

Mark R. Adamski, PG is a Technical Specialist with BP America in Houston, Texas where he supports projects both in the US and globally. He has worked for BP America since 1993. In his position, he directs both BP and American Petroleum Institute (API) research in the occurrence and behaviour of LNAPL in the subsurface. He has conducted site assessments, analyzed, and modeled LNAPL distribution and recovery at BP sites worldwide. As a result of this experience, he has presented at conferences, seminars, and workshops internationally since 2000. He has been involved with the development of landmark regulatory LNAPL guidance documents developed by the State of Texas, ITRC, and the US EPA. His primary areas of current LNAPL study are site characterization techniques, residual saturation, plume migration, and recovery techniques. Mark has worked in modeling fluid migration in porous media throughout his career with BP. Mark has been an ITRC LNAPL team member since 2007. He earned a bachelor's degree in Geological Engineering from the University of Arizona in Tucson, Arizona in 1987 and a master's degree in Hydrogeology from Texas A&M University College Station, Texas in 1993. Mark is a registered professional geologist in Texas.

Rick Ahlers is a Principal Engineer with ARCADIS, located in Carlsbad, California. Since 2002, Rick has worked for ARCADIS specializing in characterization, cleanup, and closure of NAPL sites. He has been responsible for development of NAPL conceptual site models using a diverse set of innovative and traditional investigation and data evaluation techniques. Using the LCSM, he has engineered remedial systems for cleanup of NAPL, soil vapor and groundwater, demonstrated progress toward remedial goals, and negotiated NAPL site closure. Rick is the NAPL sub-discipline leader for the ARCADIS Technical Knowledge and Innovation network. Prior to ARCADIS, he worked for 8 years at Lawrence Berkeley National Laboratory characterizing and modeling multi-phase flow in porous and fractured media. Rick has been active in the Interstate Technology and Regulatory Council (ITRC) since 2006 most recently as a member of the LNAPL team. Rick has a master's degree in Civil Engineering from the University of California, Berkeley and is a California Registered Civil Engineer.

Saud S. AL-Oud has a Ph.D. in Soil Environmental Chemistry. He is Associate Professor in the Soil Sciences Department, King Saud University. His main research interest includes: Phases and components of the soil-water-plant stem, behavior of elements added to soils from wastes and contaminants, and treatment techniques for the remediation of heavy metal contaminated soils. He works as an environmental consultant for mining firms in Saudi Arabia as well as a consulate for water municipal of Qassim region of Saudi Arabia.

Gary Andersen is the Group Leader for Molecular Microbial Ecology within the Earth Sciences Division of Lawrence Berkeley National Laboratory. His expertise is in microbial ecology with an emphasis on the natural distribution of bacteria in the environment, comparative genomics, and biotechnology. He has worked on developing high-density microarray systems for the detection and characterization of microbial communities and natural distribution of pathogens in the environment. With over 60

peer-reviewed articles in high impact scientific journals, Dr. Andersen is an international expert on the use of microarray technology for microbial applications. He has designed and developed microarray systems for the comprehensive identification of all known bacteria and archaea from environmental samples, bacterial expression (including *Caulobacter* spp. and *Dehalococcoides* spp.) and for forensic applications. His Berkeley PhyloChip recently won the R&D 100 Award and the Wall Street Journal Technology Innovation of 2008 award. He is also a leader in the development of hierarchical databases for microbial taxonomy including the Greengenes database and workbench compatible with ARB. This online resource (<http://greengenes.lbl.gov>) has become the worldwide standard for researchers in choosing phylogenetically specific probes, interpreting microarray results, as well as aligning and annotating novel sequences. Current research projects include the characterization of atmospheric bacteria as well as microbial source tracking in California beaches and bioremediation of oil.

Lisa Auchincloss is a PhD Candidate in the Plant Biology Graduate Group at UC Davis. She studies plant ecophysiology with the Richards' Lab Group in the Land Air Water Resources Department. Her dissertation research includes investigations on the effects of inundation on *Populus fremontii* seedlings and the effects of elevated carbon dioxide on nitrogen nutrition in *P. fremontii*. She is also involved in projects investigating pre-dawn stomatal opening and the examination of candidate genes for drought resistance in *Arabidopsis thaliana*. Prior to entering graduate school, Ms. Auchincloss attended Colorado College in Colorado Springs where she graduated *magna cum laude* with a B.A. in Science majoring in Biology. Her thesis work in college investigated seed viability and germinability of 7 high-alpine species used to restore alpine disturbances. During college, she was employed by the Colorado Fourteeners Initiative as a restoration intern and remains interested and involved in local restoration efforts around Davis CA.

Walter Bahm works for the State Water Resources Control Board, Underground Cleanup Fund (CUF) in the 5-year Review Unit. This unit reviews and recommends CUF-LUST sites for site closure, or further corrective action. He has a Bachelor of Science degree from UCLA in engineering and is a registered professional engineer in California. He previously worked with corrective action projects at DOE sites, industrial sites and other RCRA activities at the Department of Toxic Substances Control (DTSC).

Chris Balouet is environmental expert specialized in environmental forensics, site assessment, contaminant release, transport, fate, impacts and control in air, soil and water. He is managing director of Environment International, a company he established in 1993. He served for seven years the United Nations Environment Program, Division for Industry, Technology and Economics as consultant ; as well as international research organizations as a research scientist for eight years.

Chris Balouet has developed and lead research programs ; served major industrial companies worldwide as environmental consultant , chaired and served new industry standards ; served as expert in different environmental diagnostics, investigations, legal

cases at international level. He authored 96 publications, and keeps teaching environment in universities. His international experience is multidisciplinary, from regulatory or standard compliance to establishing / evaluating scientific chemical, biological, physical or historical evidence, from local to global standpoints.

Chris BALOUET has developed, over recent years, the use of dendroecology in environmental forensics. He has worked on 42 sites, 150 trees (43 species) for fingerprinting, characterizing and age-dating pollutants releases (see short bibliography below).

Negar Banan has an MSc degree in Environmental Assessment and Monitoring in University Kebangsaan Malaysia and a BSc in Environmental Science University of Arsanjan, Iran. Author for more than 35 conference papers. She is a member of Atmospheric Chemistry and Air Pollution Research Group, Malaysia, Professional Society of Environmental Engineers of Iran, Professional Society of Environment Impact Assessment (EIA) of Iran, Younger Researchers Club, University Arsanjan (Private), Iran.

Jason J. Beaudin, P.Eng., M.Sc. is a Senior Engineering Manager at Ground Effects Environmental Services, Inc. He is a registered Professional Engineer in the province of Saskatchewan, Canada and holds an M.Sc. degree in Environmental Management from Royal Roads University in Victoria, British Columbia. His background is in the environmental engineering and has been actively involved in in-situ remediation design, fabrication and implementation at a wide diversity of sites and a broad range of contaminants while working with Ground Effects Environmental over the past 10 years.

Dave Becker is a geologist with the Environmental and Munitions Center of Expertise (EM CX) of the US Army Corps of Engineers (USACE) in Omaha, Nebraska. Since coming to the EM CX in 1991, Dave has been involved with providing technical consultation, teaching, review of environmental restoration-related documents, and preparation of guidance relevant to field studies and *in-situ* remediation. He has strong interests in optimization of remediation systems and long-term monitoring programs, site characterization techniques, and *in-situ* remediation technologies. Before coming to the EMCX in 1991, Dave was Chief, Geology Section at the USACE Omaha District 1989-1990. For five years prior to becoming a supervisor, Dave was a project geologist in Omaha District actively involved in many environmental restoration projects. Dave is also an adjunct professor of geology at the University of Nebraska at Omaha where he has taught hydrogeology and environmental geology for the past ten years. Dave earned a bachelor's degree in geology from the University of Nebraska at Omaha in 1981 and a master's degree in geophysics from Southern Methodist University in Dallas, Texas in 1985. He is a registered professional geologist in Nebraska.

Federica Belloro: Since graduating (December 2004) with a thesis on the mathematical modelling for the solid transport shore line, Ms. Belloro has been involved in environmental engineering problems with specific reference to contaminated site management and soil remediation. She took specialized courses in environmental

management and underground contaminant transport modelling. Since 2005 Ms. Belloro was involved and took the responsibility on several site remediation projects. In particular, Ms. Belloro has been involved in: management of contaminated sites, site investigations, risk analysis, design of remediation (biological treatment, underground barriers, surficial capping and other safety measures, groundwater treatment) and supervision of remediation operations. Since 2007 Ms Belloro has been involved, as technical consultant, in a working group, in the litigation between past and present owners of aluminium plants, with specific reference to environmental issues (soil and groundwater contamination and related liabilities). Since 2007 Ms. Belloro has been involved in a large project for the Beijing Environmental Protection Bureau, where she took the responsibility of the development of a proposed set of threshold level concentrations to be incorporated in incoming regulation for contaminated sites by BEPB; she was also deep involved in the site assessment investigation and risk analysis for the BCCW dismissed coking plant, for which she especially contributed to the investigation planning and to the interpretation of the investigation results as well as to remediation design. Since September 2009 has been involved in the Project “Technical Support for Contaminated Site and Soil Remediation Management”, which scope is to provide technical support to the Ministry of Environmental Protection of the People Republic of China in the development of the national regulatory framework. In the activity on contaminated sites, Ms Belloro has devoted much attention to the problems of vapours from soil and groundwater, with specific reference to: modelling of vapor fluxes, perform vapor measurements, design safety measures to prevent vapor intrusion.

Jerzy Bilski got his Ph.D. degree from the Warsaw University of Life Sciences in Poland. His research in Ph.D. program focused on plant responses to mineral stress caused by soil acidity and salinity. As a research associate at North Dakota State University he worked on potato varietal response to salinity in North Dakota soils. At the University of Florida, research station in Lake Alfred he worked on plant adaptation to growth media containing coal ash. At North Dakota State University he worked as educational specialist for North Dakota IDeA Network for Biomedical Research Excellence Program. After joining Valley City State University in North Dakota, he continues research focusing on environmental health. His research is supported by National Institutes of Health INBRE grant “Environmental health aspects of coal fly ash utilization as a medium for plants”. He co-authored two book chapters, more than forty research papers, and more than fifty abstracts.

Chad Bird is a Project Engineer with Geosyntec Consultants in San Diego, California. Mr. Bird has 10 years of environmental experience with remediation projects utilizing various treatment strategies, including soil vapor extraction, dual-phase extraction, pump and treat with granular activated carbon, permeable reactive barriers, and bioaugmentation. He has project management and direct field experience in site characterization, engineering cost evaluations, remedy selection, implementation, operation and maintenance, and performance monitoring. Mr. Bird also has significant geotechnical experience, including providing construction quality assurance services and documentation.

Boutaina Bouzouf is a Master candidate in Environmental Engineering at Concordia University at Montreal. She also has M.S. degree in Hydraulic. She has over 3 years of experience as a Hydraulic expert for SWIM project financed by American Agency for Development and over 5 years of research in mathematical modeling saltwater intrusion problem. Boutaina has published one scientific article and eight technical papers in conference. Recently, she is registered as member of The Corporation of the Seven Wardens Inc for Engineer.

Mark Bowland is an REA II with 17 years experience in complex, multi-pathway deterministic/probabilistic risk assessments/risk based remedial action objectives, site investigation, risk communication, toxicology, fate/transport modeling, litigation support and regulatory support to public, private and military clients. His hazardous constituents experience includes metals, VOCs, SVOCs, PCBs, dioxins, PAHs, pesticides, radionuclides, asbestos, and petroleum at CERCLA, private, schools, Brownfields, Voluntary Cleanup & RCRA sites in the U.S., U.K., Europe and Hong Kong. His role in application of strategic sampling, tiered/advanced risk assessment tools integrating geostatistical applications has resulted in cleanup levels significantly reducing soil volumes requiring mitigation while achieving regulatory health protection standards.

Samuel L Brock, DVM, MPH is the Air Force Subject Matter Expert for environmental risk assessment and toxicology. In this capacity, Dr. Brock is responsible for providing technical consultation to the field, determining functional requirements for risk reduction, and developing educational and training programs. He has represented the Air Force on working groups developing National and DOD guidance on remediation risk management, vapor intrusion and bioavailability of contaminants in soil and sediments. Dr. Brock currently leads The AFCEE Emerging Issues Strategy Development and as a subject matter expert to DoD Materials of Emerging Regulatory Interest (MERIT) working groups and Military Family Housing Privatization Initiative activities addressing pesticides in soil. Dr Brock is responsible for developing Air Force criteria and implementing guidance for a wide range of technical development, implementation, interpretation and problem resolution concerning environmental risk assessment.

David Cameron is a Vice President in City National Bank's Middle Market Banking Group based in the Greater Los Angeles area. David started with City National in 2005 as an Associate Business Development Officer, and grew into his role today as a Senior Relationship Manager. David manages a portfolio of middle market companies with revenues ranging from \$10,000,000-\$250,000,000. Working closely with Corporate CEO's and CFO's in strategizing business direction, opportunity and meeting financial goals, David's clients continue to do well in the ever changing Economy. David is a 4th generation Southern California resident and has worked on numerous green projects in the Southern California area.

Dan Carr is a Principal and Vice President of Sanborn Head and Associates Inc. He holds a M.S. Degree from the Groundwater Program in the Department of Civil Engineering at Colorado State University. He is a registered professional engineer and geologist with nearly 30 years of professional experience and has led multiple vapor

intrusion projects involving residential, commercial, institutional, and industrial buildings. He served as the principal investigator for the Endicott Groundwater Vapor Project in New York and as a consultant on the Pompton Lakes site in New Jersey.

