matter of minutes. This has made these complex models practical for the first time in evaluating a research hypothesis, or a design decision. The work performed by Dr. Engel and his students has helped to shape an entirely new approach to water quality modeling that of developing water quality models within the context of a GIS setting. This has enabled "basin-level" water quality modeling, which can help not only to prevent costly, ineffective regulations, but more importantly, target stringent protection toward the most vulnerable areas. These discoveries are now used by many researchers around the world and have been extended by other scientists to create modeling and decision support systems which are being used to evaluate water resources and water quality issues for the entire US. In recent years, Dr. Engel's work has been supported by EPA, U.S. Department of Agriculture, U.S. Geological Survey and U.S. Army Corps of Engineers.

Fausey, Norman**USDA Agricultural Research Service**

Dr. Norman R. Fausey is a Soil Scientist with the USDA Agricultural Research Service, Soil Drainage Research Unit. He has B.S., M.Sc., and Ph.D. in Soil Science from Ohio State University. He has conducted research on agricultural drainage water management and recycling and its impact on stream water quality during the past 20 years. He is a member of the Soil Science Society of America, Soil and Water Conservation Society, American Society of Agricultural and Biological Engineers, Ohio Academy of Science.

Frankenberger, Jane**Purdue University Agricultural and Biological Engineering Department**

Dr. Jane Frankenberger is Associate Professor of Agricultural and Biological Engineering at Purdue University. She earned a Ph.D. in Agricultural and Biological Engineering from Cornell University, an M.S. in Agricultural Engineering from the University of Minnesota, and a B.A. in Physics from St. Olaf College. Her research focuses on agricultural drainage management to reduce nitrate loss, hydrologic modeling, and management of agricultural watersheds. She is the Indiana state Extension water quality coordinator, and has led numerous Extension projects in soil and water engineering including drinking water assessment and protection, watershed leadership, and drainage water management. She is a member of the American Society of Agricultural and Biological Engineers and serves as Associate Editor of the Transactions of the American Society of Agricultural and Biological Engineers. She is a member of the American Water Resources Association, the Soil and Water Conservation Society, and is currently President of the Indiana Water Resources Association. She is also one of the leaders (serving on the Executive Committee) of the Agricultural Drainage Management Systems Task Force, a USDA committee formed to water quality from drainage systems, including those in the Mississippi Basin.

Galloway, James N.**University of Virginia Environmental Sciences Department**

Dr. James N. Galloway is Professor of Environmental Sciences at the University of Virginia. Dr. Galloway received his B.A. degree in Chemistry and Biology from Whittier College in 1966 and the Ph.D. degree in Chemistry from the University of California, San Diego in 1972. Following a postdoctoral appointment with Gene Likens at Cornell University, he accepted a position as Assistant Professor of Environmental Sciences at the University of Virginia in 1976. He served as President of the Bermuda Biological Station for Research from 1988 to 1995, and as chair of Environmental Sciences, University of Virginia from 1996 to 2001. He is the chair of the International Nitrogen Initiative, a program sponsored by Scope Committee on Problems of the Environment and International Geosphere-Biosphere Program, and is a member of the EPA Science Advisory Board. In 2002 he was elected a Fellow of the American Association for the Advancement of Science. His research on biogeochemistry includes the natural and anthropogenic controls on chemical cycles at the watershed, regional and global scales. His current research focuses on beneficial and detrimental effects of reactive nitrogen as it cascades between the atmosphere, terrestrial ecosystems and freshwater and marine ecosystems.

Giblin, Anne**Marine Biological Laboratory, Woods Hole**

Dr. Anne Giblin is a Senior Scientist in the Ecosystems Center at the Marine Biological Laboratory. She received a B.S. degree from Rensselaer Polytechnic Institute, her Ph.D. (1982) in Ecology from the Boston University Marine Program and spent two years as a Post-Doctoral Investigator at the Woods Hole Oceanographic Institution. Her major research interest has been on the cycling of elements in the environment, especially the biogeochemistry of sulfur, iron, nitrogen and phosphorus. Much of her work has been focused in soils and sediments where she has examined element cycling under different conditions of oxidation and reduction. A major theme of her research has been to examine how sediment processes either ameliorate or augment the effects of anthropogenic inputs of elements to ecosystems. She has worked on topics such as the effects of acid deposition on the sulfur cycle of lakes, the mobility of trace metals in salt marsh sediments, the controls on the availability of phosphorus in tundra soils, and the controls of denitrification in marine and lake sediments. Her research on the nitrogen cycle has been centered on understanding how ecosystems respond to high nutrient inputs from wastewater and fertilizer. Her current projects include: examining how hydrologic disturbances may alter nitrogen cycling in estuaries; the long term biogeochemical response of sediments to an outfall relocation in Massachusetts Bay; and factors controlling the retention and transport of nitrogen in arctic watersheds. Dr. Giblin served as the president of the Estuarine Research Federation (1999-2001) and Chair of the advisory board of the Cooperative Institute for Coastal and Estuarine Environmental Technology (1999-2006). She was the co-Chair, Nutrients and Contaminants Working Group, Workshop on Planning Coordinated Research on Ecosystems, Climate, and Policy in the Northeast. Dr. Giblin has served on a number of advisory panels including the National Academy of Sciences (NAS) advisory panel on the Coastal Ocean Program (1993-1995), the Science Board for the Cape Cod National Sea Shore (1997-2002), as well as a number of panels for the National Science Foundation, NOAA, and non-profit environmental organizations.

Gilbert, Denis**Canada Department of Fisheries and Oceans**

Dr Denis Gilbert completed a Ph.D. in physical oceanography at Dalhousie University (Halifax, Nova Scotia, Canada) in 1990, after completing a B.Sc. in Physics at Université du Québec à Chicoutimi (Québec, Canada) in 1985. He has worked for Canada's Department of Fisheries and Oceans, at the Maurice-Lamontagne Institute in Mont-Joli (Québec), for the past fifteen years. His main field of expertise is the study of ocean climate variability at seasonal, interannual and interdecadal time scales. He has developed several ocean climate indices for various depth layers within the Gulf of St. Lawrence, and has updated those indices each year in a series of annual government reports on the state of the Gulf of St. Lawrence. Dr Gilbert began his research on coastal hypoxia in year 2000. In 2005, he published a paper that documented a major decline of oxygen in the bottom waters of the St. Lawrence Estuary. He co-chairs the international Scientific Committee for Oceanic Research working group on "Natural and human-induced hypoxia and consequences for coastal areas (<http://www.jhu.edu/~scor/wg128.htm>). He is also involved in the Canadian component of the Argo program, being responsible for oxygen measurements in the deep ocean on a subset of these freely drifting, profiling floats (<http://www.argo.ucsd.edu/>). His single source of research funding comes from the federal government of Canada's Department of Fisheries and Oceans.

Gold, Arthur**University of Rhode Island Department of Natural Resources Science**

Dr. Art Gold's research addresses the effects of land use and natural features on water quality. Much of his focus is on process level studies of groundwater nitrate dynamics in riparian wetlands and the use of GIS techniques to scale up from the site level to the watershed scale. Dr. Gold teaches undergraduate and graduate courses in watershed hydrology and analyses. His outreach activities are directed towards demonstration/educational programs for local and state decision-makers to facilitate watershed management and minimize the risks of non-point source pollution. Dr. Gold served from 1998 -2000 as an appointed member of EPA's Science Advisory Board Subcommittee on Environmental Models. He was an Associate Editor of the Journal of Environmental Quality from 1997-2003. He is past chair and a member of the executive committee of the Committee For Shared Leadership of USDA Cooperative State Research Education and Extension Service (CSREES) National Integrated Water Quality Program. Dr. Gold directs the New England Regional Water Quality Program, an eight year grant from CSREES that brings together researchers and extension faculty from all six New England Land Grant Universities to address water quality problems through locally-tested best management practices. He has received funding from NSF, NOAA/SeaGrant, USDA's CREES, EPA and from various state agencies.

Goni, Miguel**Oregon State University College of Oceanic & Atmospheric Sciences**

Dr. Miguel A. Goni is an associate professor in Chemical Oceanography at the College of Oceanic & Atmospheric Sciences in Oregon State University. He holds a B.S. in Oceanography from the University of Washington (1986) and a Ph.D. in Chemical Oceanography from the University of Washington (1992). Prior to his position at Oregon State University, he was a postdoctoral fellow and scientist at Woods Hole Oceanographic Institution (1992-1995) and a professor in the Department of Geological Sciences at the University of South Carolina (1995-2005). Dr. Goni's research focuses on the characterization of the sources, dispersal pathways and cycling of organic matter in ocean margins. He has worked in a variety of coastal systems, including those off the Louisiana Shelf along the Gulf of Mexico. His specific areas of expertise include studies of organic biomarkers and stable isotopes in the water column, the sediment-water interface and the seabed. A critical goal of his research is to enhance our understanding the processes that affect the ultimate fate - i.e. mineralization vs. preservation - of both autochthonous and allochthonous organic matter in coastal environments over a variety of spatial and temporal scales.

Gowda, Prasanna H.**USDA Agriculture Research Service**

Dr. Prasanna Gowda is a senior scientist with the Conservation and Production Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Bushland, TX and an adjunct professor at the Biosystems and Agricultural Engineering Department, Texas A&M University, College Station, TX. He holds a B.S. in Civil Engineering (1988), an M.S. in Urban and Regional Planning (1990) from India, a Ph.D. in Agricultural Engineering (1996) from the Ohio State University where he developed a watershed scale water quality model, and an M.B.A. in Entrepreneurship (2004) from the University of Minnesota. Dr. Gowda's research addresses

problems in water quality and Total Maximum Daily Loads (TMDLs) using Geographic Information Systems and remote sensing. Most of Dr. Gowda's research work involved in (1) developing and calibrating a watershed scale water quality model that accounts for all major hydrologic processes that affect soil erosion and nitrogen transport from upland areas to rivers and (2) development and evaluation of alternative agricultural management practices on water quality to develop TMDLs. He also closely works with agricultural economists to link biophysical modeling with economic modeling to better evaluate various public policy scenarios to improve water quality in the Midwest U.S. My research was funded through competitive research funding programs administered by CSREES-USDA, USDA National Research Initiative (NRI), Office of Water, U.S. EPA, and Minnesota Department of Agriculture.

Gupta, Satish

University of Minnesota Department of Soil, Water and Climate

Dr. Satish Gupta's conducts research on various aspects of Soil Physics, Soil Hydrology, and Soil Management. He is an expert on tillage systems effects on mass (water and chemical) and energy fluxes in soil. His research interests include water quality, soil erosion, waste management, and snowmelt hydrology. Dr. Gupta's recent projects include antibiotic losses and spread of antibiotic resistance from manure application; occurrence of antibiotic bacteria from manure application; river bank erosion using laser altimetry; predicting residue cover from satellite imagery; impact of tillage system on transport of sediment, phosphorus and herbicide in overland flow; tillage and manure interactions on surface and subsurface water quality from artificially drain fields; impact of winter waste application on nutrient losses; and the role of earthworms on preferential transport of water and contaminants in soil. Dr. Gupta teaches Contaminant and Vadose Zone Hydrology courses and an Advance Soil Physics course at the University of Minnesota. He has also taught colloquia on "Modeling water and contaminant transport through soil" and "Hillslope Hydrology". Dr. Gupta is an author or a co-author of over 140 research publications including 16 book chapters and a North Atlantic Treaty Organization (NATO) proceeding. He has advised or co-advised over 24 graduate students and over a dozen Post-doctoral researchers. Dr. Gupta is a Fellow of the Soil Science Society of America and the American Society of Agronomy. He is also an Associate Fellow of the Supercomputer Institute at the University of Minnesota. Currently, he is an Associate Editor of the Journal of Environmental Quality. He has served as an Associate Editor of the Soil Science Society of America Journal (1987-90) and an Editor-in-Chief for the journal Soil and Tillage Research (1991-1995). Dr. Gupta's recent funding has been from USDA-NRI, USGS, USDA-CSREES National Needs Fellowship Program in Water Science, North Central Sustainable Agriculture Research and Education Program, National Pork Board, Minnesota Pork Producers Association, Minnesota Corn Research and Promotion Council, Minnesota Soybean Growers Association, Minnesota Department of Transportation, Legislative Council on Minnesota Resources, Minnesota Pollution Control Agency, and Sugarbeet Research and Education Board.