Richard T. Cartwright PE, CHMM*, CPIM* is a Senior Vice President of MEC^X, LP (pronounced M-E-C-X), an innovative technology-driven company dedicated to providing cost-effective, unique “outside the box” solutions to difficult environmental remediation, professional engineering, and chemistry data validation problems. He has an MBA in Operations Management from Indiana University, a BES in Chemical Engineering from Brigham Young University, and a Professional Certificate in Project Management from the State University of New York at Buffalo. Mr. Cartwright is an internationally recognized motivational platform speaker on the Soil & Groundwater Remediation, Hazardous Materials Management, Professional Networking, and Career Planning Strategies. He is a Past President of the Academy of Certified Hazardous Materials Managers (now the Alliance of Hazardous Materials Professionals). He is a recipient of the prestigious “Pete Cook Founders Award” for distinguished lifetime leadership, dedicated service, and professional achievement within the hazardous materials management profession. He is a “Fellow” of the Institute of Hazardous Materials Management. Mr. Cartwright is the author of a repeatedly requested “Career Planning & Survival Guide”.

Jeffery L. Caufield, Caufield & James LLP. Jeffery L. Caufield is a foundation partner of Caufield & James LLP, a Southern California law firm specializing in environmental litigation and compliance issues. Prior to becoming an attorney, Mr. Caufield worked as an environmental consultant and received his undergraduate degree in Environmental Studies from the University of California, Santa Barbara. Mr. Caufield frequently lectures on environmental issues nationally and internationally.

Gwen Caviness is a Senior Manager with ENVIRON. She has 20 years of professional experience in the environmental field. Ms. Caviness has worked on all aspects of human health risk assessments including evaluating analytical data, performing exposure analyses, evaluating toxicity information, and estimating cancer risks and noncancer hazards from exposure to contaminated media. Her work has included managing and conducting risk assessments for numerous CERCLA, RCRA and other hazardous waste sites involving the evaluation of human health risks from exposure to multiple chemicals (including PAHs, TPH, dioxins, PCBs, solvents, and metals) detected in soil, sediment, air, groundwater, and surface water. Sites evaluated have included waste disposal sites, mining operations, research laboratory facilities, chemical manufacturing facilities, manufactured gas plants, and active and closing military facilities. She has also performed numerous risk assessments under CEQA and California’s Proposition 65. Her Proposition 65 experience includes evaluation of consumer products, workplace exposures, and facility air emissions. She has worked with numerous state and federal agencies and has provided technical risk assessment support for clients at client/agency meetings and negotiations. Ms. Caviness received her Master of Public Health (M.P.H.) in Environmental Health from Boston University and her Bachelors of Science from Tufts University.

Arnab Chakrabarti is a senior engineer with Geosyntec Consultants. He has a decade of experience in a variety of environmental investigation and remediation projects specializing in agricultural sites, federal superfund sites, and landfill leachate management. Arnab has a B.S.E. in Chemical Engineering from the University of Michigan and a M.S. in Environmental Engineering from the University of California, Berkeley. He is a registered civil engineer in California.

Jing Song Chang is a Professor in the Department of Environmental Engineering and Science at Chia Nan University of Pharmacy and Science in Tainan, Taiwan. Dr. Chang used to work as engineer in the Taiwan Water Supply Corporation for 5 years. He has served as chair of the department for 9 years and as dean of the office of research and development for 12 years in the university. He also served as the leader of the analytical center of the occupational health and hygiene. He is also directing the wastewater and solid waste training program which authorized by EPA for more than 20 years. Dr. Chang's researches focus on water and wastewater treatment and soil quality. He has directed more than 20 research projects. He has published more than 50 scientific papers. Dr. Chang has a B.E. degree in Civil Engineering (1978) from the National Cheng Kung University, Taiwan, M.E. (1985) and Ph.D. (1989) in Environmental Engineering from Asia Institute of Technology, Thailand. In addition he has been trained as an Environmental Professional Engineer which licensed by the government.

Ning-Wu Chang is a Senior Hazardous Substances Engineer with the Department of Toxic Substances Control of California Environmental Protection Agency. He is a licensed Civil Engineer in California and is currently the team leader for the ITRC's Remediation Risk Management Team. He received his Ph.D. degree in environmental engineering from the University of North Carolina at Chapel Hill. Prior to joining the State, Dr. Chang has worked for private consultant companies for more than 15 years on various projects involved with soil and groundwater remedial investigation/remediation system evaluation and design, landfill leachate treatment system evaluation and design, municipal and industrial water and wastewater treatment system evaluation and design, industrial waste minimization, and permitting and compliance.

Paul Cho, P.G. currently works for State of California Regional Water Quality Control Board, Los Angeles Region since 1989 after his MS degree in Geology from the University of Southern California. His regulatory work experience involves solid waste disposal facilities construction, closure and environmental programs, and environmental enforcement for oil refineries. Paul has been involved with the Solid Waste Assessment Test Program management, RCRA EI Program with the US EPA, and Los Angeles LNAPL Project with the Western States Petroleum Association.

Henrik V J Christensen has more than 20 years of experience in the consulting industry, primarily in interdisciplinary environmental project management, Environmental Assessments, Environmental Impact Statements, agency coordination, and various

environmental document preparations. In southern Nevada his experience has included managing interdisciplinary teams, preparation of technical studies and reports, and agency consultation for a broad variety of projects and clients including electric generating utilities, gas utilities, the transportation sector, and a variety of private clients. With a solid understanding of the environmental process, Mr. Christensen has effectively coordinated both private and public project efforts with municipal, county, state, and federal agencies to facilitate successful project completion. During his career, he has been involved in several electric generating siting studies and the preparation of several NEPA documents for power, airport and mining projects.

Richard Christensen, LPG, PhD is a Senior Project Manager/Hydrogeologist at Acuity Environmental Solutions (AcuityES) located in Fishers, Indiana and an Adjunct Professor at Excelsior College, Albany, NY. He obtained his Bachelor of Science in Geology from Grand Valley State College in 1984, his Master of Science in Hydrogeology from Western Michigan University in 1987, and his Ph.D. in Science Technology and Society (STS) from the Union Institute and University in 2004. He is a Licensed Professional Geologist in the state of Indiana. Mr. Christensen's professional expertise includes hydrogeology, environmental site characterization and remediation, and litigation support. He is currently finishing the successful soil and groundwater remediation of a site impacted with hexavalent chromium using a nano-scale iron sulfide based *in situ* chemical reductive technology. Mr. Christensen can be contacted at the AcuityES website, www.acuityes.com.

Kristin K. Clark, is currently a Ph.D. candidate of Environmental Science and Management at University of California, Santa Barbara. Her research emphasis is remediation of pesticides, PAHs, and groundwater contaminants—e.g. perchlorate—with nano-iron surfactant micelle arrays. She has a MS in Chemistry from California State University, Long Beach. During her master's degree she worked at the Radiation Laboratory at the University of Notre Dame to study the kinetic rates of destruction of chemical warfare agents and pesticides, in particular malathion. In addition she has interned at the DOD Edgewood Chemical and Biological Center, Forensic Analytical Center, and Geosyntec Consultants.

John D. Coates is a Professor of Microbiology at University of California, Berkeley. He also holds a joint appointment as a Geological Scientist Faculty in the Earth Sciences Division at the Lawrence Berkeley National Laboratories and is co-director of the Energy Biosciences Institute *Microbial Enhanced Hydrocarbon Recovery* (MEHR) program. He is co-founder and Board Member of *BioInsite LLC* a company geared towards the use of microorganisms for solutions to environmental contaminant problems. He obtained an Honors B.Sc. in Biotechnology in 1986 from Dublin City University, Ireland and his Ph.D. in Microbiology in 1991 from University College Galway, Ireland. His major area of interest is geomicrobiology applied to environmental problems. Specific interests include diverse forms of anaerobic microbial metabolism such as microbial perchlorate reduction, microbial iron oxidation and reduction, and microbial humic substances redox cycles. Other interests include alternative renewable energies, bioremediation of toxic metals, radionuclides, and organics. He has won

several awards for research and mentorship including the *1998 Oak Ridge Ralph E. Powe Young Faculty Enhancement Award*, the *2001 DOD SERDP Program Project of the Year* award, and the *2002 SIUC College of Science Researcher of the Year Award*. He has given more than 100 invited presentations at national and international meetings. He has authored and co-authored more than 100 peer-reviewed publications and book chapters. He has published one book and has 9 patent submissions based on technologies developed in his lab several of which are in commercial application. He sits on the editorial boards of the journals *Frontiers in Microbiology*, *Applied and Environmental Microbiology*, and *Applied Microbiology and Biotechnology*. He is an editorial scientist for the *Faculty 1000* review database and is a member of the *American Society for Microbiology*, the *American Chemical Society*, the *American Geophysical Union*, and the *International Humic Substances Society*. In addition to his traditional teaching at UC Berkeley, Dr. Coates is continuously involved in various outreach programs supporting education of high school and community college students. He has mentored several high school students and science projects in his laboratory and was the recent recipient of the University of California Berkeley Summer Research Opportunity Program Recognition award for mentorship.

Jeff Cochran Ph.D., P.E. currently works for the Birmingham Water Works Board in Birmingham, Alabama. He holds the title of Senior Engineer and has focused primarily on optimizing the BWWB's four drinking water filter plants for the past 6 years through the use of their mobile pilot plant facility. He received his Ph.D. in Environmental Health Engineering from the University of Alabama at Birmingham where he is also a professor in the Civil, Construction, and Environmental Engineering Department.

Helder J. Costa holds a B.A. in Chemistry from Boston University and an M.S. in Chemistry from San Diego State University. He has more than 25 years professional experience in environmental investigation, including forensic interpretation. He has applied innovative approaches involving compositional analysis of petroleum hydrocarbons, PAHs, and PCBs on many remedial investigations for manufactured gas plant, creosote wood-treating, PCB, and petroleum sites. He is a Vice President with Haley and Aldrich, based in Boston, Massachusetts.

Lansana Coulibaly is licensed Professional Engineer in California, and works as a contracted Remedial Technical Manager with Salient Federal Solutions at the Navy Base Realignment and Closure Program Management Office. He has over 12 years of experience in the environmental field, primarily on CERCLA investigation, and remedial design projects at various west coast naval facilities. He received a B.S. in Water Resources Management from Central State University in 1991, a M.S. in Civil Engineering from Clemson University in 1994 and his Ph.D. in Civil Engineering from New Jersey Institute of Technology in 2000.

Gary Cronk, P.E., CHMM, is the President of JAG Consulting Group, Inc., a small company in Santa Ana, CA that specializes in providing services for the design and implementation of in-situ chemical oxidation (ISCO). Mr. Cronk has experience in design and implementation of over 45 ISCO projects in California and other states. To

date, Mr. Cronk has been successful in attaining No Further Action requirements for five sites using ISCO technology. Mr. Cronk is a California Registered Professional Engineer, a California Certified Hazardous Substances Removal and Remedial Actions Contractor (A-HAZ), a Class A General Engineering Contractor, and a Certified Hazardous Materials Manager (CHMM). He holds a Masters degree in Biological Sciences from Cal State Fullerton. He is a frequent speaker at conferences and seminars on in-situ chemical oxidation and other in-situ technologies.

Howard Cumberland is Principal with Geosyntec Consultants and is a marine scientist with 21 years of environmental consulting experience. He specializes in remedial planning and negotiation strategies as well as developing and implementing remedial investigation, design, and restoration solutions associated with contaminated sediments and waterfront development activities. Howard focuses on waterfront properties, providing strategic consulting services to investigate, design and permit nearshore in-water activities such as contaminated sediment investigation and remediation, and redevelopment at Port Authorities. He has a comprehensive understanding of the ecological impacts from sediment contamination and the numerous state and federal regulatory programs that govern dredged material and contaminated sediments projects. Mr. Cumberland has managed, designed, and conducted remedial investigations, feasibility studies, the associated removal actions, and removal action monitoring for a variety of industrial clients throughout the United States, in Mexico, Guam, and Australia.

Robin Davis is a Licensed Professional Geologist and Project Manager with the Utah Department of Environmental Quality, Leaking Underground Storage Tank program. She has over 30 years of professional experience and specializes in fate and transport of petroleum hydrocarbons and data acquisition and analysis, most recently for the vapor-intrusion exposure pathway.

Helen Dawson is the Chief of Science Policy Branch in EPA's Office of Superfund Remediation and Technology Innovation. She previously served as the Regional Hydrogeologist for the Superfund Program in Region VIII, US EPA. Prior to joining the US EPA, Helen worked for eight years as a professor of Environmental Science and Engineering at the Colorado School of Mines, seven years as a consultant and expert witness to private industry, and five years as a geochemist. Helen has a B.S. in Geology from Stanford University, an M.S. in Geochemistry from the Colorado School of Mines, and a Ph.D. in Environmental Engineering from Stanford University.

Tony DeAngelo is a Research Toxicologist with the National Health and Environment Effects Research Laboratory, Office of Research & Development, US Environmental Protection Agency. His research has centered on identifying carcinogenic hazards and mechanisms of drinking water disinfection by-products. Recently, he extended his studies to complex mixtures of by-products resulting from the use of the various disinfectants. He received a PhD from the University of Illinois-Champaign-Urbana.

James G. Derouin has an undergraduate degree in Economics and received his law degree from the University of Wisconsin Law School in 1968. Derouin has practiced environmental defense law for more than forty years and has delivered more than fifty lectures nationwide on environmental issues including a presentation at the Institute of Politics, J. F. Kennedy School of Government, Harvard University. He was appointed by EPA Administrator, Christine Todd Whitman, to the Superfund Committee of EPA's National Advisory Council for Environmental Policy and Technology in 2002. He was also appointed by the Department of Health & Human Services Secretary, Tommy Thompson, to the Centers for Disease Control Board of Scientific Counselors in 2003. He was recently selected by his peers in the Arizona Bar as Environmental Lawyer of the Year for 2011. Derouin is currently Of Counsel with the Phoenix law firm of Gallagher & Kennedy.

George DeVaul is a Senior Consultant at Shell Global Solutions in Houston. His work includes development and application of risk assessment and chemical fate and transport methods applicable in site assessment and remediation.

James Dragun, Ph.D. is a soil chemist with extensive experience dealing with soil investigations and remediation. He has addressed the extent, danger, and/or cleanup of chemicals at sites of national and international concern such as the oil lakes caused by the 1991 Persian Gulf War (Kuwait), VX chemical warfare agent for the U.N. Weapons Inspection Program (Iraq), malfunction of the Three Mile Island Nuclear Power Plant (USA), and dioxin in Missouri (USA). Twenty-four nations including Japan, China, Canada, the United Kingdom, Australia, Germany, Switzerland, Italy, France, Spain, Scandinavia, and the Netherlands have utilized his expertise. He founded and built an environmental engineering-science consulting company. For over 20 years, he has led a team of specialists in chemical engineering, civil engineering, environmental engineering, geotechnical engineering, mechanical engineering, physics, plant engineering, environmental science, geology, hydrogeology, chemistry, biochemistry, toxicology, and biology. Dr. Dragun and his associates have solved environmental issues for major companies and governments in six continents (Africa, Asia, Australia, Europe, North America, and South America). Dr. Dragun has been a full Professor at the University of Massachusetts and at Wayne State University, Detroit, MI. He has authored two college textbooks and co-authored/edited eight technical books. Also, Dr. Dragun has been the Editor-in-Chief of the International Journal of Soil and Sediment Contamination for over 17 years. His accomplishments are listed in Who's Who in the World, Who's Who in Science and Engineering (world compilation), and Who's Who in America. Dr. Dragun has received several honors and awards for his professional achievements and contributions to the community.

Joachim Eberharter is an environmental consultant at Tetra Tech, Inc., in Santa Barbara, California. He has 7 years of applied experience as a geologist performing field investigations, data analysis, and reporting tasks for groundwater and soil vapor projects. His focus has been in enhanced *in situ* bioremediation and soil vapor transport and vapor intrusion.

Paul Ecker is a geologist with 20 years experience as an environmental consultant and has been a partner at PNG Environmental since 2003. Paul has been the project manager responsible for coordinating the RI/FS at PECO since PNG began work at the site in 2002. He has also managed many of the technical aspects of the project in identifying candidate technologies, implementing pilot tests, and evaluating remedial systems performance. Many of Mr. Ecker's current and past projects have been conducted as part of voluntary agreements and in cooperation with regulatory agencies including the U.S. EPA, Washington Department of Ecology, and the Oregon Department of Environmental Quality.

Elsy A. Escobar, is currently a Ph.D. student of Civil and Environmental Engineering at Arizona State University. Her research emphasis is on petroleum hydrocarbon vapor intrusion. She has a BS on Chemical Engineering from Central America University (UCA), El Salvador and a MS in Environmental Engineering from Marquette University at Milwaukee, Wisconsin. Her master's degree focus was on anaerobic treatment of water and wastewater.

Robert Ettinger is an Associate in Geosyntec's Santa Barbara office, and provides technical support on risk based decision making, corrective action implementation, and subsurface fate and transport modeling. He has been studying subsurface vapor transport phenomena for environmental corrective action planning for over 20 years. The areas of his work include the development of models to predict migration of subsurface vapors to structures, the implementation of field monitoring studies to evaluate this transport pathway, and the development of risk-based corrective action strategies for chemical release sites. Mr. Ettinger has authored key papers discussing modeling vapor migration to indoor air and the evaluation of aerobic biodegradation in the vadose zone. Additionally, he has consulted on various investigation and modeling studies for gasoline retail, refinery, manufacturing, and Superfund sites.

Herbert H.P. Fang, Chair Professor of Environmental Engineering at the University of Hong Kong. He received his BSc (1965) from National Taiwan University, and MSc (1968) and PhD (1972) from University of Rochester, NY, all in Chemical Engineering. After three years of post-doctoral research at University of Illinois (Urbana-Champaign) and twelve years of process development in industry in the US, he has taught at HKU since 1987. Professor Fang is an expert in environmental biotechnologies, including renewable bioenergy production from wastes and wastewater, biofilm, bioremediation, nutrient removal, membrane separation, etc.. He has published over 170 journal articles with more than 3700 citations and an H-index of 33. Professor Fang is the recipient of several research awards, including China's most prestigious State Scientific and Technological Advancement Award (2008). He has served at the Editorial Board Member of seven international journals, and is also a visiting Professor of eleven universities in China and Taiwan.

Robert Ferry is a Managing Hydrogeologist with Brown and Caldwell with over 30 years experience in contaminant hydrogeology, water resources development, expert witness services, and program/project management. He has directed the design,

implementation, and optimization of ground water and soil remediation systems for VOCs, fuels, metals, perchlorate, nitrate, high-explosives, and radioactive isotopes. Mr. Ferry regularly consults to the U.S. DOE, U.S. Navy, and U.S. Air Force on policy and technical issues, and participated in a DOE panel to evaluate sites for potential long-term storage and disposal of mixed waste. He has been involved in numerous hazardous and radioactive waste landfill investigations, performance evaluations, and closures, and has many years of experience implementing CERCLA investigations and remedial actions. Mr. Ferry coauthored the first Monitored Natural Attenuation Record of Decision for radioactive isotopes in the DOE Complex, and is the principal developer of the Variable-Focus Colloidal Borescope to directly measure ground water flow direction and velocity and the Well Bore Treatment Column ground water remediation system.

Arthur T. Fong, PhD, is a senior scientist/toxicologist in the Corporate Environmental Affairs organization at IBM Corporation, where he is also corporate program manager for chemical management globally. His areas of professional interest and responsibility at the present include sound chemical management, green chemistry and alternatives assessment, and responsible and sustainable development of nanotechnology. Art is a member of the California Green Ribbon Science Panel, which was established by the State of California and made up of selected experts to provide advice on scientific matters, chemical policy recommendations, and implementation strategies for the California Green Chemistry Initiative, and serves on the steering committee of the United Nations Environment Programme Global Chemicals Outlook project, which aims to provide a coherent framework for assessing and setting priorities to support an integrated comprehensive chemicals policy, to stimulate further international attention and action in this field, and to promote the transition to the green and sustainable chemistry. He is involved currently in several efforts to promote green chemistry and develop green chemistry alternatives assessment tools for upstream chemical review and materials selection: member of the technical advisory committee of the Green Screen for Safer Chemicals, a chemical screening method developed by Clean Production Action to help move society quickly and effectively toward the use of greener and safer chemicals, and member of the steering and technical committee of the US EPA Flame Retardants in Printed Circuit Boards Partnership to develop information needed to advance understanding of human health and environmental impacts of conventional and alternative flame retardants that can provide fire safety for printed circuit boards. Art is chair of the Semiconductor Industry Association nanotechnology EHS subcommittee.

Stiven Foster is a Science Advisor in EPA's Office of Solid Waste and Emergency Response (OSWER), Policy Analysis and Regulatory Management Staff. He has over 15 years experience in environmental toxicology and risk assessment. Stiven specializes in the development of science policy documents and tools to support environmental risk assessment. He will be coordinating EPA's efforts to finalize vapor intrusion guidance. Mr. Foster has a B.S. in biological sciences and a M.S. in Environmental Health from Colorado State University.

Christopher Gale is a Professional Geologist registered in California with over 6 years of experience working on site characterization and remediation projects at a wide variety of sites. Mr. Gale earned his MS in Geology from San Diego State University in San Diego, California and his BS in Geology from Colorado College in Colorado Springs, Colorado. Mr. Gale specializes in utilizing multiple lines of evidence in evaluating contaminant migration.

Claudia Gallert is a senior scientist at KIT, Karlsruhe Institute of Technology in Germany. She got a PhD in microbiology and works now in the field of environmental microbiology, bioremediation, biological wastewater and waste treatment technologies. The main focus of her research is the understanding and transfer of microbiological reactions into a technical process.

Val Gardner has been with Willowstick Technologies since 2008 working to expand awareness and encourage the adoption of a unique application of sound scientific principles known as Controlled Source Audio Frequency Domain Magnetics (CSAFDM). Organizations using this technique range from regulatory agencies and large mining companies to industrial manufacturers and hydroelectric dam operators. Prior to Willowstick Technologies, Mr. Gardner worked for a variety of other technology-focused enterprises.

Sutapa Ghosal is a research scientist with the Environmental Health Laboratory Branch of California Department of Public Health, located in Richmond, CA. Her expertise is in applied analytical spectroscopy with an emphasis on the application of spectroscopy and microscopy based techniques for the characterization and identification of complex environmental samples. Her current research focuses on the development of Raman microspectroscopy based methodologies for the non-invasive characterization samples relevant to public health including biological and chemical agents as well as nanomaterials. She received her PhD in Chemistry from the University of California, Irvine and a BS in Chemistry from Columbia University, New York.

Peter Grant is the Director of Land Science Technologies (LST), a division of Regenesys, Inc. which is dedicated to providing advanced technologies for sustainable land development. One of LST's main products is Geo-Seal™, a composite gas vapor barrier management technology designed to eliminate potential indoor air quality health risks associated with vapor intrusion. Over the past six years Peter has overseen the implementation of engineered barriers on hundreds of Brownfield redevelopment sites. While overseeing the use of engineered barriers on a wide range of building types, residential, commercial and industrial, Peter has become an expert in the implementation of gas vapor barriers. Some notable redevelopment projects include the redevelopment of a 120 acre landfill for commercial use, 50 acre former industrial property for residential use, and 3 acre US Navy property for government use. In addition to understanding how to install engineered barriers, Peter has also given educational seminars about the use of gas vapor barrier systems in the United States and Europe. Some previous speaking engagements include: Short Course Instructor at the Battelle Conference for the Remediation of Chlorinated and Recalcitrant

Compounds, EPA Brownfields, USEPA, various corporations and hundreds of environmental companies. Prior to starting Land Science Technologies, Peter was the Technical Sales Manager for the West Coast Division of CETCO's Liquid Boot division. Peter holds B.S. from the University of Southern California and an MBA from the University of California, Irvine.

Kevin Graves is currently the UST Program Manager with the California State Water Resources Control Board. Mr. Graves has over 15 years of experience with groundwater investigation and remediation. He received a Bachelors degree from UC Santa Barbara in mechanical engineering and a Masters degree from California State University Sacramento in civil engineering and is a registered Professional Engineer in both civil and mechanical engineering.

Douglas W. Grosse has a B.A. in English Literature from Ohio University and an M.S. in Environmental Engineering from the University of Cincinnati. He has worked as an Environmental Engineer at the U.S. Environmental Protection Agency (EPA) in Cincinnati, Ohio for the past 32 years. Mr. Grosse is currently working in EPA's National Risk Management Research Laboratory (NRMRL) as a Senior Environmental Engineer. Past experiences have included: in-house research at EPA's pilot plant facilities in wastewater and hazardous waste research; pilot facility manger and project officer (Center Hill Laboratory); Superfund Innovative Technology Evaluation (SITE) Program; RCRA corrective action coordinator and technical assistance in Superfund, RCRA and treatability study assistance, as an aqueous treatment specialist, Acting Branch chief, Technology Transfer Branch, and ETV/AMS Center PO. Currently, Mr. Grosse is working in the Remediation and Redevelopment Branch and Engineering Technical Support Center, as a specialist in site remediation and technology transfer.

Lynne Haroun is a Principal Consultant in the Health Sciences Practice at ENVIRON International Corporation. She has over 25 years of experience in the environmental arena, with emphasis on human health exposure and risk assessment, strategic planning, and regulatory support. She has performed numerous risk assessments under California's Proposition 65, including evaluations of consumer products, workplace exposures, and ambient environmental exposures. In the field of Site Assessment, she has managed or performed human health risk assessments at over 200 hazardous waste sites in California and other areas of the U.S. She has also provided expert witness support on a range of litigation cases, with emphasis on exposure and dose reconstruction. Ms. Haroun worked within the Monographs Program at the International Agency for Research on Cancer (IARC) in Lyon, France. She has an MPH in Environmental Health Sciences from the University of California, Berkeley, and a degree in chemistry from the University of Rochester.

Karla J. Harre, PE is the branch manager for the Technology Applications Branch in the Environmental Restoration Division at the Naval Facilities Engineering Service Center. Her team provides assistance to Navy remedial project managers with technical challenges, disseminates information on innovative technologies, optimizes planned and existing remedies, and seeks to integrate green and sustainable

remediation approaches into the cleanup process. Karla has B.E. in Civil and Environmental Engineering from Vanderbilt University and a MBA from Pepperdine University.