Haggard, Brian

University of Arkansas Crop, Soil and Environmental Sciences Department

Dr. Brian Haggard is an Associate Professor in the Biological and Agricultural Engineering and the Crop, Soil and Environmental Sciences Departments at the University of Arkansas. He has a diverse education with a B.S. (Biology) from the University of Missouri-Rolla, a M.S. (Environmental Soil and Water Science) from the University of Arkansas, and a Ph.D.

(Biosystems Engineering) from Oklahoma State University. His specific areas of research include: reservoir limnology and modeling; effect of land use on stream nutrients; stream nutrient retention in effluent dominated systems and agricultural catchments; sediment-nutrient interactions and release in aquatic systems; algal nutrient limitation in streams and reservoirs; and nutrient transport in surface runoff from poultry litter. Dr. Haggard chairs the Aquatic Sciences Committee for a Southern Extension-Research Activity (SERA) Information Exchange Group (IEG) and serves on the University of Arkansas Environmental Task Force and the Phosphorus Index Technical Team working within the constraints of litigation and settlement agreements over water quality issues. Recently, Dr. Haggard was named the USDA ARS Southern Plains Area Early Career Research Scientist of the Year in 2005. The primary funding sources for his research activities have been the USGS, USDA, EPA and the US Poultry and Egg Association Research Program.

Hamlett, James

Pennsylvania State University Department of Agricultural and Biological Engineering

Dr. James Hamlett is an Associate Professor of Agricultural Engineering at Pennsylvania State University, where he is involved in teaching related to soil and water engineering, pollutant transport processes, and research methods. He has a B.S. degree in Agricultural Engineering, an M.S. in Agricultural Engineering, and a Ph.D. in Soil Physics/Agricultural Engineering (double major) all from Iowa State University. Primary research activities have focused on modeling nonpoint source constituents from agricultural lands (field, farm, and watershed scale) and identification of best management practices for agricultural and urban areas. Dr. Hamlett is an active member of several professional societies including: Soil Science Society of America, American Society of Agricultural and Biological Engineering (ASABE), Soil and Water Conservation Society, and American Water Resources Association. He recently served as a member of the appointed "Task Force on Analysis of the Non-Tidal Water Quality Modeling Results" for the Scientific and Technical Advisory Committee to the Chesapeake Bay Program. This Task Force was created to advise the Chesapeake Bay Program concerning the interpretations of nontidal water quality monitoring results with regard to management decisions, more effective methods of data analysis, and the appropriate integration of monitoring and modeling results and activities.

Hatfield, Jerry

National Soil Tilth Laboratory

Dr Jerry L. Hatfield is the Laboratory Director of the USDA-ARS National Soil Tilth Laboratory in Ames, Iowa. He received his Ph.D. from Iowa State University in 1975 in the area of Agricultural Climatology and Statistics a M.S. in Agronomy from the University of Kentucky in 1972, and B.S. from Kansas State University in Agronomy in 1971. He served on the faculty of the University of California-Davis as a biometeorologist from 1975 through 1983 and then joined USDA-Agricultural Research Service in Lubbock, Texas as the Research Leader of the Plant Stress and Water Conservation Research Unit from 1983 through 1989. He was appointed Laboratory Director of the National Soil Tilth Laboratory in 1989. His responsibilities have included the management of the laboratory research program and technical oversight of the multi-location, multi-agency environmental quality program to assess the impact of farming systems on environmental quality and the development of a quality assurance/quality control data for the analytical portion of the project. The results of these studies have been extended in

several watershed efforts in the Midwest to evaluate the impact of farming systems on surface and groundwater quality caused by nutrient and pesticide movement. Dr. Hatfield currently serves as the Technical Leader for the air quality projects within USDA-ARS and responsible for fostering interactions among research locations and is co-leader of the Air Quality Working Group of the USDA-EPA Animal Feeding Operation Research Task Force. He served on the Governors Water Quality Task Force in Iowa to evaluate potential solutions to water quality solutions. He is currently serving as the Scientific Quality Review Officer for USDA-ARS and is responsible for the management of the project review process for all research projects within ARS. He serves as the USDA-ARS representative to the Heinz Center project on the State of the Nation's Ecosystems, the Key Indicators Initiative, and National Audubon society project on Waterbirds on Working Lands. He is a Fellow of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America and is President-Elect of the American Society of Agronomy. He is a member of the Board of Directors of the Soil and Water Conservation Society. He is the author or co-author of 336 publications and the editor of 10 monographs including Nitrogen in the Environment: Sources, Problems and Management. Funding sources over the past years has included the Risk Management Agency, Monsanto, Dow Chemical, National Pork Board, and AgCert to address problems on environmental quality and agricultural management.

Hoef, Robert G.

University of Illinois (Urbana Champaign) Department of Crop Sciences

Dr. Robert G. Hoef was raised on an irrigated grain and livestock farm in east central Nebraska. He obtained his B.Sci. and M.Sci. from the University of Nebraska and his PhD in soil science from the University of Wisconsin in 1972. Following graduation he was employed as an Extension Agronomist at South Dakota State University until 1973 when he moved to the University of Illinois as an Assistant Professor of Extension and Research-Soil Fertility. He progressed through the ranks to Professor in 1981. Dr. Hoef served as Coordinator of Agronomy Extension from 1977 to 2004 and Associate Head of the Department of Crop Sciences from 2004-2005. In 2005, he was named Head of the Department of Crop Sciences. Dr. Hoef has devoted a major portion of his research career to projects designed to evaluate factors influencing the efficiency of nutrient use. His work with nitrification inhibitors provided classical data that allows scientists and crop producers to make an informed decision on where these products will likely be beneficial. His work on the effect of excess moisture on nitrogen loss now allows producers to apply the proper rate of nitrogen knowing that they can utilize climatic data for the specific site to predict whether loss potential has been great enough to justify supplemental application after periods of excessive rain. His work on factors affecting immobilization and mineralization of nitrogen has brought a new perspective to the importance of proper nitrogen management for optimum crop production while maintaining environmental quality. Dr. Hoef has expanded his research program to include work on manure management and on factors affecting the potential for phosphorus loss from agricultural soils. Results of this work have been incorporated into nutrient management plan modules. He has authored 3 books, 7 book chapters, over 40 scientific journal articles and well over 200 professional and popular articles. His research programs have clearly provided a data base for individuals to utilize in designing nitrogen management programs that will optimize production and minimize the potential for nitrogen to have an adverse impact on water quality. Dr. Hoef was the first Editor of the Journal of Production Agriculture and served as President of the American Society of Agronomy, the

largest agricultural scientific society in the U.S. Dr. Hoelt's research has been funded by Illinois EPA, Illinois Department of Agriculture, USDA, Dow Chemical Company, The Andersons, Central Illinois Power, SKW, Trostberg, Germany, Illinois Pork Producers, Pioneer Hybrids, Northern Illinois Water, Sohio, Brandt Chemical, and the Sulphur Institute. He has been named a Fellow in the American Society of Agronomy and the Soil Science Society of America.

Hopkinson, Charles

Marine Biological Laboratory, Woods Hole

Dr. Charles Hopkinson is Senior Scientist at The Ecosystems Center, Marine Biological Laboratory, Woods Hole. He has a B.S., Ursinus College (1970), M.S., Louisiana State University (1973), and Ph.D., Louisiana State University (1979). Dr. Hopkinson's research interests are focused in coastal systems, ranging from watersheds to estuaries out onto the continental shelf. His research largely addresses issues related to the effects of human activities on coastal systems, such as climate change, population increase, land use change and sea level rise. He takes a biogeochemical approach examining carbon, nitrogen and phosphorus cycles at scales ranging from the microbial to watersheds to regional. Stated another way, Dr. Hopkinson's interests include wetland and aquatic ecology, element cycles in marine and fresh water systems, microbial ecology, nitrogen and phosphorus cycling, land use change and watershed dynamics, land-sea coupling, global ecology, systems ecology - modeling, and integrated assessment. In recent years, Dr. Hopkinson's work has been supported by the National Science Foundation, SeaGrant, EPA, and the Massachusetts Water Resources Authority. Dr. Hopkinson was a member of the Committee on the Causes and Management of Coastal Eutrophication, Ocean Studies Board and Water Science and Technology Board, Commission on Geosciences, Environment, and Resources, National Research Council. National Academy of Sciences.

Howarth, Robert W.

Cornell University Department of Ecology and Evolutionary Biology

Dr. Robert W. Howarth earned a B.A. from Amherst College in 1974 and a Ph.D. jointly from MIT and the Woods Hole Oceanographic Institution in 1979. He is currently the David R. Atkinson Professor of Ecology & Evolutionary Biology at Cornell University, a position he has held since 1993. He is also director of the Agricultural Ecosystems Program at Cornell, director of the North American Nitrogen Center (part of the International Nitrogen Initiative), and an adjunct research scientist at the Ecosystems Center of the Marine Biological Laboratory in Woods Hole, MA. He represents the State of New York on the Scientific and Technical Advisory Committee of the Chesapeake Bay Program. And he was the Coordinating Lead Author for the Millennium Assessment for the chapter on societal responses to nutrient pollution, released in early 2006. He is a member of the American Institute of Biological Sciences, the American Society of Limnology and Oceanography, the Ecological Society of America, and the Estuarine Research Federation. He is the President-elect of the Estuarine Research Federation and will serve as President from 2007 to 2009. With the Ecological Society of America, he is a member of the Biogeochemical Cycling Rapid Response Team. In recent years, Dr. Howarth's research has been supported by the EPA Star program, NSF Biocomplexity Program, NOAA's Coastal Ocean Program, USDA/CSREES, Woods Hole SeaGrant, the Mellon Foundation, and the Hudson River Foundation. Dr. Howarth's research interests focus on biogeochemistry and ecosystem science, particularly in coastal marine ecosystems and in large river basins. Detailed

interests include the interactions of element cycles; global and regional nitrogen and phosphorus cycles; the biotic, physical, and geochemical controls on nitrogen fixation in both aquatic and terrestrial ecosystems; the influence of land-use, management practices, and climate change on export of nutrients from land to waters; atmospheric deposition of nitrogen onto the landscape; the controls and consequences of eutrophication in estuaries; sediment biogeochemistry, particularly in seagrass ecosystems; environmental management and the effects of pollutants on aquatic ecosystems; the interactions between ecosystem processes and community structure; and the application of science to sustaining the biosphere.

Hu, Chuanmin

University of South Florida College of Marine Science

Dr. Chaunmin Hu currently serves as research assistant professor and executive director at the Institute for Marine Remote Sensing (IMaRS) at the University of South Florida College of Marine Science. Dr. Hu received his Ph.D. in environmental optics and has been working in satellite oceanography since then. Dr. Hu's research area is remote sensing of the coastal ocean with the focus on coastal pollution and eutrophication, red tides and anomaly events, and carbon cycles. In the past 5 years, Dr. Hu's research has been supported by U.S. National Air and Space Administration, the National Oceanic and Atmospheric Administration, U.S. Geological Survey and the Florida Department of Environmental Protection.

Jaynes, Dan

USDA Agricultural Research Service

Dr. Dan Jaynes is a Supervisory Soil Scientist and Research Leader in the Soil and Water Quality Unit at the National Soil Tilth Laboratory in Ames, Iowa. He received a B.A. in Physics from Monmouth College, a M.S. in Soil Science from the University of Wisconsin, and a Ph.D. in Agronomy from Pennsylvania State University. Dr. Jaynes' areas of expertise include soil physics, soil hydrology, and evaluating water quality affects of management practices and drainage practices. Major fields of interest include water and solute transport in soil, variation in soil physical and chemical properties over time and space, and modeling soil physical and chemical processes. Recent research has included characterizing the impact of farming systems on surface water quality, developing field methods for measuring parameters needed for solute transport models, developing new methods for nitrogen management and control, describing and explaining the spatiotemporal patterns of yield variations in corn and soybean fields and evaluating soil sensors for characterizing soil variability, developing new subsurface drainage system designs and management methods to reduce nitrate losses, and evaluating the use of watershed-scale models in artificially drained Midwest watersheds. Dr. Jaynes has served as chairman of the "Characterization and Management of Soil Water and Solutes in Field Soils" regional research committee, Associate Editor for Soil Science Society of America Journal, and Associate and Technical Editor for Journal of Environmental Quality, chair and member of numerous committees of the Soil Science Society of America and American Society of Agronomy, member and chair for numerous USDA-ARS Research Performance and Evaluation System panels, member of CSREES review team for Department of Natural Resources and Environmental Science, University of Nevada and as a panel member on three USDA-NRI grant review panels.

Jochem, Frank**Florida International University Marine Biology Program**

Dr. Frank J. Jochem holds a Ph.D. in biological oceanography from the Institute of Marine Sciences at Kiel University, Germany. After 11 years of scientific work in Kiel, as graduate student, research scientist, and research associate professor, he moved to the Marine Science Institute of the University of Texas at Austin, Port Aransas, TX, for two years before he joined the Marine Biology Program at Florida International University, Miami, FL, as an assistant professor in 2001. During his tenure at Kiel University, Dr. Jochem's research focused on newly discovered phototrophic picoplankton, phytoplankton productivity and ecology, including harmful algal and cyanobacterial blooms in the Baltic Sea, and microbial food web composition and dynamics in as diverse marine systems as the Baltic Sea, Atlantic and Indian Ocean, Caribbean, and the Antarctic Ocean. He was also among the pioneers introducing analytical flow cytometry into marine sciences. During his time in Texas and Florida, Dr. Jochem expanded his work scope into bacterial productivity, community composition, and biogeochemical nitrogen cycling within the microbial food web. Current work entails the spatial and temporal dynamics of bacterioplankton community composition assessed by flow cytometry, genetic fingerprinting, and quantitative real-time PCR in relation to environmental gradients, trophic interactions in the microbial food web, and biogeochemical nitrogen cycling in Florida Bay, Lake Erie, and the Gulf of Mexico. He is also working on novel molecular techniques to assess in-situ growth rates of phytoplankton and toxin production-related gene expression in the Florida Red Tide dinoflagellate *Karenia brevis*. Dr. Jochem has experience in hypoxic research through studies in the Baltic Sea, seasonally hypoxic Lake Erie, and through work in the Mississippi River plume on the Louisiana shelf during the drought spring of 2000. He will return his research to the Gulf of Mexico hypoxic region within the framework of a NOAA Coastal Ocean Program project in summer 2006. His work in the Baltic Sea, Antarctica, North Atlantic, Caribbean, and Indian Ocean was funded by German Research Foundation (Deutsche Forschungsgemeinschaft) and the European Union Marine Science and Technology Program. His Gulf of Mexico research was funded by the Nancy and Perry Bass Endowment to the University of Texas. Ongoing research in Florida Bay, Lake Erie, and the Gulf of Mexico hypoxic zone as well as laboratory-based studies is funded by the NOAA Coastal Ocean Program, NSF Bio Ocean, NSF Microbial Observatories, and National Institute of Environmental Health Sciences.

Jones, John**University of Missouri Department of Fisheries and Wildlife Sciences**

Dr. Jack Jones is a Professor of Limnology and Chair of the Department of Fisheries and Wildlife Sciences at the University of Missouri. His advanced degrees are from Iowa State University where his graduate projects in eutrophication and nutrient issues were under the direction of Dr. Roger Bachmann. He has spent 30 years at the University of Missouri quantifying how nutrients and physical factors control algal biomass in streams, lakes and reservoirs. Dr. Jones has studied the influence of the seasonal monsoon on nutrient levels and nutrient limitation of algae in lakes of Asia. Most recently he has linked non-point source nutrient loss from agricultural watersheds to the cross-system variation in phosphorus and nitrogen in Missouri reservoirs. Dr. Jones' recent funding for study of lakes in Missouri has come from state agencies in Missouri. These include the Missouri Department of Conservation and Missouri Department of Natural Resources. He is Editor of the Proceedings of the International

Society of Theoretical and Applied Limnology and Associate Editor of Lake and Reservoir Management.

Justic, Dubravko

Louisiana State University Department of Oceanography and Coastal Sciences

Dr. Dubravko Justic is a professor in the Department of Oceanography and Coastal Sciences and Director of the Coastal Ecology Institute at Louisiana State University. He received his M.S. in Ecology in 1984 and his Ph.D. in Biological Oceanography in 1989 from the University of Zagreb (Croatia). Before joining Louisiana State University in 1991, he worked at the University of Zagreb, University of Trieste (Italy) and Florida State University. His research program has focused on long-term ecological studies of freshwater and coastal ecosystems (e.g., Lake Jezero, northern Adriatic Sea and northern Gulf of Mexico). Coupled with field experimentation, his work has involved interdisciplinary systems analysis, analysis of trophic interactions, and modeling of the effects of natural and anthropogenic factors on biological communities. More recent activities include modeling of the impacts of riverine nutrients on eutrophication and hypoxia in coastal waters, development of coupled estuarine-wetland models, and prediction of the potential effects of climate change on coastal ecosystems. Dr. Justic's research is currently supported by NOAA, USDA, Coastal Restoration and Enhancement through Science and Technology program and Louisiana Sea Grant.

Kazmierczak, Jr., Richard

Louisiana State University Center for Natural Resource Economics & Policy

Richard R. Kazmierczak Jr. earned a Ph.D. in Agricultural Economics from Virginia Polytechnic Institute and State University. He is Professor of Resource Economics at the Center for Natural Resource Economics & Policy in the Department of Agricultural Economics and Agribusiness at Louisiana State University. In 2001-02 he also served as a Senior Research Fellow at the Marine Policy Center, Woods Hole Oceanographic Institution. He has chaired 13 graduate committees and been a member of 41 others. He has published nearly one hundred articles and has received recent grants from the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, the Gulf and South Atlantic Fisheries Foundation, and the Louisiana Board of Regents that collectively exceed one million dollars. He currently is a member of the socioeconomic panel of the Gulf of Mexico fisheries Management Council and serves as secretary to the Marketing, Trade and Management of Fisheries and Aquaculture Resources, a multistate project funded through the U.S. Department of Agriculture. His current areas of study are resource and environmental economics (with a focus on technology and the use of market and non-market mechanisms) and the bioeconomics of resource use. He has earned several honors including the Outstanding Dissertation Award from the American Agricultural Economics Association, the Joseph E. Sedberry Outstanding Graduate Teacher for the LSU College of Agriculture, and five poster and paper awards from the Southern Agricultural Economics Association, the World Aquaculture Society, and the American Agricultural Economics Association.

Kemp, William Michael**University of Maryland Center for Environmental Science**

Dr. William Michael Kemp, who is currently a Professor at the University of Maryland's Center for Environmental Science located at the Horn Point Laboratory in Cambridge, has a broad and diverse academic background. His educational training includes a B.S. degree (1969) in Civil Engineering from Georgia Institute of Technology, a M.S. degree (1971) in Environmental Engineering (under A.W. Hoadley) also from Georgia Tech, and a Ph.D. (1977) in Systems Ecology (under H.T. Odum) from the University of Florida. Although Dr. Kemp's areas of expertise span a range of topics within coastal ecosystem science, his research has focused primarily on factors controlling primary production and community respiration, rates and regulation of nutrient cycling, and dynamics of trophic interactions. His studies use numerical models, experimental ecosystems, comparative analysis and scaling relationships to develop integrated understanding of coastal ecosystem processes and dynamics. Much of his work has involved studies of the ecology of seagrasses and related submersed aquatic plant communities, as well as studies of benthic biogeochemical processes including nitrification and denitrification. His research has been well funded over the past twenty-five years by diverse agencies including US EPA, NOAA, NSF and Maryland Departments of Natural Resources and of the Environment. These investigations have led to the publication of more than 120 peer-reviewed articles in scientific journals and books. These include recent widely-cited reviews articles on coastal eutrophication, nitrogen cycling, and seagrass environmental requirements. He has co-authored or co-edited three books, including a popular text on estuarine ecology, which was originally published in 1989 and is currently being updated and revised. Dr. Kemp has also served as mentor for numerous undergraduate interns, graduate students, and post docs. He regularly teaches courses in modeling and estuarine systems ecology, and he has advised 20 doctorate and masters students, who have completed their degrees and found productive employment in the field. Dr. Kemp has been actively involved in scientific and management issues at regional, national and international levels. He has organized workshops and chaired symposia in the Chesapeake Bay region, and at meetings of the Estuarine Research Federation (ERF), the American Society of Limnology and Oceanography, and the Estuarine and Coastal Shelf Science Society. He has served on the editorial boards of three important scientific journals, and he was elected to the ERF Executive Board (1987–1989). Dr. Kemp has been actively involved in the Chesapeake Bay Program, serving on various advisory committees and task groups to address questions related to modeling and monitoring water quality and submersed plants. One such committee was responsible for the establishment of Bay's water clarity standards. He is currently a member of the Scientific and Technical Advisor Committee which advises the entire Chesapeake Bay Program. He has served on national and international advisory committees including: the Danish Ministry of Environment's Eutrophication Modeling Review Team (1994), the University of Stockholm's Faculty Appointments Board (1995), the US President's Panel on National Environmental Monitoring and Research (1996), the Pew Foundation Fellowship Nomination Committee (1998), the NRC's Review Panel for Everglades Ecosystem Restoration (2002), the Hudson River Foundation's Research Review Board (2005), the International Council for Science, SCOR Coastal Hypoxia Workgroup (present). In addition, Dr. Kemp received the Maryland Governor's Citation for Chesapeake Bay Research (1992), he was selected by the Royal Swedish Academy of Science to participate in the Crafoord Award ceremonies in Stockholm (1996), and he was awarded the Distinguished Estuarine Scientist Sabbatical by the Florida Center for Environmental Studies (1999).

Khanna, Madhu**University of Illinois (Urbana-Champaign)****Department of Agricultural and Consumer Economics**

Dr. Madhu Khanna is a professor in the Department of Agricultural and Consumer Economics at the University of Illinois at Urbana-Champaign. She received her Ph.D. from the University of California at Berkeley. Her research focuses on environmental policy analysis and incentives for adoption of environmentally friendly technologies. She has examined the effectiveness of alternative market based instruments for inducing the adoption of best management practices in agriculture such as precision farming and improved irrigation methods and the targeting of green payment policies for reducing nitrogen run off and sediment from cropland. She also examines the design and performance of voluntary programs such as the Conservation Reserve Enhancement Program to improve water quality in the Illinois River. She is currently examining the economics of using perennial grasses to provide environmental benefits, such as soil carbon sequestration and reduced run-off, as well as a source of bioenergy. Her research has been funded by EPA, US Department of Energy, and the Illinois Council on Food and Agricultural Research. Dr. Khanna teaches undergraduate and graduate courses in international trade and environmental economics. She has received several teaching and research awards and was supervisor of the recipient of an Outstanding Thesis Award in 2002 from the American Association of Agricultural Economics. She was selected as a University of Illinois Scholar for 2004-07. She has served on review panels for the EPA and the USDA. She is also on the Board of Directors of the Association of Environmental and Resource Economists. She serves as an associate editor for the American Journal of Agricultural Economics and is on the editorial boards of the Journal of Soil and Water Conservation, Journal of Agricultural and Resource Economics, and Review of Agricultural Economics.