Blayne Hartman received his Ph.D. in geochemistry from the University of Southern California. He co-founded H&P Mobile GeoChemistry, a business partnership offering on-site laboratory analysis, direct push environmental sampling, soil vapor surveys, and vapor intrusion services, and is currently an independent consultant offering vapor intrusion and soil gas support. Dr. Hartman is a nationally recognized expert on soil vapor sampling, soil vapor analysis, and vapor intrusion. He has provided training on soil gas methods and vapor intrusion to County and State regulatory agencies in over 30 states, many of the EPA regions, the DOD, and numerous stakeholder groups and consultants. He has written numerous articles on the collection, analysis, and interpretation of soil vapor data, including chapters in four textbooks. He has participated in technical workgroups on soil vapor methods for EPA, CA-EPA, CA Regional Water Boards, County of San Diego, ITRC & ASTM and has reviewed/edited instructional manuals for the EPA OUST and Superfund groups. Over the past four years, Dr. Hartman has been a contributing author/editor to vapor intrusion and soil gas guidance documents to federal EPA, CA-EPA, San Diego County, ITRC, DOD, API, and more than 25 individual State documents. He is currently a trainer in the EPA-OUST, ITRC, ASTM, and API vapor intrusion courses.

Elisabeth L. Hawley, P.E. is an environmental engineer at Malcolm Pirnie/ARCADIS in Emeryville, CA where she works on environmental restoration projects involving site characterization and remedial strategies to achieve site closure. She has also collaborated on litigation projects and applied research projects involving unregulated contaminants and contaminants of emerging concern, including N-nitrosodimethylamine (NDMA) and perchlorate. She has a M.S. degree in Civil and Environmental Engineering and a B.S. degree in Environmental Engineering Science from the University of California at Berkeley.

Mike Hawthorne is a Professional Geologist and a Principal with H2A Environmental, Ltd. (H2A). He has B.S. and M.S. degrees in Geology from Baylor University and completed post-graduate work in Groundwater Hydrology from Wright State University. In 2000, after 12 years of LNAPL remediation experience with Groundwater Technology Inc., Texaco/Star Enterprise and KEI Consultants Ltd., Mike co-founded H₂A, where he currently serves as a Principal Remediation Geoscientist leading LNAPL Conceptual Site Model, pilot testing, and remediation programs. He conducts LNAPL nature and distribution studies, remediation pilot studies, hydrogeologic site characterization, and remediation activities including design, construction, operation, optimization and closure analyses. Mike is currently serving on a nationwide team to develop an ASTM International® LNAPL Transmissivity guidance document. In addition, Mike's current technical interests include multiphase extraction systems in complex hydrogeologic environments, metrics for LNAPL remediation, and decline curve analysis for remediation systems. He is the editor of *Applied NAPL Science Review*.

Jason Heberling has been working as an engineer for the Birmingham Water Works Board, Birmingham, Alabama for over five years. He is currently pursuing a Ph.D. in Civil Engineering at the University of Alabama at Birmingham (UAB) where he received a Masters degree, also in Civil Engineering. He was awarded a Bachelors degree in Geology at the University of Alabama (main campus in Tuscaloosa, Alabama).

Hemambika, B., is a Ph.D. student in the Department of Microbiology at Bharathidasan University, Tiruchchirappalli, Tamil Nadu, India. She is working under the supervision of Dr. V. Rajesh Kannan. Her research interests are focused on the control of soil contamination by heavy metals and application of heavy metal resistant plant growth promoting bacteria for the improvement of phytoremediation. Ms. Hema has presented/attended 5 International and 12 National conferences and published 3 research papers in International Journals. She has received her master degree in Environmental Sciences in 2007 and bachelor degree in Plant Biology and Plant Biotechnology in 2005 from Bharathiar University, Coimbatore, Tamil Nadu, India. During her master's degree, she worked on Comparative Study of Electrocoagulation and Chemical Coagulation in the Treatment of Effluents from Textile Industry.

Ian Hers is a senior consultant with Golder Associates with 20 years professional experience, located in Vancouver, B.C., Canada. He directs and provides technical support for projects involving environmental site assessment, human health risk assessment, and remediation of contaminated sites. Much of his work over the past twelve years has focused on the assessment and mitigation of soil vapor intrusion into buildings. He is the vapor intrusion practice leader for Golder Associates and supports projects throughout North America, Europe and Australia. Dr. Hers has worked on a number of large and complex vapour intrusion projects and has provided expert advice on assessment strategies, predictive models, and mitigation options. He has developed guidance for numerous regulatory agencies, completed or is working on several research programs evaluating vapor intrusion, has developed new models for this pathway, and is familiar with site characterization techniques needed to obtain high quality, defensible data. He has helped author guidance for USEPA, Health Canada, Science Advisory Board of British Columbia, and United Kingdom (CLEA review of models); served on technical advisory panels or groups (CCME, USEPA, state agencies); conducted research or developed guidance for several federal and state agencies including New Jersey, Alberta, British Columbia, Ontario, Atlantic Provinces; and published over 15 technical papers on vapor intrusion issues. He is currently conducting field-based research programs for the Shell Global, Electric Power Research Institute and BC Science Advisory for Contaminated Sites. Dr. Hers holds a Ph.D. in Civil Engineering (University of British Columbia), serves on the Board of Directors of the Science Advisory Board for Contaminated Sites in British Columbia, is a member of the roster of professional experts in British Columbia.

Brian Hitchens, PG., CHG, is an Associate with Geosyntec Consultants in San Diego, California. Mr. Hitchens received a Bachelor of Arts degree in Geology from the College of Wooster in 1997 and a Master of Science degree in Structural Geology from the University of Wyoming in 1999. Mr. Hitchens has been with Geosyntec for the past

11 years where he has been involved with many diverse projects with responsibilities including project management, data analysis and visualization, reporting, environmental cost analysis, litigation support, and negotiation with regulatory agencies. He specializes in site characterization, applied in-situ remedial technologies, sediment remediation, bioremediation, and data management and visualization.

George Ivey is the President and Senior Remediation Specialist with Ivey International Inc. He has over 23 years environmental assessment and remediation experience, and has worked on more than 1,300 remediation projects worldwide. His educational background includes: Organic Chemistry, Geological Engineering, and a Master's Certification in Project Management. He is a Professional Chemist in Alberta, and also holds National Environmental Certifications in Canadian and the USA. His multidisciplinary background has provided him with a unique perspective for evaluating and solving complex site remediation problems. He is very active in remediation technology development, and is involved in several applied-research projects in North America, South America, Europe, and Australia.

Among some of his more notable accomplishments include:

- _ The Globe Award for Environmental Innovation and Application;
- _ The North American Frost & Sullivan Award for Technology Innovation;
- _ Two Environmental Business Journal Awards; and
- _ Several Remediation Technology Product and Process Patents.

James A. Jacobs is a California certified hydrogeologist who has two decades of in situ remediation experience. He designs and performs feasibility bench tests in the laboratory to evaluate chemical oxidation, enhanced bioremediation and geochemical stabilization technologies. He is the winner of 3 Fulbright teaching awards. He is currently working on a book about oil spills and gas leaks. In his spare time, he gives lectures on cruise boats to passengers interested in earth history and evolution.

Paul Johnson is a professor of Civil, Environmental, and Sustainable Engineering and is currently Dean of the Ira A. Fulton Schools of Engineering. Prior to joining ASU in 1994 he was a Senior Research Engineer at the Shell Oil/Shell Chemical Westhollow Technology Center in Houston, TX. He holds B.S. and Ph.D. degrees in chemical engineering from the University of California at Davis and Princeton University, respectively. Dr. Johnson's research and professional activities are focused on soil and groundwater remediation and risk assessment; more specifically, the design, monitoring, and optimization of remediation systems and the monitoring and modeling of exposure pathways. He has been working on vapor intrusion-related topics for over 20 years, including his current SERDP-sponsored research project focused on gaining a better understanding of the temporal changes in indoor air quality at vapor intrusion sites. Since 2003, Professor Johnson has served as the Editor for the National Ground Water Association's journal Ground Water Monitoring and Remediation, and he also serves as consultant to industry and regulatory agencies.

Jace W. Jones, Ph.D. - Dr. Jones is an Analytical Chemist with experience in both the environmental and biochemical fields. His chemistry background provides him with a

strong foundation in bench chemistry and quantitative analysis. He is fluent in many wet chemistry extraction procedures and trained in both liquid and gas chromatography separation techniques. Specifically, his area of expertise involves the use of mass spectrometry for structure characterization of a wide variety of molecules ranging from small organic compounds to large biomolecules. Currently, Dr. Jones is the Technical Director at Jones Environmental, Inc. which provides analytical and consulting services for the environmental field. His primary responsibilities include validation of laboratory reports, method development, QA/QC, SOPs, management of personnel, and consulting. Additionally, Dr. Jones maintains an active collaboration with several academic research laboratories including University of Washington, University of Maryland-Baltimore, and California State University at Long Beach.

Steve Jones, Ph.D. – Dr. Jones is an Analytical Chemist with over 39 years experience. Since 1984, he has been active in environmental chemistry. Over the past 39 years he has testified several hundred times in court and for dispositions as an Expert in various states. Because of his forensic background, his expertise is widely used by environmental consulting firms, attorneys and engineering firms. Throughout his career, Dr. Jones has been active both in the laboratory and in laboratory management. He spent 2-1/2 years as the technical director of IT Corporation's environmental testing laboratory in Cerritos, California, obtaining approvals for that lab for Contract Laboratory Program (CLP-Superfund), and for two additional labs for OEHL (Air Force) and NACIP (Navy) work. He has spent more than 25 years as a bench chemist and is well versed in GC/MS, GC, IR, AA, ICP, wet chemistry methods, as well as extraction techniques. Currently, Dr. Jones manages his own analytical testing firm which provides consultation, lectures, fuel fingerprinting, simulated distillation, fuel aging and many other chemistry-related services. He has also headed the building, setup, and operation of four analytical testing laboratories. For the past 25 years he has served as a reference for lab personnel and customers who have questions about testing procedures related to environmental and analytical chemistry areas. Aside from managing his analytical testing firm, Dr. Jones has taught "Characterization of Hazardous Waste" and "Organic Chemistry of Hazardous Waste" at the University of California's Extension Service in Irvine, California. Dr. Jones has given numerous presentations related to the environmental testing field and has expertise with most EPA methods.

Andrew Kanzler is a graduate student in Regenerative Studies at Cal Poly Pomona, he has a BS in landscape architecture from the same university. He is currently employed at the Inland Empire Utilities Agency in which he spends much of his time on water conservation efforts and education. Andrew's current research interests include ecological design, sciences, and engineering (both in the qualitative and quantitative senses), climate appropriate consumer behavior in home gardens, and climate appropriate food production.

William B. Kerfoot is president of Kerfoot Technologies, Inc., located in Mashpee, Massachusetts. He is a Licensed Site Professional (hazardous waste) in the Commonwealth of Massachusetts and has over 25 years' experience in site

assessment and remediation. He has over 15 years' experience in the design and implementation of subsurface ozone treatment systems for petroleum retail outlet spills, treating MtBE, TBA, TPH, and BTEX. Recently he has developed peroxide-coated nanobubble (Nanozox™) systems to recycle fracture water with mobile wellhead systems. Dr. Kerfoot has conducted training workshops for AEHS and NGWA on in-situ chemical oxidation and contaminated soils, sediments, and water. He serves on the Scientific Advisory Board for the AEHS West Coast Conference and Board of Directors of the International Ozone Association, Pan American Group. Dr. Kerfoot holds numerous patents in processes and equipment currently used in groundwater retrieval, flow measurement, and remediation. Dr. Kerfoot has recently developed remediation technologies based upon oxidative microbubble to nanobubble reactions and has authored over fifty scientific publications.

Maya Key, P.E. is an environmental engineer at Kennedy/Jenks Consultants in Sacramento, California. She has a BS degree from the University of Michigan and MS degree from Stanford University in environmental engineering. With 7 years experience in site investigation and remediation, she has worked primarily on sites with petroleum hydrocarbon contamination and has used a variety of remediation technologies including SVE, groundwater extraction, passive oil-water separation, air sparge, and bioremediation. She has experience with field investigations, performance monitoring and review, mass calculations, statistical analyses, and modeling.

Alamgir Khan is a Ph.D. candidate in Environmental Engineering at the University of Guelph, Canada. He has over 17 years of research experience as an agricultural engineer in soil reclamation, surface water hydrology, pesticide application techniques, and agro-based machines. Mr. Khan served as a resource expert with Small and Medium Enterprise Development Authority (SMEDA), Pakistan for pesticide application techniques and cotton ginning. His strengths are also extended to develop training modules and impart trainings in the areas of reclamation of sodic soils, irrigation practices, pesticides application techniques, preventive maintenance of bulldozer under carriage system, and improvements of cotton ginning machines.

Andrew Kirkman is a Senior LNAPL Technical Lead and Hydrogeologist for AECOM. He has 12 years experience conducting environmental investigations and engineering. Mr. Kirkman specializes in subsurface petroleum hydrocarbon, coal tar and creosote distribution, and release and recovery studies. He was recently invited to provide training on LNAPL assessment techniques to the Los Angeles Regional Water Quality Control Board. He has characterized the distribution and mobility of NAPL at multiple refinery, railroad, retail, manufactured gas plant, wood treating and terminal sites. Mr. Kirkman has worked with regulatory agencies across the nation to accept alternative metrics to NAPL remediation such as NAPL transmissivity or recoverability rather than gauged NAPL thickness alone. Mr. Kirkman has participated in Interstate Regulatory Council guidance document generation and currently, Mr. Kirkman is the chair of an ASTM task group under E50.04 to develop a guidance document on the calculation of LNAPL Transmissivity.