Kitchen, Newell**USDA Agricultural Research Service**

Dr. Newell Kitchen serves as a Soil Scientist in the Cropping Systems and Water Quality Research Unit and an Adjunct Associate Professor in the Soil, Environmental, and Atmospheric Sciences Department on the campus of University of Missouri, Columbia, Missouri. He received his B.S. (1984) from Brigham Young University (Agronomy), M.S. (1986) from University of Missouri (Agronomy), and Ph.D. (1990) from Colorado State University (Soil Science). Dr. Kitchen's current research is focused on developing profitable cropping and soil management systems that protect soil and water resources. He is an ardent advocate of using new technologies for collecting crop and soil information in order to make better management decisions. He has gained national and international recognition for his contributions in precision agriculture, nutrient management, and water quality. Dr. Kitchen has authored over 40 peer-reviewed journal articles (15 senior authored) and three book chapters, and presented over 50 formal research papers at national professional meetings and symposia. Dr. Kitchen co-founded the Missouri Precision Agriculture Center, a joint University of Missouri and ARS Center committed to the advancement of sound science-based precision agriculture systems, and he has served on the Steering Committee in organizing cornbelt region workshop (sponsored by USDA, EPA, and commodity organizations) called "Addressing Gulf Hypoxia and Local Water Quality Concerns," Ames, IA, Sept. 26-28, 2005. Dr. Kitchen was invited by USDA-CSREES National Program to serve on a five-member team to review the research and extension programs for the

Louisiana State University's Agronomy and Environmental Management Organization, Baton Rouge, LA, Mar. 13-18, 2005. He was elected to the American Society of Agronomy Division Chair (2001) and Board Representative (2005-2008) and has served as current or past associate editor for *Agronomy Journal* and *Precision Agricultural Journal*.

Kladivko, Eileen

Purdue University Department of Agronomy

Dr. Eileen J. Kladivko is Professor of Agronomy at Purdue University. She has degrees in Environmental Science, Agronomy, and Soil Science from Purdue University and the University of Wisconsin. Dr. Kladivko teaches and does research in soil physics, soil biology, and soil management. Her overall research focus has been to identify soil management systems that improve environmental quality and promote agricultural sustainability. Specific research areas have included the impacts of tile drainage on crop yields and nitrate losses to surface waters; the interactions of earthworms, soil management, and soil physical properties; conservation tillage and cover crops for soil quality improvement; and preferential flow of chemicals through soils. Dr. Kladivko currently serves on the State Technical Committee for the Natural Resources Conservation Service (NRCS) in Indiana. She served on the organizing committee for the September 2005 workshop on Gulf Hypoxia and Local Water Quality Concerns, held in Ames, Iowa, and was a reviewer for a Conservation Effects Assessment Program (CEAP) book commissioned by the Soil and Water Conservation Society for use by NRCS. She has served on a number of peer-review panels for national or regional grants programs. In recent years, Dr. Kladivko's work has been supported by USDA's Integrated Research, Education, and Extension Program; the Consortium for Agricultural Soils Mitigation of Greenhouse Gases (CASMGS); the Oregon Ryegrass Growers Seed Commission; and the Kellogg Foundation. She has served as Chair of the Soil and Water Management Division of the Soil Science Society of America and is a member of numerous professional and honorary societies.

Kling, Catherine

Iowa State University Center for Agricultural and Rural Development

Dr. Catherine Kling is a Professor of Economics at Iowa State University and head of the Resource and Environmental Policy Division of the Center for Agricultural and Rural Development. Prior to her Iowa State appointment, she was an Associate and Assistant Professor in the Department of Agricultural Economics at the University of California, Davis. Dr. Kling holds a B.A. in Business and Economics from the University of Iowa and a Ph.D. in Economics from the University of Maryland. She is a Fellow of the American Agricultural Economics Association and has served as a member of their board of directors and awards committee chair. She has also served as vice president and member of the board of the Association of Environmental and Resource Economists, and has held editorial positions at several environmental and agricultural economics journals. Dr. Kling's research addresses methods for improving non-market valuation methods and economic incentives for pollution control, especially in relation to non-point source pollution from agriculture. Her research has been funded in part from grants from the U.S. Department of Agriculture, EPA, National Science Foundation, Iowa Department of Natural Resources, Iowa Farm Bureau, The Nature Conservancy, Iowa State Water Resources Research Institute, California Institute for Energy Efficiency, Iowa State Leopold Center for Sustainable Agriculture, Giannini Foundation for

Agricultural Economics, University-wide Energy Research Group at the University of California, and the Sloan Foundation.

Lowrance, Richard

USDA Agricultural Research Service

Dr. Richard Lowrance received his B.S. in Biology from the University of South Alabama and his Ph.D. in Ecology from the University of Georgia. He is a Research Ecologist with USDA-ARS where he does research on the effects of riparian ecosystems and buffers on water quality and nonpoint source pollution transport. In addition, he works in the area of watershed and landscape management for environmental quality benefits, leading a team that has developed the Riparian Ecosystem Management Model to simulate the water quality impacts of riparian forest buffers and other edge of field buffers. Dr. Lowrance is past-chair of the Wetland Soils Division of the Soil Science Society of America and has served on numerous advisory panels for USDA, EPA, and other governmental and non governmental organizations.

Mallin, Michael

University of North Carolina (Wilmington) Aquatic Ecology Laboratory

Dr. Michael A. Mallin is an aquatic ecologist who has research interests that include nutrient dynamics, the environmental impacts of rural and urban stormwater runoff, phytoplankton and zooplankton ecology, and general water quality issues. Dr. Mallin received an M.S. in limnology from the University of Florida and worked for several years in as a river and reservoir biologist for the Carolina Power and Light Company. He received a Ph.D. in marine and estuarine biology from UNC Chapel Hill and is currently Research Professor at the University of North Carolina Wilmington Center for Marine Science. His current research interests include the causes and effects of eutrophication, factors influencing coastal primary productivity and aquatic food webs, the impacts of urban and rural pollution, land use and how it affects water quality, and environmental management issues. Dr. Mallin's work covers marine, estuarine, and freshwater systems, and he serves as the Research Coordinator for the Lower Cape Fear River Program, the Wilmington Watersheds Program, the New Hanover County Tidal Creeks Program (which received the 2000 Large Community Planning award from the N.C. American Planning Association) and he is a principal investigator with the Coastal Ocean Research and Monitoring Program. In his research, Dr. Mallin collaborates with biologists, chemists, engineers and land use planners. His work is funded by the North Carolina Water Resources Research Institute, the NOAA Coastal Ocean Research and Monitoring Program at the University of North Carolina Wilmington, the U.S. Marine Corps base at Camp Lejeune, the City of Wilmington, New Hanover County, N.C., and the North Carolina Division of Water Quality/U.S. EPA 319 Program. His publications include studies on bacterial contamination of coastal waters, pollution from industrial scale swine and poultry farms, the ecology and toxicity of *Pfiesteria*, the effects of weather on ecosystems, the ecology of tidal creeks, nutrient sensitivity of streams, rivers, and estuaries, and the environmental quality of urban and rural watersheds. Dr. Mallin was selected to be a 2001 Aldo Leopold Environmental Leadership Fellow through the Ecological Society of America, and is currently (2004-2006) serving as President of the Southeastern Estuarine Research Society.

Malone, Thomas**University of Maryland & Ocean.US Office for Sustained and Integrated Ocean Observations**

Dr. Thomas Malone is a Professor at the University of Maryland Center for Environmental Science (UMCES). He is currently on leave from the University to serve as a consultant to the Intergovernmental Oceanographic Commission and the Ocean.US Office for Sustained and Integrated Ocean Observations (www.ocean.us) on the design and implementation of integrated coastal ocean observing systems globally and nationally. In 2002, Dr. Malone received the University of Maryland Reagent's Public Service Award for his work on U.S. and international ocean observing systems. Dr. Malone received a Ph.D. in biology from Stanford University in 1971, a M.S. in oceanography from the University of Hawaii in 1967, and a B.A. in zoology from Colorado College in 1965. Prior to moving to the University of Maryland in 1982, he held faculty appointments at The City College of New York (with tenure), Lamont-Doherty Geological Observatory of Columbia University, and the Oceanographic Division of Brookhaven National Laboratory. He has published over 100 peer-reviewed papers on phytoplankton and coastal ecosystem dynamics, coastal eutrophication, the role of science in society, and integrated ocean observing systems. During the past 20 years, Dr. Malone has served as Interim President of UMCES (1988-1990), Director of the Horn Point Laboratory of UMCES (1990-2002), President of the American Association of Limnology and Oceanography (1998-2000), Director of the EPA Multiscale Experimental Ecosystem Research Center (1990-1996), and Director of the Ocean.US Office for Sustained and Integrated Ocean Observations (2003-2005).

Mankin, Kyle**Kansas State University Biological and Agricultural Engineering**

Dr. Kyle R. Mankin is an Associate Professor in Biological and Agricultural Engineering (50% teaching and 50% research). His teaching responsibilities include courses in Natural Treatment Systems, Watershed Modeling, Water Quality Management, and an Introduction to Biological and Agricultural Engineering and Technology. His research emphases include watershed water-quality assessment and modeling, and design and management of natural treatment systems: constructed wetlands, vegetative filter strips and riparian buffers for residential, crop and livestock wastewater treatment. He has authored or coauthored over 140 publications including 30 refereed journal articles. He earned a Ph.D. in Agricultural Engineering from The Ohio State University in 1994 and both M.S. (1987) and B.S. (1985) in Agricultural Engineering from The Pennsylvania State University. Dr. Mankin has served on USDA National Research Initiative Grant Review Panels (Watershed Processes and Water Resources) in 2006 and 2003. He served on a USDA-CSREES Program Review Panel for the Biological and Agricultural Engineering Department at Louisiana State University in 2004. With the American Society of Biological and Agricultural Engineers, he currently serves as Associate Editor for Transactions of the American Society of Agricultural and Biological Engineers, Proceedings Chair and Editor for the Onsite Wastewater Treatment Conference, Section Chair in Countryside Engineering, Chair in Rural/Urban Resource Management Group, Chair in Textbooks and Monographs Group, and Vice-Chair in Pollution by Sediments Group. He has received research funding for 32 projects from state and federal sources, including USDA Cooperative State Research, Education and Extension Service; EPA Office of Research and Development; EPA Experimental Program to Stimulate Competitive Research; NSF Experimental Program to Stimulate Competitive

Research; Kansas Department of Health and Environment, Bureau of Water; Kansas Fertilizer Research Fund; and Kansas Department of Agriculture. Dr. Mankin is a member of Soil Water Conservation Society (Chair, Manhattan, Kansas Chapter), American Ecological Engineering Society, American Water Resources Association, and American Society of Engineering Education.

Marshall, Howard
University of West Georgia

Dr. Howard Marshall is retired from EPA's Region 4. He is currently an Adjunct Professor at the University of West Georgia where he teaches a course on environmental issues. Dr. Marshall has dedicated his professional life to environmental issues, specifically water quality. Earning a Doctorate of Marine Sciences from the University of North Carolina and a Masters in Zoology from the University of Florida; Dr. Marshall has served on the Water Advisory Boards for Congressmen Darden, Gingrich, Barr and currently Congressman Gingrey.

McIsaac, Gregory
University of Illinois (Urbana-Champaign) Natural Resources and Environmental Sciences

Dr. Gregory McIsaac is an Associate Professor of Natural Resources and Environmental Sciences at the University of Illinois at Urbana Champaign. He holds a Ph.D. in Agricultural Engineering from the University of Illinois, a M.S. in Agricultural Engineering from the University of Minnesota and a B.S. in Chemical Engineering from the University of New Hampshire. His research focuses on quantifying the influence of agricultural management practices on hydrology, sediment, and nutrient transport at the field and watershed scales. He serves as an associate editor for the Journal of Environmental Quality and served on proposal review panels for the U.S. Department of Agriculture.

Melvin, Stewart
Iowa State University/Curry Wille and Assoc, PC

Dr. Stewart Melvin holds the rank of professor emeritus in the agricultural and biosystems engineering department at Iowa State University (ISU) and currently a project manager in a small agricultural engineering firm, Curry Wille and Associates, in Ames, IA. Melvin has B.S., M.S. and Ph.D. Degrees in Agricultural Engineering at Iowa State. He has worked for USDA-Natural Resource Conservation Service and Colorado State University, and as a visiting professor in Silsoe College in Bedfordshire, UK in addition to his 34 years for Iowa State University where he worked as an Extension Agricultural Engineer in soil, water and agricultural waste management. He has forty years experience in agricultural drainage and water management, and has conducted significant research in the areas water quality impacts of agricultural practices, particularly on subsurface drainage water. He lead a long term (15yr) research program in NC Iowa to determine the effect of rate, timing and form of fertilizer nutrients on the quality of subsurface drainage. Melvin has also been highly involved with design of systems to treat agricultural drainage waters within fields or below fields to remove nitrate and other pollutants in agricultural drainage waters. Melvin served as the head of the Agricultural and Biosystems Engineering Department for 8 years prior to retiring in 2004 from the ISU. He currently is working part time as project manager in a small agricultural engineering consulting firm where he works on agricultural water quality problem solutions. He holds the rank of Fellow in the American Society of Agricultural and Biosystems Engineers, is a member

of the Soil and Water Conservation Society, along with several other professional societies and organizations, service organizations and church boards. He has served on advisory panels for USDA-ARS, USDA-CREES to evaluate research proposals and research programs for various academic departments in the USA. He has served as an external examiner internationally, and has been involved with several international programs to promote better quality programs in Asia, Europe, and South America.

Meyer, Judith L.

University of Georgia Institute of Ecology

Dr. Judith L. Meyer is a Distinguished Research Professor in the Institute of Ecology at the University of Georgia at Athens (UGA). She holds a B.S. in Zoology from the University of Michigan, a M.S. in Zoology from the University of Hawaii, and a Ph.D. in Ecology from Cornell University. She has been on the faculty at UGA since 1977. She is an aquatic ecologist who has published over 150 scientific papers on her research on rivers and streams. Her research has focused on ecological processes that maintain water quality, on river and stream food webs, and on the impact of watershed disturbance, urban development, and riparian zone management on river and stream ecosystems. Her current research is on urban rivers, impacts of lawn care practices on stream ecosystems, nitrogen cycling in rivers, impacts of excessive sedimentation on aquatic biota, importance of decaying leaves and woody debris in stream ecosystems, and effects of changes in riparian buffer designations for Georgia's trout streams. She served as Principal Investigator for the Coweeta Long-term Ecological Research Site and the Director for Science of the River Basin Science and Policy Center at UGA. Recent funding sources are National Science Foundation, Environmental Protection Agency, U.S. Fish and Wildlife Service, Mott Foundation, the Nature Conservancy, and Georgia Department of Natural Resources. She has served as President of the Ecological Society of America and has been appointed to numerous committees of the National Academy of Sciences/National Research Council including the Water Science and Technology Board and the Board on Environmental Studies and Toxicology. She is a member of the Independent Science Board of the California Bay Delta Authority and of the Ecological Processes and Effects Committee of the EPA Science Advisory Board. She serves as Chair of the Science and Technical Advisory Committee of American Rivers, a national river conservation organization. She was named a Clean Water Act Hero by the Clean Water Network for her scientific research that has contributed to achieving the goals of the Clean Water Act. She is the recipient of the 2003 Award of Excellence in Benthic Science from the North American Benthological Society.

Mitsch, William

The Ohio State University School of Environment and Natural Resources

Dr. William J. Mitsch is Distinguished Professor in the School of Environment and Natural Resources at The Ohio State University, and Director of the Wilma H. Schiermeier Olentangy River Wetland Research Park. Dr. Mitsch's research interests include wetland ecology and biogeochemistry, the creation and restoration of wetlands, ecosystem modeling and wetland management policy. He is extensively published in the peer reviewed literature and wrote the textbook *Wetlands*, now in its 3rd edition (2000). He is Editor-in-Chief of the journal *Ecological Engineering* and was founder and first president of the American Ecological Engineering Society (AEES). Dr. Mitsch received his Ph.D. in Environmental Engineering Sciences (Systems Ecology) from the University of Florida in 1975. Prior to his position at Ohio State, he taught at

Illinois Institute of Technology and University of Louisville. In August 2004, Dr. Mitsch received the 2004 Stockholm Water Prize in Stockholm Sweden from Swedish King Carl XVI Gustaf for a career in ecological engineering, ecological modeling, and wetland science and management.

Mulla, David

University of Minnesota Department of Soil, Water and Climate

Dr. David Mulla is currently Professor and Larson Chair for Soil and Water Resources at the University of Minnesota. He earned a B.S. in Earth Sciences (Geophysics) from the University of California, Riverside in 1979. His M.S. (1981) and Ph.D. (1983) degrees are in Agronomy from Purdue University. Dr. Mulla is currently a member of the Scientific Advisory Panel for the Lake Pepin TMDL Process, St. Paul, MN. He is also a member of the Soil Science Society of America. Dr. Mulla and his coauthors have produced over 140 publications, and their research has been funded at over \$10 million. Dr. Mulla has experience in modeling erosion, and losses of phosphorus, nitrogen, and pesticides to surface and ground waters. He has developed statewide maps and tables showing the vulnerability of various agricultural regions in Minnesota for pollution of rivers, lakes, and groundwater, as well as best management practices (BMPs) for each region. In 1998 he was appointed to the White House Task Force on Hypoxia in the Gulf of Mexico. In 1999 he was asked by the Minnesota State Environmental Quality Board to lead a study on the impacts of animal agriculture on water quality. He has developed coupled nitrogen and phosphorus budgets for large agricultural regions to determine the magnitude of environmental losses and identify areas where improved efficiency is warranted. In 2004 he collaborated on a unique statewide study to quantify phosphorus loads exported to surface waters from point and nonpoint sources. He has conducted a paired watershed study on the effectiveness of BMPs on water quality. He has conducted research on grid and targeted soil sampling for precision farming, on the application of geostatistics to precision farming, on field experiments to determine optimum nitrogen fertilizer rates, and on remote sensing and Geographic Information Systems to classify farms into management zones. Dr. Mulla's work has been supported by NSF, EPA, USDA, USGS, US Agency for International Development, Minnesota Department of Agriculture, University of Minnesota and Center for Agricultural Partnerships. In 2004 he organized the International Conference on Precision Agriculture, held in Minneapolis, with 500 participants from 33 countries.

Nassauer, Joan

University of Michigan School of Natural Resources and Environment

Dr. Joan Iverson Nassauer is Professor of Landscape Architecture in the School of Natural Resources and Environment, University of Michigan. She earned the BLA, University of Minnesota; MLA, Iowa State University, 1978. She was named Fellow of the ASLA in 1992, and Distinguished Practitioner of Landscape Ecology in 1998. She serves on the editorial boards of Landscape Ecology, Landscape Journal and the Cambridge University Press series in landscape ecology. In the past five years she has served as New Zealand Institute of Landscape Architects Fellow, 2006; Beatrix C. Farrand Visiting Distinguished Professor, University of California, Berkeley, 2003; and Miegunyah Distinguished Fellow, University of Melbourne, Australia, 2001. Her research addresses the relationship between stakeholder perceptions and the ecological function of human-dominated landscapes, including public acceptance of landscape change, landscape indicators, and ecological planning for metropolitan and agricultural

landscapes. In the past fifteen years, she has participated in leading several interdisciplinary research projects including an integrated assessment of alternative scenarios for Corn Belt agriculture. Current work is funded by NSF, USDA Forest Service, the state of Minnesota, and the Norwegian Institute of Land Inventory.

Newman, Michael C.

College of William & Mary Virginia Institute of Marine Science

Dr. Michael Newman is Professor of Marine Science at the College of William and Mary, Virginia Institute of Marine Science. He received degrees in zoology from the University of Connecticut (B.A., 1974; M.S., 1978) and environmental sciences from Rutgers University (M.S., 1980; Ph.D., 1981). After his postdoctoral studies, Dr. Newman was a research ecologist at the University of Georgia's Savannah River Ecology laboratory. He now holds a Professor of Marine Science position at the College of William and Mary's School of Marine Science after ending a three-year term as Dean of Graduate Studies of the School of Marine Science. Dr. Newman's research emphasizes quantitative methods in ecotoxicology with topics of interest ranging from chemical measurement statistics to QSAR-like models for predicting metal ion effects to contaminant effects on population genetics to methods of predicting community level effects. He has authored approximately 100 publications on these topics including four books, *Quantitative Methods in Aquatic Ecotoxicology*, *Fundamentals of Ecotoxicology*, *Population Ecotoxicology*, and *Community Ecotoxicology*. He also edited several books, *Metal Ecotoxicology*, *Hierarchical Ecotoxicology*, *Risk Assessment: Logic and Measurement*, *Coastal and Estuarine Risk Assessment*, and *Risk Assessment with Time-to-Event Models*. Dr. Newman is active in advisory service. He served on Organization for Economic Co-operation and Development (OECD), EPA, U.S. Department of Energy (DOE), National Academy of Sciences (NAS), and state environmental regulatory and risk assessment committees and panels. Dr. Newman was one of two U.S. members of an OECD team charged with assessing statistical methods for analyzing toxicity data. Work with DOE involved complex-wide consideration of data quality objectives for risk assessment activities, and various site-specific advisory services to the Savannah River and Hanford sites. He has been a member of numerous EPA teams including the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) ECOFRAM working group, two FIFRA science advisory panels, the Chesapeake Bay Office science advisory board, a Food Quality Protection Act (FQPA) scientific review board, and a joint U.S. EPA-Israeli Water Agency working group. Dr. Newman has reviewed numerous risk assessment documents for EPA and was a consultant to the National Academy of Sciences Everglades Ecosystem Assessment. He continues to work actively with various Virginia Department of Environmental Quality teams and panels.

Nowak, Pete

University of Wisconsin-Madison Department of Rural Sociology

Dr. Pete Nowak received his Ph.D. from the University of Minnesota's College of Agriculture in 1977. He served as both an assistant and associate professor at Iowa State University before joining the faculty at the University of Wisconsin in 1985. At the College of Agricultural and Life Sciences in Madison he holds an appointment as a Professor of research in the Department of Rural Sociology, a Soil and Water Conservation Specialist in the Environmental Resources Center, and Chair of Academic Programs in the Gaylord Nelson Institute for Environmental Studies. Pete's career has focused on measuring and explaining the adoption and diffusion of

agricultural technologies, especially those with natural resource management implications. More recently he has focused on examining the application of spatial analytical techniques and statistics to critical issues in resource management including manure management, integrated pest management, and the targeting of conservation practices within watersheds. Current work is examining manure management in an urbanizing setting using various spatial analytical techniques and statistics such as GIS and telemetry technologies. His work has been published in a variety of journals and books. He has served as an Associate Editor for the Journal of Soil and Water Conservation, Editorial Board of the Journal of Precision Agriculture and on the Foundation for Environmental Agricultural Education. In the recent past he has worked with the National Academy of Science's Board on Agriculture, U.S. Army Corps of Engineers, U.S. Office of Management and Budget, USDA's Natural Resources Conservation Service and a National Blue Ribbon Panel examining the USDA Conservation Effectiveness Assessment Project. He also served on the Board of Directors of the Soil and Water Conservation Society.