Jeff Kurtz is a Senior Scientist at EnviroGroup and has over twenty years experience as a consulting Geologist/Geochemist. Dr. Kurtz is the indoor air testing manager for one of the largest vapor intrusion sites in the country (Redfield), with responsibilities that include evaluating the extent of vapor intrusion impacts and the performance of vapor intrusion controls, and evaluating the contributions of indoor sources and background to indoor air levels of VOCs. He has worked on a number of other vapor intrusion sites in Colorado, California, Kansas, New Jersey, New York, Utah and Wyoming, and is well known for his research and publications on indoor sources of VOCs, including the use of COC ratios in groundwater and indoor air to separate vapor intrusion from background sources. Dr. Kurtz has worked closely with Dr. Paul Johnson and Robbie Ettinger to publish the first study providing validation of the JE Model from empirical data.

Carl Lenker, P.E. is a Project Engineer for Gannett Fleming located in the Irvine, California office. He is a registered professional engineer with more than seven years of environmental consulting experience consisting of conducting Phase I and II environmental site assessments, evaluating remediation technologies, and performing remediation of soil and groundwater for various private and public clients. Has experience with the design and installation of several remediation technologies at small and large sites, including the installation of slurry walls, soil excavation, soil vapor extraction, free product recovery systems, dual-phase extraction, potassium permanganate injections, and ozone sparge systems. Mr. Lenker is active in promoting sustainable practices, especially during site remediation. He is the sustainability coordinator for the Gannett Fleming Irvine office, is a member of the CleanTech OC trade association, and provides technical support for several large solar power facilities.

D.D. Levine is a Ph.D. student in Soils and Biogeochemistry at the University of California at Davis. She also has an M.S. degree in Soil Science and a B. S. in Soil Science. She has several years experience working with agricultural producers in the Sacramento Valley on resource issues such as nutrient management and conservation planning.

Cen Li is a master candidate in Environmental Science and Engineering at King Abdullah University of Science and Technology, Saudi Arabia. She also has a bachelor degree in Environmental Engineering at Zhejiang University, China. She got over three years of lab experience in soil contamination, working in collaboration with Cornell Waste management Institute.

Johan Liebens (Ph.D., 1996, Michigan State University; M.S., 1983, B.S., 1981, Free University Brussels, Belgium) is Professor in the Department of Environmental Studies at the University of West Florida. Johan is a broad-based physical geographer with research interests in environmental soil science and heavy metal pollution of soils and sediments. His work includes both basic and applied research. GIS-based spatial analyses are part of most of his research. He has extensive experience with field mapping and surveying methods and physical and chemical analyses of soils and sediments. Recent research projects have focused on organic carbon pools in soils, and

pollution of surface soils, sediments in stormwater retention ponds, and water and sediments in bays along the coast of the Gulf of Mexico. His research has been funded, among others, by NSF, GSA, USDA, EPA, and Florida Center for Solid and Hazardous Waste Management. He has published in *Environmental Geology*, *Communications in Soil Science and Plant Analysis*, *Historical Archaeology*, *Shore & Beach*, *Marine Pollution Bulletin*, *Water Air and Soil Pollution*, *Soil and Sediment Contamination*, and in *Soil Use and Management*. Johan is a member of the Association of American Geographers, the Soil Science Society of America, and the Association for Environmental Health and Sciences.

Keisha D. Long is an Environmental Engineer with the South Carolina Department of Health and Environmental Control and currently works as a Project Manager in the State Superfund program. Her responsibilities include overseeing the assessment, remediation, and clean up of Superfund sites in South Carolina; and overseeing the assessment and cleanup of Voluntary Cleanup Program sites. Subsequent to her current responsibilities, Ms. Long worked as a remedial project manager in the RCRA Corrective Action Engineering program, and the Federal Superfund/State Dry-cleaning Restoration program. Her responsibilities in the RCRA program included guiding clean-up actions for dozens of waste management units at Department of Defense bases including: Charleston Air Force Base, Poinsett Electronic Combat Range, and Shaw Air Force Base. In the Federal Superfund and Dry-cleaning Restoration program, she assessed registered dry-cleaning sites and assisted EPA – Region 4 with the assessment and cleanup of sites in South Carolina that were listed on the National Priorities List (NPL). She holds a BS in Civil Engineering from Clemson University.

Dave Ludwig is a systems ecologist by training and a restorationist and sustainability analyst by trade. He holds a Bachelor's of Environmental Science from Rutgers University, a Master's in Marine Biology from the Virginia Institute of Marine Science, and a Doctorate in Ecology from the Institute of Ecology at the University of Georgia.

Hong Luo (Emma) graduated with her Ph.D in environmental engineering from ASU in 2009. She is currently working as a post-doctoral research associate with Paul Johnson at ASU. Her research interest is the fate and transport of contaminants in the environment, with a focus on vapor intrusion processes. She has been a key individual in developing our understanding of the spatial and temporal variability of soil gas concentrations at petroleum hydrocarbon sites. She has also modified the Abreu-Johnson vapor intrusion model (v2005) to enhance its transient capabilities. Currently, she is the manager and one of the tech leaders for a SERDP-funded project that integrates field-, lab- and modeling components to improve our ability to assess the groundwater to indoor air pathway at chlorinated solvent-impacted sites. She is also working on the practical application of the modified model and supervising graduate students at ASU.

Christopher (Chris) Lutes is an Associate Vice President and Principal Scientist with ARCADIS. He has over twenty years of experience managing technology evaluations, remediation projects, pollutant fate and transport studies, and air emissions

characterizations for ARCADIS. He leads an ARCADIS sub-discipline for air/vapor intrusion issues. In this role he leads the development of internal technical guidance and supports projects nationwide. He was a lead author for the EPA engineering issue on Vapor Intrusion Mitigation and has authored more than 100 other peer reviewed literature articles. He has worked with EPA to conduct several research studies of the uses of radon as a tracer for Vapor Intrusion, distinguishing soil from indoor sources and passive sampling methods. Mr. Lutes holds a B.S. in Chemistry from the University of Virginia and an M.S. in Environmental Science and Engineering from the University of North Carolina at Chapel Hill.

Sriram Madabhushi became a consultant in 2008 with Booz Allen Hamilton after 16 years of service as a state regulator. He currently divides his time supporting the Air Force in their optimization efforts and as a program advisor to the Interstate Technology Regulatory Council's Remediation Risk Management and Green and Sustainable Remediation teams. Previously, he was a hydrogeologist in the Bureau of Land and Waste Management, South Carolina Department of Health and Environmental Control (SCDHEC) in Columbia, South Carolina. Sriram worked for three years in the Federal Facilities Agreement - Superfund Section reviewing the site rehabilitation activities at the Savannah River site and three years in the RCRA section providing technical review of project documents related to Shaw and Charleston Air Force Bases. Sriram worked the first eight years of his career with the SCDHEC in the Underground Storage Tank Program. He was integral in the implementation of the risk-based corrective action and performance-based management processes in the UST Program. He has strong interests in statistical decision making techniques in remedy selection, optimization of remediation technologies, groundwater fate and transport modeling, application of innovative technologies in site investigations and rehabilitation, etc. During 2004-2008, Sriram was the co-leader of the ITRC Remediation Process Optimization (RPO) and RRM teams. He was an instructor on the team's advanced RPO training course and Performance-based Environmental Management course. He earned a bachelor's degree in physics from Andhra University, Waltair, India in 1981 and a master's degree in exploration geophysics from Indian Institute of Technology, Kharagpur in 1984. Sriram is a certified Professional Geologist in the state of South Carolina.

Diana Marquez is an Associate Toxicologist with Burns & McDonnell Engineering Company, Inc. in Kansas City, MO and has worked for the company since June 1995. She currently serves as the National Leader for the company's Risk Assessment and Vapor Intrusion Practices. Her previous experience involved two years working at a DOE nuclear weapons manufacturing facility in the hazardous waste management and environmental remediation fields. Diana earned a bachelor's degree in biology from Villanova University in Villanova, PA in 1991 and master's degree in toxicology from the University of New Mexico in Albuquerque, NM in 1992.

Ben Martich is a senior scientist with CDM in Helena, Montana. Mr. Martich has 15 years of experience in environmental consulting with particular focus on site characterization and water quality. For the past six years, he has managed characterization and remedial actions at contaminated sites where vapor intrusion

represents the primary risk for exposure. He provided technical assistance to the Alaska Department of Environmental Conservation during the agency's recent development of its vapor intrusion guidance. Mr. Martich also is engaged in research of vapor intrusion in arctic and subarctic climates with staff from the University of Alaska Fairbanks.

Kevin C. Mayer is a partner and civil trial attorney in the Los Angeles office of Crowell & Moring LLP. Kevin's practice focuses on complex commercial and mass tort litigation, construction, toxic tort, OSHA, environmental and products liability litigation. He has represented numerous clients in the oil and chemical, mining, manufacturing, entertainment, construction, and financial industries in a variety of federal and state courts and government agencies, and in business negotiations. Kevin represents land owners and operators in CERCLA, RCRA, CEQA and state statutory and common law administrative proceedings, litigation and trials involving environmental contamination, cost-allocation, leaking underground storage tanks, waste disposal practices, and commercial development. His experience in this area includes solid and liquid waste management, regulatory compliance and enforcement, Superfund, fear of future disease, risk assessment, Brownfields, and soils, air and groundwater contamination investigation and remediation. Kevin handles civil and administrative law trials and appeals for industrial and commercial clients' alleged violations of the federal and California Occupational Safety and Health Act, and California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).

Todd McAlary is the Vapor Intrusion Practice Leader for Geosyntec Consultants, Inc. He has degrees in Geological Engineering and Hydrogeology from the University of Waterloo, where he measured and modeled vapor diffusion through unsaturated sands as his Master's Thesis. Mr. McAlary has over 20 years of consulting experience, primarily for Fortune 500 companies in the United States. He has conducted site-specific investigations of vapor intrusion since 1992, co-authored or peer reviewed 9 guidance documents on vapor intrusion over the past 8 years, and has presented research in this field at over 30 conferences, workshops, and training sessions. He received the 2006 Industry Recognition Award for his contribution to the ITRC vapor intrusion guidance and has been a member of the Federal EPA Expert Panel on Vapor Intrusion since 2000. Mr. McAlary is currently managing large-scale vapor intrusion investigations, conducting applied research to improve vapor intrusion assessment methods, and providing services as an expert witness.

Thomas McHugh, Ph.D. Dr. McHugh is a Vice President with GSI Environmental Inc., in Houston, Texas. He is a Diplomate of the American Board of Toxicology and has over 18 years of experience in the environmental industry with academic research and private consulting organizations. He received a B.A. in Biochemistry and Environmental Science from Rice University (1990), an M.S. in Environmental Engineering from Stanford University (1993), and a Ph.D. in Toxicology from the University of Washington (1997). Dr. McHugh has worked on a number of projects related to vapor intrusion including field investigations and model development. He is the principal investigator (PI) for three vapor intrusion research projects funded by the Department of Defense through their Environmental Security Technology Certification Program (ESTCP)

research program. Through these projects, he has developed improved methods for to distinguish between vapor intrusion and indoor sources of VOCs. He is the lead author on several peer-reviewed journal articles, peer-reviewed conference proceedings, and technical documents on vapor intrusion. Dr. McHugh has developed training classes on a number of topics including vapor intrusion.

Captain McKenna is the Executive Director of the Marine Exchange. He served in the United States Navy for twenty-eight years prior to retiring with the rank of Captain. His service included ten sea tours, three of those in command. He has been a principal in the development of the Marine Exchange's joint partnership Vessel Traffic Service (VTS), a national model for future Vessel Traffic Services. The Marine Exchange provides real time and historical data to the Maritime Industry, significantly upgrading the ship operations infrastructure of the Port Complex.

Edmund Merem completed his B.A. and M.E.S. at York University, Toronto and then his M.A. at Pontifical Lateran University, Vatican City. He graduated with a Ph.D. from Jackson State University, Mississippi. Dr. Merem has 16 years of experience in Global environmental planning and environmental accounting for oil and gas in Canada and the US, and hydro-politics of the Middle East and Africa. He has written several research monographs and papers that have been published in academic journals and major conference proceedings. His 2nd book entitled "*Environmental Accounting For Oil and Natural Gas A North American Case Study*" has just been published by Edward Mellen Press. He worked as an Environmental Analyst in the Environment Bureau of Agriculture and Agric-Food Canada. He is very fluent in Italian and a number of European and African languages. Dr. Merem is currently an Associate Professor of Environment and Land Use and the PhD program coordinator in the Urban and Regional Planning Department at Jackson State University.