Opaluch, James

University of Rhode Island Department of Environmental and Natural Resource Economics

Dr. James Opaluch is a professor of Environmental Economics at the University of Rhode Island. He received a Ph.D. in Economics and Masters Degree in Statistics both from the University of California, Berkeley. Dr. Opaluch has been actively involved in issues related to natural resource and environmental policy for many years. Dr. Opaluch is an internationally recognized expert in natural resource valuation and damage assessment, and has served as an expert witness in over 20 major natural resource damage assessment cases. Other projects include development of the original Type A model for assessing natural resource damages under Superfund (incorporated in Federal Regulations); evaluation of the potential social costs of the national five-year offshore oil and gas leasing program; comprehensive assessments of proposed national environmental regulations; development of a methodology for landfill siting for the state of Rhode Island, and estimating uses and values of the Peconic Estuary System as part of the National Estuaries Program. Dr. Opaluch was recently invited to serve on the United Nations Environmental Program's Working Group of Consultative Experts to provide advice and training to policy professionals throughout the world. Dr. Opaluch has served on a number of national committees, including National Academy of Science panel to assess the Outer Continental Shelf Environmental Studies Program, National Academy of Science Panel on Polychlorinated Biphenyls (PCB) Contamination Sites, National Academy of Science committee on wetlands productivity, National Academy of Science committees to assess the adequacy of environmental information on Georges Bank, South Florida, California and Alaska, the U.S. Minerals Management Service Social Science Research Panel, and Governing Board Associate of the American Agricultural Economics Association. Dr. Opaluch has served in a variety of professional capacities, including Associate Editor of the American Journal of Agricultural Economics, President of the Northeast Agricultural and Resource Economics Association, Vice President of the Association of Environmental and Resource Economists, Associate Editor of the American Journal of Agricultural Economics, Associate Editor of the Journal of Environmental Economics and Management, Editorial Board of the Agricultural and Resource Economics Review and Director of the Northeast Agricultural and Resource Economics Association. Dr. Opaluch been recipient of various awards, including Research Scientist of the Year at the University of Rhode Island, College of Resource Development, Outstanding Service Award from

the Northeast Association of Agricultural and Resource Economics, Outstanding Dissertation Award of the American Agricultural Economics Association and has served as advisor to four Theses that were winners of the American Agricultural Economics Association thesis awards. Dr. Opaluch has received research support from many private corporations and federal agencies, including the National Science Foundation, the U.S. Environmental Protection Agency, the U.S. Department of the Interior, and the National Oceanic and Atmospheric Administration. Dr. Opaluch has authored or co-authored numerous papers in refereed journals, including the Journal of Environmental Economics and Management, the Rand Journal of Economics, American Journal of Agricultural Economics, Land Economics, Applied Economics, Coastal Management, Natural Resource Journal, Marine Resource Economics, and Oil and Chemical Pollution and has written many technical reports and chapters in books.

Paerl, Hans

University of North Carolina (Chapel Hill) Institute of Marine Sciences

Dr. Hans W. Paerl is Kenan Professor of Marine and Environmental Sciences, at the University of North Carolina (Chapel Hill) Institute of Marine Sciences, Morehead City. His research includes; microbial ecology, nutrient cycling and primary production dynamics of aquatic ecosystems, environmental controls of algal blooms, and assessing the causes and consequences of man-made and climatic (storms, floods) nutrient enrichment and hydrologic alterations of inland, estuarine and coastal waters. His recent studies have identified the importance and ecological impacts of atmospheric nitrogen deposition in estuarine and coastal environments. Dr. Paerl was recently (Feb. 2003) awarded the G. Evelyn Hutchinson Award by the American Society of Limnology and Oceanography for his work in these fields and their application to interdisciplinary research, teaching and management of aquatic ecosystems. His work plays a central role in coastal water quality and fisheries issues facing North Carolina and the nation. Dr. Paerl's research is supported by the National Science Foundation, the North Carolina Sea Grant program, the NOAA Ecology and Oceanography of Harmful Algal Blooms Program, the North Carolina Department of Environment and Natural Resources and St. Johns Water Management District of Palatka, FL.

Persyn, Russell A.

South Dakota State University Agricultural and Biosystems Engineering

Dr. Russell Persyn is an Assistant Professor in the Agricultural and Biosystems Engineering Department at South Dakota State University and serves as the Environmental Quality Engineer for the South Dakota Cooperative Extension Service. Dr. Persyn received his Ph.D. from Iowa State University in agricultural engineering and civil engineering and received his M.S. and B.S. from Texas A&M University in agricultural engineering. He is also a Registered Professional Engineer in the State of Texas. Dr. Persyn has worked on water quality issues and evaluation of best management practices and waste treatment technologies. He has led and collaborated on projects involving nutrient enrichment issues and worked with scientists, engineers, and stakeholders to assist in meeting surface water quality standards. Specifically, Dr. Persyn has worked on evaluating composted organics from various sources for use in erosion control on construction projects, focusing on movement of sediment, nutrient and heavy metal transport, and development of model parameters. Dr. Persyn also has considerable experience in the design and evaluation of treatment technologies such as constructed wetlands, sand filters, trickling filters, and aerobic treatment units and land application technologies including spray distribution,

drip distribution, and subsurface treatment. Dr. Persyn has received funding for research and outreach projects on water quality and watershed issues from the Texas Water Resources Institute, Texas State Soil and Water Conservation Board, EPA, U. S. Geological Survey, and U.S. Department of Agriculture. Dr. Persyn is an active member of the American Society of Agricultural and Biological Engineers serving and organizing technical meetings, symposiums, continuing professional development sessions, and promoting engineering licensure.

Rabalais, Nancy

Louisiana Universities Marine Consortium

Dr. Nancy Rabalais serves as a Professor at the Louisiana Universities Marine Consortium. She earned a Ph.D. degree from the University of Texas at Austin, and B.S. and M.S. degrees in Biology from Texas A&M University, Kingsville, TX. Dr. Rabalais' research interests include the dynamics of hypoxic environments, interactions of large rivers with the coastal ocean, estuarine and coastal eutrophication, benthic ecology, and environmental effects of habitat alterations and contaminants. She has been appointed to be the next Chairperson of the Ocean Studies Board of the National Research Council. She recently received the 12th Boswick H. Ketchum Award in January at the Woods Hole Oceanographic Institution (WHOI). The Ketchum Award is presented by the Institution's Coastal Ocean Institute and Rinehart Coastal Research Center to a scientist who demonstrates innovative coastal research, leadership in the scientific community and attention to the effects of marine pollution on the coastal environment and society. In 1999, she was named NOAA Environmental hero for her work in the causes and consequences of Gulf of Mexico hypoxia.

Raschke, Ronald

RLR Associates

Dr. Ron Raschke is presently the President of his consulting firm, RLR Associates. Prior to his consulting, he served EPA's Region 4 as an expert in eutrophication and lake management, and as an adjunct professor with the University of Georgia's Warnell School of Forest Resources. He received a B.A. in Biology from Dana College in 1960, an M.A. in Botany from the University of Nebraska in 1963, and a Ph.D. in Botany (Phycology) from Iowa State University in 1968. His research focused primarily on algal assay and eutrophication. Dr. Raschke formerly was a Fulbright Scholar at the University of Adelaide in Australia, past president of the North American Lake Management Society (NALMS), and past president of the Georgia Lake Management Society.

Reckhow, Kenneth

Duke University Nicholas School of the Environment and Earth Sciences

Dr. Kenneth H. Reckhow is professor and chair of Environmental Sciences and Policy in the Nicholas School of the Environment and Earth Sciences at Duke University. On the faculty at Duke since 1980, Dr. Reckhow concurrently served as director of the University of North Carolina Water Resources Research Institute and was an adjunct professor in the Department of Civil Engineering at North Carolina State University between 1996 and 2004. He is a past-president of the National Institutes for Water Resources and of the North American Lake Management Society, past-Chair of the North Carolina Sedimentation Control Commission, and has served on the Boards of the American Water Resources Association and the Universities Council on Water Resources. He has published two books and over 100 papers, principally on

water quality modeling, monitoring, and pollutant loading analysis. In addition, Dr. Reckhow has taught several short courses on water quality modeling and monitoring design, and he has written eight technical guidance manuals on water quality modeling. He is serving, or has served on the editorial boards of *Water Resources Research*, *Water Resources Bulletin*, *Lake and Reservoir Management*, *Journal of Environmental Statistics*, *Urban Ecosystems*, and *Risk Analysis*. He received a B.S. in engineering physics from Cornell University in 1971 and a Ph.D. from Harvard University in environmental systems analysis in 1977. In 2001, Dr. Reckhow served as Chair of the National Academy of Sciences Committee to Assess the Scientific Basis for the EPA TMDL Program. In recent years, Dr. Reckhow's work has been supported by EPA, the National Science Foundation, Water Environment Research Foundation, and the North Carolina Division of Water Quality.

Rowe, Dennis

USDA Agricultural Research Service

Dr. Dennis Rowe is Research Leader for USDA-ARS's Waste Management and Forage Research Unit at Mississippi State, MS. This Unit is an eight scientist research program focused on safe management of agricultural waste. Dr. Rowe received a Bachelor's from Purdue University (B.S. in Horticulture, 1968) and a M.S. and Ph.D. from Pennsylvania State University (M.S. in Horticulture, 1976 and Ph.D. in Agronomy, 1980). Dr. Rowe's research has focused on Best Management Practices for economical and efficient manure application to forages and to row crops and fate of manure nutrients in soil and water over time. With over 57 publications in waste management in the past six years, Dr. Rowe is a member of the Agronomy, Soil Science, and Crop Science Societies of America, the Soil and Water Conservation Society, and the International Biometric Society. Relevant assignments and advising include being detailed to the Washington, DC area to compose the first national assessment of research accomplishments of USDA-ARS's Manure and Byproduct Utilization program in 2003 and 2004. In 2002, Dr. Rowe was appointed permanent USDA-ARS representative to the Poultry Water Quality Consortium (includes USDA Natural Resources and Conservation Service, Tennessee Valley Authority, EPA, and U.S. Poultry and Egg Association). He was also appointed to the Executive Committee of Mississippi State University's Nutrient Management and Water Quality Task Force in 1999 and Mississippi Farm Bureau Steering Committee for Poultry Research in 1998.

Sanders, James

University of Georgia Skidaway Institute of Oceanography

Dr. James Sanders is Director of the Skidaway Institute of Oceanography, a campus of the University System of Georgia. He received his B.S. from Duke University in Zoology and his Ph.D. from the University of North Carolina in 1978 in Marine Sciences, then was a postdoctoral investigator at Woods Hole Oceanographic Institution. Prior to his arrival in Savannah Dr. Sanders was on the faculty and served as Director of the Academy of Natural Sciences' Estuarine Research Center in Maryland from 1981 to 1999, then was Chairman of the Department of Ocean, Earth and Atmospheric Sciences at Old Dominion University in Virginia. Dr. Sanders is known for his interests within the area of trace element biogeochemistry: how trace elements are transported through coastal zones, transformed by chemical and biological reactions during transport, and how they can impact aquatic ecosystems. He serves as a consultant to federal and state science agencies and industrial groups in the U.S. and Europe. He is a member of numerous scientific societies, is President-Elect of the National Association of

Marine Laboratories and serves on the Executive Committee of the Board of Governors of the Consortium for Oceanographic Research and Education. He is the author of over 70 scientific publications. His research funding has come from a variety of federal and state agencies (NOAA, EPA, NSF, Maryland Department of Natural Resources) and private organizations (Electric Power Research Institute, other corporations).

Sawyer, John E.

Iowa State University Department of Agronomy

Dr. John E. Sawyer is associate professor and extension soil fertility specialist in the department of agronomy at Iowa State University. He holds an A.S. in Engineering Technology from the University of Toledo (1974) where he concentrated in chemistry; a B.S. from Ohio State University (1977) in agronomy where he concentrated in soil science; and a M.S. and Ph.D. from the University of Illinois (1985 and 1988) in agronomy where he concentrated in soil fertility. Dr. Sawyer's provides statewide leadership for extension soil fertility and nutrient management education programs in Iowa related to soil management, agronomic crop production, and water quality. He also provides leadership for experiment station, regional, and national soil and water quality committees. His education program clientele includes producers, agribusiness, crop advisers, and agencies. Dr. Sawyer is responsible for development of soil fertility and nutrient management extension bulletins, web sites, and nutrient management decision tools. He works extensively with the Certified Crop Adviser international program and provides on-going education programs for certified individuals in Iowa and other states/regions. His research focus is the study of plant nutrients in soils and plants, especially nitrogen; fertilizer and manure nutrient management; and implications of soil management related to soil fertility and the environment. In recent years, Dr. Sawyer's research has been supported by the Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation; the Iowa Egg Council; Leopold Center for Sustainable Agriculture; Iowa Natural Resources Conservation Service, USDA; Iowa State University, Department of Agronomy; Iowa Department of Natural Resources. Many projects are conducted cooperatively with producers and agencies to document and demonstrate economical crop nutrient use and effectiveness of nutrient management tools and recommendations.