Elizabeth (Liz) Miesner: is a Principal with ENVIRON International Corporation in San Francisco, California. She has been with the firm for 16 years and in environmental consulting for over 22 years. She has worked on all aspects of human health risk assessments including evaluating analytical data, calculating/modeling exposure point concentrations, developing human exposure criteria, estimating cancer/noncancer risks from exposure to contaminated media, and characterizing uncertainties associated with risk assessment methodologies. Her work has included managing and conducting risk assessments for numerous CERCLA, RCRA and other hazardous waste sites involving the evaluation of human health risks from exposure to contaminants detected in soil, sediment, air, groundwater, and surface water. Ms. Miesner has also conducted numerous risk assessments of air toxic emissions in support of projects conducted under the "Air Toxics Hot Spots" bill (AB2588), the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) and in support of environmental impact reports (EIR). Her recent work has included preparing and implementing numerous ambient/indoor air monitoring plans to evaluate potential vapor migration into a building or sources within a building. Ms. Miesner received her M.S. in Environmental Health Science (Environmental Health Management/Air Pollution) from the Harvard School of Public Health and her B.S. in Psychobiology from the University of California, Los

Angeles. She has been a member of the AEHS Scientific Advisory Board for the West Coast Conference since 2007.

Rachel E. Mohler, Ph.D, is a lead research chemist for Chevron Energy Technology Company. Her research interests include the development of portable instrumentation and advanced data processing tools for complex chromatographic data. Her skills in chemistry and chemometric analysis have been repeatedly applied to Chevron's Environmental Forensics data. In addition to the Environmental Forensic arena, Rachel applies chemometric analysis to a variety of applications within Chevron and provides analytical expertise within Chevron for the Environmental Management Company (EMC).

Will Moody has a B.S. degree in Environmental Science from Virginia Polytechnic Institute and State University. He has over nine years of environmental consulting and site remediation experience. For the last six years, he has been working with Geo-Cleanse International, Inc.'s field operations and marketing departments. Will has supervised some of the largest in-situ chemical oxidation projects in the U.S., and has also been involved with several projects in Europe. His work for Geo-Cleanse also includes site analysis and design, and laboratory studies and testing.

Leo Moorman holds a PhD in physics. He is president of Radon Home Measurement and Mitigation, Inc (CO, WY) and NEHA certified, has given talks to the radon professional community about radon related subjects that reflect both his experimental and theoretical physics interests. Topics he discussed are among others pre-screening building sites for the potential of high radon radon levels after a building is completed. He also developed a method to use radon decay product measurements and the ultra fine component to more specifically define the relative health risks in a given indoor air environment. He has given talks about energy efficiency and specifically operational costs of radon mitigation systems, and has developed a computer program how to calculate the pressure and flow distribution throughout multiple branch radon mitigation systems. Dr. Moorman is currently a board member of the American Association of Radon scientists and Technologists (AARST).

Rebecca Mora is a senior engineer with AECOM. She also serves as the leader of the AECOM In Situ Bioremediation Technical Practice Group. Rebecca received her B.S. degree in Environmental Engineering from the University of Notre Dame. She has 14 years of remediation experience and specializes in design and implementation of innovative in situ technologies to treat groundwater contaminated with organic and inorganic compounds. She also specializes in the use of innovative site characterization techniques, including molecular diagnostic tools.

Lisa Moretti is an environmental engineer with ERM in Sacramento, CA with a focus on contaminated site management. She has conducted research on remediation technologies and fate and transport of DNAPL in both sediment and groundwater. As a consultant, she has provided environmental compliance expertise for remediation sites,

air permitting processes, and the Gulf Oil Spill. She has a BS from Tufts University and MS from The University of Texas at Austin, both in Environmental Engineering.

Bill Morris is a Senior Scientist with EnviroGroup Limited, has more than 20 years of environmental remediation experience, 10 years vapor intrusion experience and is currently EnviroGroup's lead vapor mitigation expert. He is nationally certified as a radon mitigation provider and has 25 years' experience in construction. Bill previously worked for the Kansas Dept. of Health and Environment for 15 years at the Bureau's Quality Assurance Officer and the Kansas point of contact for vapor intrusion since 2001. Bill is an instructor with the Interstate Technology and Regulatory Council (ITRC) vapor intrusion teams' classroom training and he routinely presents at conferences regarding vapor intrusion. Bill has been active in the ITRC since 2004 when the vapor intrusion team was formed and Co-lead the team. Bill was also active in an EPA vapor intrusion committee and the ASTM regarding vapor intrusion. He has experience in environmental chemistry, aquatic toxicology, environmental emergency response, and site remediation. Bill earned his B.S. in Zoology, in 1989, from Northern Arizona University in Flagstaff, Arizona.

Ranga Muthu is an Environmental Scientist with RAM Group of Gannett Fleming since March 2009. Since then he has worked on projects related to petroleum hydrocarbons and chlorinated solvent contamination. In addition he has worked on risk assessment and vapor intrusion issues, development of guidance documents and software, training, statistical analysis, interpretation of data, risk assessment, and report preparation consistent with state and federal environmental regulations. As a contributing member of the American Society of Testing and Materials, he is participating in a National Task Force to develop new methodologies and metrics to manage sites contaminated with petroleum hydrocarbons. Ranga received his Bachelor's in Civil Engineering and a Doctorate in Environmental Engineering and is EIT certified. He is an active member of American Society of Civil Engineers, Texas Association of Environmental Professionals, Society of Petroleum Engineers.

Jonathan Myers has a Ph.D. in Geochemistry plus 28 years of environmental consulting experience. His specialties include geochemical modeling, environmental forensics, natural attenuation investigations, and the use of geochemical evaluations to distinguish between contamination versus naturally high background concentrations of elements in groundwater, surface water, sediment, soil, and air. Dr. Myers has authored over 30 peer-reviewed research papers and book chapters, and has taught short courses on geochemical and environmental forensic techniques.

April Nabors has worked as an Environmental Engineer for the Birmingham Water Works Board in Birmingham, Alabama for the last 3 years while pursuing a PhD in Interdisciplinary Engineering, with a focus on Environmental Health, from the University of Alabama at Birmingham. She also has a Bachelor of Science in Biology and a Master of Science in Environmental Management from Samford University. In the summer of 2009, she earned a Certificate in Sustainable Engineering through UAB while studying abroad in Cairo, Egypt. Later that year she earned a Certificate in

Environmental Engineering also from UAB. Her ongoing research primarily involves drinking water treatment optimization testing with a current focus on upcoming EPA Stage 2 Disinfection by-product regulations. She recently obtained a State license to operate a Grade IV drinking water treatment plant in Alabama. Other areas of research include source water monitoring and emerging contaminants in our drinking water.

Karen Nardi is a partner in Arnold & Porter's environmental group. She counsels clients on a wide range of environmental and safety laws. She works with clients to conduct audits, develop compliance programs, and obtain permits and variances. Karen has followed *Green Chemistry* closely and gave four webinars on it in 2010. A poll published by *GC California* magazine in December 2008 named her the top environmental compliance attorney in California. She has also been included in the *Super Lawyers* list of Northern California's top attorneys seven years in a row. Karen holds a Master's degree in Public Policy from the Goldman School at UC Berkeley. She has been a legislative analyst for the California State Assembly and an intern at the Congressional Budget Office in Washington, DC. A She is co-author of several books, including the *Environmental Law Handbook*. Karen J. Nardi, Partner, Arnold & Porter, One Embarcadero Center, 22nd Floor, San Francisco, California 94941, (415) 356-3010, karen.nardi@aporter.com

Charles Neslund is the Manager of Specialty Services at Lancaster Laboratories, Inc, in Lancaster, PA. He received his Bachelor of Science in Chemistry from the University of Pittsburgh in 1982. He then did graduate level studies at the University of Pittsburgh under Paul Dowd, until he began at Lancaster in 1984. In his 25 plus years at Lancaster Labs, Charles has worked in or managed the pesticide residue group, volatiles group, petroleum hydrocarbons and the GC/MS groups. He has managed GLP projects and aided in the start up of new technical areas. Charles' current responsibilities include the Volatiles in air group, LC/MS/MS development and analysis and the dioxin/furan analysis area. Charles is a member of the American Chemical Society, Chromatography Forum of the Delaware Valley, Air & Waste Management Association and the Society of Environmental Toxicology and Chemistry. He also participates in the Sediment Management Workgroup on behalf of Lancaster Laboratories.

Hieu Nguyen is the Technical Engineer for CETCO Remediation Technologies, based in Santa Ana, California. He is has a bachelor degree in Chemical Engineering from University of Idaho and joined CETCO company in 2007.

Eric M. Nichols, P.E. (ARCADIS US). Mr. Nichols is National Technical Manager of Remediation for ARCADIS US, where he is responsible for fostering innovation and advancing best practices for site evaluation and remediation. He is a groundwater hydrologist and Principal Engineer with 25 years of experience in characterizing and remediating soil and groundwater, and assessing and managing risks. He provides technical review and litigation support services for groundwater flow and contaminant migration, remediation and natural attenuation, vapor intrusion, groundwater modeling, water resources management, and aquifer hydraulics. Nichols is an active educator and

is co-author of several standards and guidance documents, including ITRC guidance on the remediation of fuel oxygenates and LNAPL.

Steffen Griepke Nielsen has a master degree in environmental engineering from the University of Aalborg, Denmark. He has worked on a variety of projects for 9 years for the environmental consultant NIRAS in Denmark, before he joined TerraTherm in 2008. Steffen is working out of TerraTherm's California office in Bakersfield, and is mainly involved in the design and modelling task required prior to bringing a thermal projects to the field. Today's presentation will be focused on thermal treatment in urban settings with access limitations and will primarily be based on lessons learned from three thermal projects conducted in Denmark.

Zhu Hua Ning has been a professor of urban forestry at Southern University, Baton Rouge, LA, USA since 1994, where she played an instrumental role in the establishment of the nation's first Urban Forestry B.S. degree granting program and the subsequent M. S. and Ph.D. programs. She has published 8 books and more than 100 research publications in global climate change, eco-physiology, urban forestry, arboriculture and more. She is currently directing three research laboratories, coastal change research of NASA University Center for Coastal Zone Assessment and Remote Sensing, and several research and education projects. As the Director of the Gulf Coast Regional Climate Change Assessment, which encompassed five U.S states along the Gulf of Mexico, she successfully led the region in contributing to the U.S. National Assessment on climate change from 1997 to 2003 and received a merit award by the White House Office of Science and Technology Policy. She served as the Chair-elect and Chair of the Society of American Foresters (SAF) Urban and Community Forestry Working Group from 2003 to 2007. She has led the working group to two SAF Working Group Merit Awards for the contribution to forest science and technology both in 2005 and 2006. She served on the Board of Directors of Seventh American Forests Congress Communities Committee since 2001. In addition, she chaired the SAF National Committee on Cultural Diversity, and is the Chair of the SAF International Forestry Working Group. She has won many merit awards including USDA Forest Service Distinguished Leadership Award in Minority Education and Outreach in Urban Forestry, USDOJ National Park Service Merit Award, etc. Dr. Ning has been involved with the USDA-Forest Service research stations and centers, US Environmental Protection Agency, US Global Change Research Program, USGS National Wetlands Research Center, and many institutions of higher education. Dr. Ning has been involved with the White House Initiative on Cooperative Conservation, the Alliance of Community Trees, and Sustainable Urban Forestry Coalition. She also serves as a national advisory committee member to the TreeLink. She has provided inputs on many state, regional and national research and educational initiatives. Dr. Ning's international experiences includes serving as an invited expert for the China State Forestry Administration on national natural forest protection, research team leader for the urban forest ecological study of the Chinese Academy of Sciences, expert for the National Science Foundation's Egypt water related environmental problem research team, expert for the Jamaica national forest management plan roundtable, etc.

Ochieng Aoyil was born in Kenya in 1963 and I have studied and lived in Kenya, China, Tanzania, Germany and South Africa. I did my primary and secondary education in Kenya, I obtained my first degree, BEng in chemical engineering, at East China University of Chemical Technology in China, and I obtained my MSc in chemical engineering at the University of Dar es Salaam and Technical University Berlin. For the period I was doing my MSc and PhD, I was on study leave from Moi University where I was employed immediately I finished my first degree. I am currently a permanent resident of South Africa where I obtained my PhD at the University of Cape Town (UCT). I worked as a part time lecturer for about five years at UCT before I got full time employment at Wits in 2006. I moved from Wits early 2009 to take up appointment as associate professor at the Vaal University of Technology (VUT), where I am to date. I am registered with the Engineering Registration Board of Kenya. I have received the following awards: National Research Foundation (NRF) Doctoral bursary (2001-2003), German Academic Exchange Service (DAAD) scholarship (1994-1996), Chinese government scholarship (1987-1992), China-African students' leadership award, Shanghai (1991), University, best high jumper, Shanghai (1990). I was on the organizing committee for the Fourth South African Conference on Applied Mechanics – SACAM06 (2006). At VUT, my main work includes research, teaching, postgraduate students supervision, outreach and occasionally I act as head of department. My research interests include computational fluid dynamics and wastewater treatment. In addition to my regular work at VUT, I am currently working as a consultant for the Water Research Commission of South Africa, among other organizations and companies; also I am regular reviewer for the following journals 12 internationally accredited journals.