Scavia, Don

University of Michigan School of Natural Resources and Environment

Dr. Don Scavia is Professor and Associate Dean of the School of Natural Resources and Environment, Director of the Michigan Sea Grant program, and interim Director of the Cooperative Institute for Limnology and Ecosystem Research. His current research, teaching, and service focus on integrating natural and social science in environmental policy contexts through integrated assessment and other decision support tools. His primary focus is on the impacts of changes in human-dominated watershed on freshwater and marine ecosystems. His BS, MS, and PhD degrees are in Environmental Engineering and he has been certified as a Senior Ecologist by the Ecological Society of America. He has published extensively on lower food web dynamics, aquatic biogeochemical cycling, and ecosystem modeling. His early work in the Great Lakes and smaller freshwater systems earned him respect as a leading limnologist and ecological modeler. His more recent work, focused on modeling, simulation, and assessment of coastal hypoxia has produced new and important insights and publications in this area. Dr. Scavia currently serves on the Science Committee for the NSF Collaborative Large-scale

Engineering Analysis Network for Environmental Research (CLEANER) program and on the BOSC subcommittee reviewing EPA's STAR and GRO Fellowship programs. As outlined in his resume has had extensive experience chairing and serving on other review and advisory committees, as well as on interagency government committees. He served on the Board of Directors for the International Association for Great Lakes Research (IAGLR) and the American Society for Limnology and Oceanography (ASLO), and is currently Associate Editor for Estuaries (ERF) and Frontiers in Ecology and Environment (ESA).

Scharf, Peter Clifton

University of Missouri Plant Sciences Division

Dr. Peter Scharf is an associate professor in the Plant Sciences Division at the University of Missouri, where he chairs the Soil Fertility Working Group. His research focuses on economic and environmental impacts of nitrogen fertilizer management. He is active in the development of innovative technologies for diagnosing the correct rate of fertilizer, including aerial and ground-based sensors. Much of this work is done with the cooperation of farmers and agribusiness people. He holds a B.S. from the University of Wisconsin (Biochemistry, Genetics), an M.S. from Virginia Tech (Agronomy), and a Ph.D. from Virginia Tech (Crop and Soil Environmental Sciences). Dr. Scharf's work is supported by EPA, Missouri Fertilizer & Ag Lime Council, USDA-Natural Resources Conservation Service, Missouri Dept. of Agriculture, and the Missouri Dept. of Natural Resources. He holds a B.S. from the University of Wisconsin (Biochemistry, Genetics), an M.S. from Virginia Tech (Agronomy), and a Ph.D. from Virginia Tech (Crop and Soil Environmental Sciences).

Schepers, James

USDA Agricultural Research Service

Dr. James S. Schepers was raised on an irrigated farm near Shelton, Nebraska and is currently employed as a supervisory soil scientist with the USDA-Agricultural Research Service in Lincoln, Nebraska where he is also an adjunct professor in the Agronomy and Horticulture Department at the University of Nebraska. He received his B.S. and M.S. degrees in Soil Science from the University of Nebraska in 1968 and 1970 and received his Ph.D. in Soil Physical Chemistry from the University of Illinois in 1973. Dr. Schepers is the Research Leader of the ARS Soil and Water Conservation Research Unit in Lincoln. His research activities include developing management practices and cropping systems to more efficiently use fertilizers, water, and animal wastes so as to protect surface and groundwater quality. Related activities include consulting with the International Atomic Energy Agency on an irrigated wheat project to increase nitrogen use efficiency, participating in a scientific exchange to China to assess water quality issues related to nitrogen management, and serves as the U.S. representative and scientific coordinator to Organization for Economic Cooperation and Development in the area of Integrated Farming Systems. Dr. Schepers has served on peer panels within ARS (including one panel for Natural Resource Conservation Service scientists) for about ten years. In 1995, he chaired the USDA National Research Initiative Water Quality grant evaluation panel. He presently co-chairs a multi-agency group that is working to develop an N-Index Risk Assessment tool for the US. Particular interests include using various types of remote sensing to evaluate soil properties and monitor crop growth to enhance precision agriculture practices. Experiences include water quality monitoring in runoff, grid soil sampling, variable rate nutrient application, fertigation, chlorophyll meters, tissue testing, yield monitors, geographic information systems,

remote sensing, and active and passive crop and soil sensors. Funding to support this research is provided through USDA Agricultural Research Service.

Schoeneberger, Michele

USDA National Agroforestry Center

Dr. Michele M. Schoeneberger received a B.S. from University of Wisconsin-Green Bay in Ecosystems Analysis; a M.S. from Oregon State University in Forestry/Forest Soils; and a Ph.D. from North Carolina State University in Forestry/Forest Soils. She is a Research Project Leader and Supervisory Soil Scientist in the U.S. Forest Service Southern Research Station Research Work Unit (Tree-Based Buffer Technologies for Sustainable Land Use) located in Lincoln, NE. The Research Work Unit is the Research & Development Program of the USDA National Agroforestry Center. The Center, a partnership of Forest Service R&D, State & Private Forestry, and the USDA Natural Resources Conservation Service, develops and delivers technology on a broad suite of agroforestry practices to natural resource professionals and landowners, and conducts research on how to design and install tree-based buffers to protect water quality and provide other benefits. Dr. Schoeneberger coordinates and participates in the research program aimed at developing tree-based buffer systems to mitigate nonpoint source pollution and sequester carbon, restore essential ecosystem functions, and provide economic opportunities at the farm/landscape levels. She also works to advance the scientific underpinnings of these tree-based conservation/production technologies and communicate these findings into products that assist the acceptance, adoption, and establishment of agroforestry on the ground and increases the awareness and understanding by policy and program makers. Development and delivery of decision-support tools for natural resource professionals and landowners are currently focused on the lands within the Mississippi River Basin and working through the Upper Mississippi River Partnership being facilitated by State & Private Forestry and the Lower Mississippi Alluvial Valley Project being facilitated by the US Forest Service.

Sharpley, Andrew N.

USDA Agricultural Research Service

Dr. Andrew N. Sharpley has been a Soil Scientist with the USDA Agricultural Research Service since 1978, first at the National Agricultural Water Quality Laboratory in Durant, OK and from 1995 at the Pasture Systems and Watershed Management Research Unit, University Park, PA. He received degrees from the University of North Wales, United Kingdom in 1973 and Massey University, New Zealand in 1977. His research investigates the cycling of phosphorus in soil-plant-water systems in relation to soil productivity and water quality and includes the management of animal manures, fertilizers, and crop residues. Most recently he has developed decision making tools for agricultural field staff to identify sensitive areas of the landscape and to target management alternatives and remedial measures that have reduced the risk of nutrient loss from farms. These tools are now widely accepted by US EPA, NRCS, and the Comprehensive Nutrient Management Planning Strategy. He is a Technical Editor for the Journal of Environmental Quality, Fellow of the American Society of Agronomy and Soil Science Society of America and received their Applied Soil Science and Environmental Quality Research Awards and recently received USDA's Secretary's Honor and Technology Transfer Award for his contribution to developing simple risk assessment tools for use by farmers and action agencies as part of Comprehensive Nutrient Management Planning strategies. Most recently, Dr. Sharpley has served on National Academy of Science's Committee on "Causes and

Management of Coastal Eutrophication;” USDA-CSREES-EPA “National Livestock Curriculum Project;” and external reviewer of White House Committee on Environment and Natural Resources (CENR) Hypoxia Work Group “Effects of Reducing Nutrient Loads to Surface Waters within the Mississippi River Basin and the Gulf of New Mexico.” In the last 10 years, he has received research funds from the Chesapeake Bay Program; Cooperative Institute for Coastal and Estuarine Environmental Technology; Delaware Department of Natural Resources and Environmental Control; Maryland Department of Environment; National Research Initiative; Organization for Economic Cooperation and Development; Pennsylvania Conservation Commission; Pennsylvania Department of Agriculture; Watershed Agricultural Council, New York; USDA 1890 Capacity Building Program; USDA-CSREES; US EPA; USDA-Vermont Agricultural Experiment Station Competitive Hatch Program; and USDA-NRCS.

Shortle, James

Pennsylvania State University Department of Agricultural Economics and Rural Sociology

Dr. James Shortle is the University Distinguished Professor of Agricultural and Environmental Economics, and Director of the Environment and Natural Resource Institute, at Pennsylvania State University. He graduated with a Bachelor of University Studies from the University of New Mexico in 1975, and was named a Distinguished Alumnus of the University of New Mexico in 2005. He received his Ph.D. in Economics from Iowa State University in 1981. He has been at Penn State since 1981. He has over 100 publications in peer reviewed disciplinary and interdisciplinary journals, and chapters in books. He has edited two books on the economics of water pollution policies for agriculture, and one on land policy. Dr. Shortle’s research has been supported by the National Science Foundation, US Department of Agriculture, and US Environmental Protection Agency, as well as by state agencies and private foundations. He has served on science advisory panels and committees including recently the EPA Science Advisory Board Second Generation Model Advisory Panel, the National Research Council’s Committee on Water Quality in Southwestern Pennsylvania. He has won awards for research accomplishments from the Agricultural Economics Society, the Northeast Agricultural and Resource Economics Association, and the Pennsylvania Chapter of Gamma Sigma Delta.

Simpson, Thomas W.

University of Maryland College of Agriculture and Natural Resources

Dr. Thomas W. Simpson is Professor and Coordinator of Chesapeake Bay Programs for the College of Agriculture and Natural Resources at the University of Maryland. He has a B.S. from Virginia Tech and an M.S. and Ph.D. from Penn State, all in Soil Science. From 1980 to 1992, he was Professor of Soil-Environmental Quality at Virginia Tech, focusing on organic waste management and agricultural water quality issues. Dr Simpson’s early research efforts focused on beneficial use of organic waste, composting and agricultural impacts on water quality. In the last decade, his work has focused on Best Management Practice efficiencies for agricultural sources of nutrient pollution and opportunities for innovation agricultural conservation programs, practices and policies. Since 1992, Dr. Simpson has coordinated science activities regarding nonpoint sources of pollution and the Chesapeake Bay. He currently chairs the Chesapeake Bay Program’s Nutrient Subcommittee, which oversees nutrient and sediment reduction efforts from all sources throughout the watershed. Dr. Simpson also leads the Mid-Atlantic Water Quality Program, a ten university research and outreach effort and is one of 12 members of the USDA-land grant National Committee on Shared Leadership for Water Quality. He has served on

numerous programmatic and proposal review panels and boards for USDA, EPA, NOAA and various private foundations. In recent years, Dr. Simpson's work has been supported by U.S. Department of Agriculture, EPA, Maryland Departments of Agriculture and Natural Resources, Chesapeake Bay Trust, Chesapeake Research Consortium (a university consortium) and the Keith Campbell Foundation. His primary current focus is on innovation in water quality practices and policies and integration of science into water policy.

Snyder, Clifford

Potash & Phosphate Institute

Dr. Clifford S. Snyder is Southeast Director of the Potash & Phosphate Institute (PPI) and holds a Ph.D. (1984) in soil science from N.C. State University, and a M.S. (1980) and B.S. (1978) from the University of Arkansas. He has conducted and administered collaborative scientific research and education to develop and implement nutrient management strategies for forage, crop, and forest production. Since 1995, he has coordinated agronomic and environmental research through land-grant colleges with funding by the Foundation for Agronomic Research (FAR). Both PPI and FAR are not-for-profit scientific organizations with mandates for agronomic research and education. Dr. Snyder serves on the EPA Gulf of Mexico Nutrient Enrichment Focus Team, is a Certified Crop Adviser, co-chairs the Southern Plant Nutrient Management Conference, is an active member of the American Association for the Advancement of Science, Soil Science Society of America (Division Chair), and American Society of Agronomy (Division Chair, Fellow in 2002).