Mehul Patel has been with the Orange County Water District (OCWD) for fourteen years. He is currently the Groundwater Replenishment System (GWRS) Program Manager for OCWD. Mehul is in charge of overseeing all treatment processes associated with the 70 mgd GWRS Advanced Water Purification Facility (AWPF). The AWPF is the largest indirect potable reuse plant in the world including the largest reverse osmosis system in the western hemisphere at 70 mgd. Mehul was formerly in charge of the day-to-day operation of all district applied research treatment processes including microfiltration, reverse osmosis and ultraviolet (UV) systems. He has extensive experience in pilot, demonstration and full-scale operation of microfiltration, ultrafiltration, reverse osmosis technologies, and advanced oxidation systems. He also worked as a process engineer assisting in troubleshooting for operation of OCWD's renowned Water Factory 21 facility. Mehul's expertise is in the use advanced technologies for water reclamation and recycling. He has written, presented, and published a number of technical papers relating to the use of membrane and ultraviolet light technologies for wastewater reclamation. Mehul received his Bachelors of Science degree in Civil Engineering from the California State Polytechnic University Pomona and his and Masters of Science degree in Civil Engineering from the California State University Long Beach. He is a registered professional civil engineer in the state of California. He is a member of the American Society of Civil Engineers, American Water Works Association (including a member of its Membrane Process Committee), Water Environment Federation (including a member of its Disinfection Committee), American Membrane Technology Association (including serving currently on its board),

WaterReuse Association and is past president of the Southwest Membrane Operator Association.

Kanan Patel-Coleman is a Principal Risk Assessor with URS Corporation in Los Angeles, CA with 25 years' experience in human health risk assessments, laboratory analyses, environmental studies, and program management. Dr. Patel-Coleman holds a D.Env. in Environmental Science and Engineering and a MPH in Environmental Health Sciences from UCLA. She has led evaluations at numerous complex petroleum sites in California.

Gopal Pathak graduated in Civil Engineering in 1977 from Birla Institute of Technology, Mesra, Ranchi, India. Further he did his Master of Engineering from the same institute. He did his Ph.D in Environmental Engineering in 1998. Presently he is working as a Professor and Coordinator in Environmental Science and engineering Group, BIT, Mesra. Professor Pathak presented a number of Technical papers in National and International Conferences in places like China, Australia, Finland, Sweden, Iran, Bangladesh, USA, Western Africa, South Africa etc. He has worked as a visiting professor in universities like UTS, Australia, RMIT, Melbourne, NJIT, New Jersey, and Princeton University, USA. He is member of the scientific advisory board for the Annual International Conference on Contaminated soils, sediments, water and energy, which is annually held at the University of Massachusetts, USA. Also he is a member of the Annual International Conference on Contaminated soil, water, energy and air that is annually held in San Diego.

Tom Peargin is a Senior Staff Hydrogeologist with Chevron Energy Technology Company. His specialties include design and performance of air-based remediation technologies for groundwater, and subsurface vapor transport as it relates to vapor intrusion. Tom received his BS degree in geology from California State University, Humboldt, and MS degree in geology from Oregon State University.

Ioana Petrisor is an environmental biochemist with 18 years of experience (both in academia and industry). She is currently Editor-in-Chief of Environmental Forensics Journal and Senior Scientist at Haley & Aldrich, Inc. a consulting firm promoting environmental sustainability. Dr. Petrisor specializes in environmental forensics/litigation support using up-to-date fingerprinting methods to track the source and age of contaminants. She conducted innovative research for US DOE and US DoD and is author of 1 invention patent, 1 forensic text book (in press) and more than 70 scientific publications and 10 editorials. She has a PhD in Biology (Biochemistry Major) from Romanian Academy of Sciences and a Bachelor in Chemistry (Biochemistry Major) from Bucharest University, Romania.

R. Paul Philp is Professor of Petroleum and Environmental Geochemistry at the University of Oklahoma. He received his Ph.D. from the University of Sydney, Australia in 1972 and a D.Sc. from the same University in 1998 on the basis of his research in geochemistry over the past 20 years. Prior to starting at the University of Oklahoma in 1984 Dr. Philp was a Principal Research Scientist, C.S.I.R.O., Sydney, Australia. His

current research interests center around petroleum, environmental and forensic geochemistry with an emphasis on molecular and isotopic characterization of oils, gases, rock extracts and contaminants for the purposes of source determination, characterization of depositional environments, maturity, biodegradation and for correlation purposes. Much of the current research activity in the area of forensic geochemistry involves the use of stable isotopes for the purposes of fingerprinting contaminants in the environment for correlation purposes; source determinations and evaluating whether or not natural attenuation is active. This approach is particularly valuable in the case of refined products or single component contaminants when the more traditional GC and GCMS techniques are of little or reduced use. He has authored or co-authored over 340 articles and books and has lectured extensively on petroleum and environmental geochemistry in SE Asia, South America, Europe and Africa.

Mr. John Powell is Manager of Emission Control Systems for Advanced Cleanup Technologies, Inc. located in Rancho Dominguez, California. In this capacity he has been responsible for the design and development of an emission control system to remove air pollution from ocean going vessels in port and from locomotives in rail yards. This device has been successfully tested and found to perform as predicted, removing over 95% of NO_x, SO_x, and PM as well as a significant amount of VOCs from the exhaust gas in a cost effective manner. Mr. Powell has over 30 years' experience in environmental control, system design, manufacturing processes, engineering, and testing. Mr. Powell has a degree in physics. He has a number of patents and has published technical papers in various journals.

Andrzej Przepiora, M.Sc., P.Geo. received his M.Sc. in Geology from the Department of Earth Sciences at Texas A&M University, College Station, Texas. He joined EnviroMetal Technologies Inc. in 1999 and has been Senior Hydrogeologist with the Adventus Group since December 2006. He provides technical input into various aspects of implementation of Adventus technologies, including abiotic and microbial approaches to treatment of organic contaminants and metals in groundwater and soil. His main responsibilities include initial data evaluation from potential remediation sites, development of field designs, coordination of internal laboratory testing for commercial applications and R&D projects, on-site field installation support and performance monitoring data review.

Lutfor Rahman received his PhD in Polymer Chemistry in 2000 at University Putra Malaysia. Soon after PhD, he was worked as Postdoctoral fellow at the same University and 2 years later he joined to a faculty position at University Malaysia Sabah. After several years working, in 2010, he was appointed as Associate Professor of Polymer Chemistry and Technology at the University Malaysia Pahang. His primary research interest is focused on the design and synthesis of new materials as cellulose based chelating polymer which forming complex with transition metal ions and removing metal ions from industrial waste water for safe the environment.

Barry Rakewich is a senior project manager for Nichols Environmental (Canada) Ltd. In Edmonton, Canada. Mr. Rakewich is a Professional Agrologist with a B.Sc. in

Environmental and Conservation Sciences from the University of Alberta with over 10 years of consulting and industry experience. His areas of expertise include soil and groundwater assessments and investigations; site remediation evaluation, design and implementation; in-situ remediation and chemical oxidation; spill response and clean up. Mr. Rakewich has completed assessment and remediation projects across Canada and into the southern USA. Mr. Rakewich has also completed spill response and clean up for clients throughout the Western Canada provinces of British Columbia, Alberta, Saskatchewan and Manitoba. Corporately, Nichols Environmental has extensive experience conducting in-situ chemical oxidation projects having completed the largest in-situ chemical oxidation project in Canada involving the oxidation of a petroleum hydrocarbon contaminated site in Northern Alberta.

Shabnam Rathore is a Ph.D. candidate in Institute of Soil Science and Land Evaluation at Hohenheim University, Stuttgart Germany. Her research emphasis is on assessment of biomass (trees/crops) production on salt affected land by using modeling with GIS. She also has M.Sc and B.Sc degree in Agriculture Sciences in first class first position from Pakistan. She has over six decades of experience as an Agriculture Scientist with extensive experience dealing with soil, plant, and fertilizers investigations, however more than three years experience in modeling and GIS.

G. Todd Ririe has a BA degree in geology from Cornell College, and a PhD degree in geology from the University of Iowa. Todd has over 20 years of experience in applied geology, geologic instruction, and environmental applications of geology. Since 1990, his primary responsibility has been on environmental projects primarily focused on petroleum hydrocarbon site assessment and application of effective remedial approaches to reach closure. Work has included projects throughout the U.S., Southeast Asia, and South America. His current position is the environmental technology coordinator for BP in the Western United States.

Charles E. Robinson, P.E., Vice President, serves ARCADIS as the Brownfields, Real Estate, and Developers Market Sector Manager. Mr. Robinson has over 30 years of experience as a regulator, consultant, and contractor in the environmental remediation industry. With ARCADIS, one of his main pursuits has been to devise and complete over a dozen price guaranteed projects in support of the remedial business objectives of ARCADIS clients. His professional focus has been to resolve remedial challenges through aligning the interests of the project, public, and business using the tools of government, technical approach, and legal and business mechanisms.

Yue Rong (a.k.a. "Y.R.") is currently the Environmental Program Manager for the Underground Storage Tank Program at the California Regional Water Quality Control Board, Los Angeles Office. He has more than 20 years' experience with the Agency in dealing with groundwater contamination problems in the Los Angeles area of California, U.S.A. He is an Associate Editor for the peer-reviewed journal of *Soil and Sediment Contamination* and an Associate Editor for the Journal of *Environmental Forensics*. Dr. Rong was elected in 2006 and re-elected in 2008 as the president on the board of directors for the Southern California Chinese American Environmental Protection

Association (SCCAEPA), serving the local minority community. He is also the Editor-in-Chief for the peer-reviewed SCCAEP A Online Journal. Dr. Rong is the author or co-author for about 30 peer-reviewed publications, and the editor of the book entitled "Practical Environmental Statistics and Data Analysis." He was the recipient of the California Regional Water Quality Control Board Outstanding Achievement Award and Supervisory Performance Award. Dr. Yue Rong has his Ph.D. in Environmental Health Sciences from the University of California at Los Angeles (UCLA) and M.S. in Environmental Sciences from the University of Wisconsin.

Atul M. Salhotra is an internationally recognized expert in the development and application of risk based decision making programs for the management of chemically impacted sites. He is the lead author, project manager, and developer of Risk Based Corrective Action (RBCA) Programs for several states including Oklahoma, Texas, New-Mexico, Kansas, Nebraska, Missouri, Tennessee, Alabama, North Carolina, Idaho, Washington DC, New York, and USEPA (Indian Countries). As one of the original nine ASTM approved trainers for RBCA, he has conducted training courses in over 25 states and 10 countries. Over 6000 individuals have attended his courses. Dr. Salhotra is also well versed in the site-specific evaluation of indoor vapor intrusion, natural attenuation, and fate and transport modeling for the cost effective management of sites. He has supervised over 150 risk assessments involving hydrocarbons, metals and solvents and successfully defended the results with regulatory agencies across the country.

Dr. Salhotra has provided litigation support on numerous high-profile projects related to the migration of plumes under people's homes, the allegation of adverse health effects due to vapor intrusion, and diminution of property values. Several of these projects involved public meetings, risk communication presentations, and media coverage.

Dr. Salhotra is an MIT graduate with a Doctoral Degree in Civil Engineering.

Bradley E. Sample is an ecotoxicologist with over 20 years of experience as an ecological risk assessor and wildlife ecologist focusing on large, complex sites. He is currently principal scientist for Ecological Risk, Inc. Dr. Sample is a co-author of a book on ecological risk assessment at contaminated sites, and served on the editorial board of the journal Environmental Toxicology and Chemistry from 2001 to 2003. In December 2005 Dr Sample was elected to serve as an Editor for Hazard/Risk Assessment for Environmental Toxicology and Chemistry, a position he still holds. Due to Dr. Sample's expertise, he has twice been invited to serve on peer-review committees for the ecological risk assessment and bioaccumulation modeling components of the U.S. EPA's Hazardous Waste Rule. In 2004 he served on an independent peer-review committee evaluating EPA's ecological risk assessment for the General Electric Housatonic River site. Also in 2004, he served as a peer review committee member for the development of EPA's national metals risk assessment framework. In 2008, Dr Sample served on the USEPA Science Advisory Panel reviewing the Office of Pesticide Programs Preliminary Notice of Intent to Cancel the pesticide, carbofuran.

Scott Samuelson is a Professor of Mechanical, Aerospace, and Environmental Engineering at the University of California Irvine, Director of the National Fuel Cell Research Center, and co-Chair of the California Stationary Fuel Cell Collaborative in collaboration with Mary Nichols, the Chair of the California Air Resources Board. His research is directed to power generation from combustion, fuel cells, and integrated combinations of both. He received the Master of Science and Ph.D. degrees from the University of California Berkeley, and is a Fellow in the American Society of Mechanical Engineers.

Craig Sandefur serves as Vice President of Technical Services and is recognized as an expert in the field of enhanced aerobic and anaerobic bioremediation. He has over 18 years of experience in the remediation industry and has developed much of Regensis' current product application methodologies. In this role, Mr. Sandefur was the focal point in the development of what is now commonly accepted direct-push application protocols for the delivery of electron acceptors like ORC and ORC-A[®], electron donors like HRC[®] and 3-D Microemulsion (3DMe)[®] and chemical oxidants like RegenOx[®]. He was directly involved in the development of ORC and HRC design software which has become some of the most widely used software in the environmental industry. **Mr. Sandefur** has successfully designed and implemented a wide-range of in-situ remediation strategies on hundreds of projects. In addition, Mr. Sandefur has reviewed and evaluated many of the implemented projects to date and has provided expertise in the areas of technical trouble shooting and field performance. Mr. Sandefur manages the company's technical services staff and provides oversight on enhanced bioremediation and chemical oxidation remediation applications.