Stow, Craig

University of South Carolina Department of Environmental Health Sciences

Dr. Craig Stow is an Associate Professor in the Department of Environmental Health Sciences at the University of South Carolina. He has a Ph.D. in environmental modeling from Duke University, an M.S. from Louisiana State University in Marine Sciences, and a B.S. from Cornell University in Environmental Technology. In between his M.S. and Ph.D. Dr. Stow worked for approximately five years in the Water Pollution Control Division of the Louisiana Department of Environmental Quality. Dr. Stow's recent funding sources have included EPA, National Oceanic and Atmospheric Administration, Water Environment Research Foundation, NC Water Resources Research Institute, and the City of Charlotte, NC. Most of this funding has been for data analysis and model development to quantify, and forecast the effects of pollutants in lake and coastal ecosystems. Dr. Stow's primary research area is the application of empirically-based probabilistic models in aquatic ecosystems to assist in environmental decision-making.

Thomas, Daniel

Louisiana State University & the LSU AgCenter

Dr. Daniel L. Thomas is currently Professor and Head of the Biological and Agricultural Engineering Department at Louisiana State University and the LSU Agricultural Center in Baton Rouge. Dr. Thomas assumed that role in March of 2003. Prior to that time he served as a faculty member at the University Georgia, Bio & Ag Engineering Department, College of Agricultural and Environmental Sciences Tifton Campus from 1984 to 2003 while working his way from Assistant Professor to Professor. While at the University of Georgia, he has served in different leadership roles including Research Leader (starting in 1991) to Research, Extension and

Instruction Coordinator (starting in 1996) for the Tifton unit. His career started with B.S. (1978) and M.E. (1980) degrees in Agricultural Engineering from Louisiana State University and a Ph.D. from Purdue University (1984). He has been involved in research and extension activities associated with drainage, water quality, irrigation, and precision systems. With over 70 refereed/reviewed publications, over 110 presentations to professional groups, over 70 formal extension presentations, and about 30 other publications, his research and extension efforts are well-known. He has been a member of American Society of Agricultural Engineers, American Society of Civil Engineers Environmental & Water Resources Institute, and the Soil and Water Conservation Society for many years and has served in leadership positions in each organization. He has taught portions of college level courses on irrigation, professionalism/ethics, drainage, design of small dams, engineering graphics, and surveying. Dr. Thomas' work has been funded by the Georgia Department of Natural Resources, U.S. Department of Agriculture, the Southeastern Peanut Research Initiative, and state agricultural experiment stations in Georgia and Louisiana. He has been recognized by Sigma Xi (Research Honorary), Alpha Epsilon (Agricultural Engineering Honorary), and Gamma Sigma Delta (Agricultural Honorary). He was the Panel Manager for the NRI Watershed Processes and Water Resources Program in 2004-2005. In 2005, Dr. Thomas was inducted into the first class of Diplomats for the American Academy of Water Resources Engineers. For more information on Dr. Thomas, see <http://www.bae.lsu.edu/people/faculty/thomas/thomas.html>.

Thompson, Timothy
Science, Engineering, and the Environment, LLC

Mr. Tim Thompson is a Senior Environmental Scientist with Science, Engineering and the Environment, LLC. In his current position his principle responsibilities are in the field of characterization, risk assessment, and management of contaminated sediments. He received his B.Sc. in Agricultural Sciences from the University of Arizona, his M.Sc. in Ocean Sciences from the University of British Columbia, and was a Monbusho Fellow, at the University of Nagasaki and Tokyo Fisheries University, Japan. In his 18 years of experience as a practicing professional in environmental science he has been program manager and principal scientist for several large contaminated sediment programs under Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) and the Resource Conservation and Recovery Act. His current work in sediments also includes habitat evaluations and integration of field data with spatial modeling tools, spatial characterization and statistical analysis of bedded sediment data, bedded sediment characterization, water quality monitoring, sediment remediation and ecological risk assessment. He is a member of EPA's Science Advisory Board Environmental Processes and Effects Committee, and sits on request with the Environmental Engineering Committee. He is a peer reviewer for the Superfund Hudson River Ecological Risk Assessment and for the Engineering Performance Standards. He also recently completed peer review for the Housatonic River Ecological Risk Assessment. Mr. Thompson's recent sources of funding have included private west-coast industries, ports, and municipalities that are required to conduct Superfund Remedial Investigations and Feasibility Studies. In addition, he has a contract with the Electric Power Research Institute. His recent contract experience includes both industry and federal/state agencies, ranging from large multi-national oil firms to the U.S. Navy and the Corps of Engineers. Mr. Thompson has numerous publications on ecological risk assessment, contaminated sediment management, and sediment capping techniques.

van Heerden, Ivor**Louisiana State University Hurricane Center**

Dr. Ivor L. van Heerden is the Director of the Center for the Study of Public Health Impacts of Hurricanes at Louisiana State University. In addition, he is Associate Professor in the Department of Civil and Environmental Engineering and Deputy Director of the LSU Hurricane Center. He received his B. Sc. from the University of Natal in South African, his M.S. and a Ph.D. in Marine Sciences from Louisiana State University. In 1994 Dr van Heerden was appointed by the Governor of Louisiana to manage the state's coastal restoration program as the Assistant Secretary of the Department of Natural Resources. His appointment reflected his development of a multifaceted large-scale restoration plan for the State. One of the aspects of this position was that he had to ensure the transfer of technology and ideas from academia to state and federal agencies involved in restoration and to local government. During his tenure he gave hundreds of talks from White Staff to isolated bayou communities on the need to have large-scale restoration projects that mimic the natural environment. Dr van Heerden has worked with many communities on flooding problems and in the central part of the state (Atchafalaya Basin) help the locals organize a flood committee to be able to more strongly present their case to Congress in Washington D.C. He and his team designed the flood management plans this group eventually got funded. Subsequently, members of this team were retained by the US Army Corps of Engineers to develop a flood management plan for the Atchafalaya River. Dr van Heerden also assembled a multi campus and consulting company team to undertake a series of studies for the Barataria-Terrebonne National Estuary Program. In southern Africa he has, since 1984, been involved in management of the greater St Lucia Wetland complex, Africa's largest estuary – a World Heritage Site. Dr van Heerden helped found the LSU Hurricane Center and recently received a grant from the Louisiana Board of Regents, Millennium Trust Health Excellence Fund, to establish a Center for the Study of the Public Health Impacts of Hurricanes. As Director of this new Center he is the lead Principal Investigator (PI) of a five-year pilot study focusing on the greater New Orleans metropolitan area. Dr van Heerden collaborates with sixteen PIs from the LSU Campus in Baton Rouge, LSU Health Science Center in New Orleans and University of Notre Dame. Additionally, he consults with Advisory Board members on the New Orleans public health project, including Federal Emergency Management Agency, Center for Disease Control, EPA, LA Office of Emergency Preparedness; Governor's Office of Coastal Activities; Department of Health and Hospitals; Office of Public Health; Office of Mental Health; Department of Environmental Quality; LSU Health Sciences Center; East Baton Rouge Parish Animal Control; and New Orleans Sewerage and Water Board. He presently teaches a freshman introductory course concerning Disaster Science and Management and two graduate seminar courses.

Winstanley, Derek**IL Department of Natural Resources and University of Illinois (Champaign)**

Dr. Derek Winstanley is presently Chief of the Illinois State Water Survey, IL Department of Natural Resources, and Adjunct Professor, Dept of Geography, University of Illinois at Champaign. Dr. Winstanley received his B.A. in Geography from Oxford University (1966), his M.A. in Geography from Oxford University, (1970), and his doctorate in climatology from Oxford University (1970). His expertise is in nutrient cycling; hydrology; climatology; water quality; and water supply planning. Dr. Winstanley has served on a Blue Ribbon Panel on A

National Digital Library for the Physical Sciences for the Nat'l Academy of Sciences, the Illinois River Science Advisory Committee; the Illinois State Water Plan Task Force; the Illinois Drought Task Force; and the University of Illinois at Chicago Institute for Environmental Science and Policy Advisory Committee. He is a member of the American Geophysical Union and the American Meteorological Society.

Wiseman, William

National Science Foundation

Dr. William Wiseman currently serves as a Program Officer for the Arctic Natural Sciences program of the Office of Polar Programs at the National Science Foundation. The Office of Polar Programs is a broad program covering areas as diverse as glaciology, oceanography, soil microbiology, and space weather. His educational background includes B.S.E.E. and M.S.E. degrees in electrical engineering from The Johns Hopkins University and M.A. and Ph.D. degrees, with specialization in coastal physical oceanography, from the same institution. His areas of expertise include coastal and estuarine physical oceanography with significant interdisciplinary background in sediment transport and biological oceanography. He spent two years on the faculty of the University of New Hampshire before moving to Louisiana State University in 1971. For nearly three decades, he has studied the physics of the Mississippi River outflow, the resultant coastal transport processes, and how these influence the seasonal hypoxia along the Mississippi, Louisiana, and Texas coasts. This work was supported most recently by NOAA and the Minerals Management Service. He has served as chair of the Department of Oceanography and Coastal Sciences, the Department of Geology and Geophysics, and director of the Coastal Studies Institute - all at Louisiana State University. His previous service on advisory committees and professional societies includes service on numerous federal panels providing advice on oceanographic proposals, service on the National Research Council's Ocean Studies Board's panel on coastal eutrophication, advisory committees to the State of Louisiana and NOAA concerning hypoxia in the Gulf of Mexico, service of science advisory panels of Minerals Management Service projects in the Gulf of Mexico, service on the interagency working group on the Bering Sea Ecosystem Study, and service as vice-chair and chair of the Baton Rouge section of the Institute of Electrical and Electronics Engineers.

Wright, L. Donelson

Virginia Institute of Marine Science, College of William and Mary

Dr. Lynn Donelson Wright is Chancellor Professor of Marine Science in the School of Marine Science, Virginia Institute of Marine Science, College of William and Mary. He served as Dean of the School of Marine Science and Director of the Virginia Institute of Marine Science from 1996 until August of 2004. Prior to 1982, he was on the faculties at the University of Sydney, Australia and at Louisiana State University. His degrees are: B.A. in geology from the University of Miami (1965); M.A. in geomorphology from the University of Sydney (1967); and PhD from the Coastal Studies Institute, Louisiana State University (1970). He is an honorary fellow of the University of Wales, Bangor (U.K.) and is a Southeastern Universities Research Association (SURA) Fellow for Coastal Research. His recent and ongoing research has been supported largely by the National Science Foundation and the Office of Naval Research. This research is largely focused on: bottom boundary layer and sediment transport processes operating in the coastal ocean and adjoining estuaries; on the cross-shelf flux of particles; on the morphodynamics of the inner continental shelf; river-mouth and estuarine processes including

the roles of positive and negative buoyancy; on the complex interrelationships among numerous physical and biological processes near the sea floor; and on the morphodynamics of deltaic coasts and shelves. He is also involved in promoting and implementing coastal aspects of Integrated Ocean Observing System. The research is interdisciplinary and involves elements of physical, geological, and biological oceanography and has direct engineering and environmental applications.

Wu, JunJie

Oregon State University Resource and Rural Economics

Dr. JunJie Wu is the E. N. Castle Professor of Resource and Rural Economics at Oregon State University. He is currently a member of the editorial council of the Journal of Environmental Economics and Management and an associate editor of American Journal of Agricultural Economics. He received his Ph.D. from the University of Connecticut in 1992. Dr. Wu's research areas include optimal design of environmental and conservation policy, interactions between agricultural production and water quality, land use economics and policy, and rural-urban interface. He has studied a variety of policy issues related to agricultural production, resource conservation, and environmental management at the national, state and local levels. His recent projects include optimal allocation of conservation funds in the presence of threshold effects and ecosystem linkages; optimal design of conservation payments under asymmetric information; the slippage effect of conservation programs; environmental and distributional impacts of alternative conservation targeting strategies; mandatory versus voluntary environmental regulations; the impacts of farm policies on agricultural production and water quality; relative efficiency of alternative policy instruments to reduce nonpoint-source water pollution; dynamic interactions between urban development, land use regulations, and municipal structure; and natural resource endowments and economic development in rural America. Dr. Wu has received several awards for quality research, including the 2002 American Agricultural Economics Association Quality of Research Discovery Award and the 2004 Western Agricultural Economics Association Outstanding Published Research Award. He has recently received funding from several sources, including the EPA and U.S. Department of Agriculture.