Clay A. Sandidge has 20 years of experience in the environmental remediation, consulting, engineering, transportation and real estate transaction/development business in Southern California. Throughout his 20 year career he has focused on providing integrated solutions to Oil Companies, Ports, Utilities, Schools, Manufacturing, Municipal, State, Local and Federal Government clients. At Weston he builds teams to deliver integrated sustainable solutions which include Redevelopment, Clean Energy, Green Buildings, and Sustainability Consulting. He is involved in multiple real estate development projects involving transformation of industrial properties for residential, retail, office, and mixed-use development. Clay is President of Sandidge Consulting delivering solutions for numerous projects including Ports of Long Beach and Los Angeles, municipalities of Long Beach and Los Angeles, Oil Companies, Sempra Energy, S. CA Edison, College Districts and other clients. He is currently President of Future Ports, a board member of the Harbor Association of Industry & Commerce and is actively involved with many other local civic associations in the Long Beach and San Pedro area. Clay lives in Mission Viejo with his wife, Donna and three children, Slate, Eve and Wilson.

Javier Santillan has worked for the Air Force for over 17 years as a chemist, hydrogeologist, and environmental scientist. He is currently the Air Force SME for Remedial Systems and the lead on several Broad Agency Announcement Projects,

including those on the Applied Chemical Sensor Program, nano-iron, and effectiveness of Air Force pump and treat systems. He has a B.S. in chemistry and an M.S. in agricultural chemistry, both from the University of Arizona and a Ph.D. in soils and irrigation from Utah State University. He has been an instructor for online ITRC courses.

David Schroder is a Senior Scientist in the Sylvania, Ohio office of Stantec Consulting. Mr. Schroder has over twenty years experience in the environmental consulting field, including all aspects concerning the management, design, permitting, installation, operation, maintenance, and analytical monitoring of soil and groundwater remediation programs. Mr. Schroder's experience incorporates a wide range of chemical, biological, and mechanical remediation technologies, and he has assisted with the research and development of application techniques for chemical oxidation, enhanced natural attenuation, enhanced reductive dechlorination, permeable reactive barriers, surfactant-enhanced recovery, and chemical stabilization for a variety of soil and groundwater contaminants. This includes both bench-scale evaluations and full-scale field applications. Mr. Schroder has a BS in Chemistry and Biology from the State University of New York at Brockport.

Brian Schumacher is the Branch Chief of the Environmental Chemistry Branch of the United States Environmental Protection Agency's Office of Research and Development in Las Vegas, NV. Brian was hired by the U.S. EPA in 1991 to take the lead and address ways to improve the sampling and analysis of soils contaminated with volatile organic compounds. This research has led to his natural progression into the arena of vapor intrusion. Dr. Schumacher is currently conducting research in numerous areas related to vapor intrusion including: the improvement/standardization of soil gas sampling methodologies; the spatial and temporal variability of VOCs in the environment (in both subslab and uncovered areas), and passive vapor intrusion sampling. His latest research effort, just underway, is looking at the fluctuation of VOC and radon concentrations in and around a home over a period of 1 year.

Henry Schuver (DrPH, Epidemiology, Johns Hopkins School of Public Health; M.S., Geology, Arizona State University) has been with the USEPA's Office of Resource Conservation and Recovery (ORCR), Cleanup Programs Branch since 1997. In 1999 he authored the national RCRA Corrective Action Environmental Indicator (EI) guidance which led to a review of all plausible exposure pathways for subsurface contamination including impacts to indoor air. Since then he has led the development of the 2001 RCRA Supplemental Guidance for Vapor Intrusion, supported the development of the OSWER draft 2002 guidance, and has held annual workshops to improve the science and understanding of vapor intrusion. Recently he authored the 2010 review of the Agency's 2002 draft Vapor Intrusion Guidance in support of the finalization of the Agency guidance (planned 2012). Prior to coming to Washington, he worked in the USEPA regional office in NY (1995-1997), as a private consultant in PA (1989-1995), and with the state of New Jersey (1985-1989).

Alan Seech holds M.Sc. and Ph.D. degrees in Soil Chemistry and Environmental Microbiology, respectively, from the University of Guelph. In 2002, working with a group

of private investors, he purchased Grace Bioremediation Technologies from W.R. Grace & Co. and currently serves as CEO and Director of Technology for Adventus Americas, its successor. Alan is involved in the research and development of innovative bioremediation technologies for the treatment of recalcitrant organic compounds, as well as providing key support to clients throughout the remedial process. Alan has published numerous articles on bioremediation and biodegradation of organic contaminants in soil and presented more than 50 papers at international conferences on bioremediation. He is the inventor of the patented DARAMEND[®] technology for bioremediation of soils and sediments containing recalcitrant organic contaminants and holds four United States patents. Alan also serves as an Associate Graduate Faculty at the Department of Environmental Biology, University of Guelph.

Nian She has more than 21 years of experience in river/lake restoration, sediment remediation, water quality, hydrologic/hydraulic modeling, stormwater management and water resources planning and management. Dr. She is a senior civil engineering specialist with City of Seattle before join Herrera. He is also a guest professor in Shenzhen University of China, and an international expert in LID, sediment remediation and river/lake restoration. He developed several innovative technologies in sediment remediation, river/lake restoration and holds several patents in sediment treatment processes. He has very strong analytical skills, and developed tools for government in stormwater control and water resources planning and management including LID models, water consumption real time forecast models, water main rehabilitation priority model and watershed snotel forecast models. He has experience managing different type of projects in US and aboard. Dr. She is very active in academic research. He is currently a council member of Urban Watershed Management Research Institute of EWRI, and was the chairman of 2008 International Low Impact Development Conference in Seattle. He has given lectures in nonpoint source control and LID workshops in European counties, New Zealand and China.

Lenny Siegel has been Executive Director of the Center for Public Environmental Oversight since 1994. He is one of the environmental movement's leading experts on both military facility contamination and the vapor intrusion pathway, and for his organization he runs two Internet newsgroups: the Military Environmental Forum and the Brownfields Internet Forum.

Siegel serves on numerous advisory and technical committees including, the Moffett Field Restoration Advisory Board, the National Research Council's Committee on Future Options for Management in the Nation's Subsurface Remediation Effort, and the Interstate Technology & Regulatory Council's work team on Permeable Reactive Barriers.

Carl Spreng worked as an exploration geologist after receiving BS and MS degrees in Geology from BYU. Exploration projects included National Uranium Resource Evaluations for DOE; coal, oil shale and tar sands evaluations; and oil and gas exploration. Since 1992 he has worked for the Hazardous Materials and Waste Management Division of the Colorado Department of Public Health & Environment as a project manager overseeing environmental restoration at DOE's Rocky Flats Site. He

currently also serves as co-leader of the Interstate Technology and Regulatory Council's (ITRC's) Attenuation Processes for Metals and Radionuclides Team.

David Springer is a Principal Hydrogeologist with Tetra Tech in the Santa Barbara, CA office. He is a licensed professional geologist in California, and has been practicing as an environmental consultant for over 23 years in the Santa Barbara area. He received his Bachelor's degree in Geology and Environmental Studies at the University of California at Santa Barbara in 1989, and his Master's degree within the Hydrology program through the Department of Geography, U.C.S.B. in 1993, while working as a post graduate researcher at the Institute for Crustal Studies. His areas of emphasis include site characterization and remediation of soils and groundwater for a diverse array of clients. Over the previous 8 years, Mr. Springer has applied his expertise in designing and implementing primarily groundwater solvent remediation programs using a variety of technologies at Vandenberg Air Force Base, CA, where he manages Tetra Tech's IRP program.

Daniel J. Steck is a Professor of Physics and the Director of the Schaefer Environmental Radiation Laboratory at St. John's University. He has a PhD in nuclear physics from the University of Wisconsin-Madison. Dr. Steck has been conducting research on environmental radiation and radon since 1981 on topics as diverse as novel radon detectors, radon and radon potential mapping, spatial and temporal radon variation indoors and out, contemporary and retrospective radon dosimetry, radon epidemiology, radon from decorative granite, and cost effectiveness of lung cancer prevention via radon mitigation. His work has resulted in one patent, more than 70 publications and several awards, including the 2010 Nexus Award from the American Association of Radon Scientists and Technologists. Dr. Steck has been a consultant to national and international organizations including the World Health Organization, and radiation protection agencies in the United States, Canada, Italy, China, Hungary, and Finland.

Alina Stingu is a Ph.D. student in Chemical Engineering Department at "Gheorghe Asachi" Technical University of Iasi, Faculty of Chemical Engineering and Environment Protection, Iasi, Romania. She is studying the morpho-physiological changes of different plant species under heavy metal stress and polyphenolic extracts treatment obtained from different vegetal raw material (spruce bark, chestnuts shell, grape seeds, *Asclepias syriaca* plant). Based on polyphenolic profile of tested aqueous extracts, she is trying to propose a potential mechanism for naturally polyphenolic compounds modulator aspects in phytoremediation process. Ms. Stingu has a Bachelor in Environmental Engineering from "Gheorghe Asachi" Technical University of Iasi, Romania (awarded in 2006) and a Master of Science Degree in Environmental Management (awarded in 2007) from Iasi University of Iasi, Romania.

Paul Stock has been a Hydrologist with the Minnesota Pollution Control Agency (MPCA) since 1999. He is presently the Remediation Coordinator for the Petroleum Remediation Program. He is the principal author of a recently completed series of guidance documents explaining MPCA policies and requirements for the design and

operation of remediation systems used to cleanup petroleum releases. This includes a new guidance document with Minnesota's definition of recovery of free product to the maximum extent practicable. Beginning in 1998, laser induced fluorescence (LIF) probes have been used to investigate light non-aqueous phase liquid (LNAPL) in Minnesota and Paul specializes in the interpretation of LIF data to structurally map LNAPL bodies and characterize its subsurface behavior. In 1979, Paul earned a B.A. with Distinction from the University of Minnesota majoring in Geology. He also completed graduate course work at Louisiana State University and Wright State University. After college, Paul worked as a coal geologist for the North American Coal Corporation from 1980 to 1987, and then as an project manager and geologist for Delta Environmental Consultants until 1998. Prior to joining the MPCA, he worked for the Minnesota Department of Agriculture overseeing the investigation and cleanup of pesticide and nutrient releases at agricultural chemical facilities. Paul has been a Certified Professional Geologist under the American Institute of Professional Geologist since 1986, and a Minnesota Licensed Geologist since 1997. He is also a member of the National Ground Water Association and Minnesota Ground Water Association.

Darko Strajin, P.Eng., has over 20 years of consulting experience in the environmental and geotechnical fields. He graduated with a B.A. Sc in Geotechnical Engineering from the University of Belgrade, Serbia in 1987. Darko moved from Serbia to Canada in 1993 and since then he has been employed with several major consulting companies. His areas of expertise include the management and assessment of contaminated sites and the design and implementation of innovative, cost-effective, in-situ remedial systems for impacted soil and groundwater. Darko has acted as a Project Director in many complex Soil and Groundwater remediation projects in Toronto and throughout Ontario. He is very experienced in designing and implementing perozone technology in difficult conditions involving fracture shale bedrock. His broad experience in engineering enables him to provide superior service to the environmental industry. Darko is well known in the remediation industry as he often presents successful projects at conferences worldwide.

Douglas J. Sutton has had over 15 years of experience with remediation and green practices. His work with remediation has involved conducting optimization evaluations at over 70 environmental cleanup sites nationwide for U.S. EPA, U.S. Army, and private sector clients. He has also authored or co-authored six technical guidance-oriented documents on behalf of U.S. EPA related to groundwater remediation. His remediation work also includes design, operations, and project management of sites in the private sector. Dr. Sutton's work with green and sustainable practices has included studying the influence of North American forests on regulating greenhouse gases and feasibility analysis and/or design of various energy efficient and renewable energy technologies such as photovoltaic systems, geothermal heat pumps, solar heating, and combined heat and power. Dr. Sutton applies both of these areas of expertise to conduct green remediation evaluations, develop technical guidance-oriented green remediation documents, and provide training in the field of green remediation on behalf of U.S. EPA and other federal agencies.

Robert E. Sweeney, Ph.D., R.G. is a petroleum geochemist consulting on issues involving forensic geochemistry, sources for fugitive hydrocarbons, and identifying and quantifying *in situ* processes involved in the biodegradation of hydrocarbons. He has many years of experience doing university research and applied industry projects. Publications are available on request. Recent interests include quantitative modeling of methanogenesis, and the use of temperature monitoring to determine *in situ* rates of SVE, air sparge, and ISCO remediation.

Aklilu Tesfamichael, Ph.D., is an Engineer in Geosyntec's San Diego, CA office. He received his Ph.D. in Civil and Environmental Engineering with specialty in Water resources engineering from Utah State University. He has worked on variabilities and uncertainties in probabilistic risk assessment procedures. Since joining Geosyntec, Mr. Tesfamichael's work areas include contaminated site characterization, human health risk assessment, landfill gas management, water quality management, stormwater management and groundwater and surface water modeling. Mr. Tesfamichael has also provided key statistical analysis support in several projects.

Karen Thorbjornsen holds B.S. and M.S. degrees in Geology and is a registered Professional Geologist. She has 14 years of environmental consulting experience with Shaw Environmental, Inc. in Knoxville, Tennessee. She has performed background studies for metals and PAHs in environmental media and statistical analyses of environmental data at numerous sites across the United States. She specializes in geochemical evaluations of metals — a technique used to distinguish natural concentrations from site-related contamination in soil, groundwater, surface water, and sediment. Her geochemical evaluations are performed to delineate the extent of contamination, refine lists of chemicals of concern, optimize long-term monitoring programs, confirm the success of soil removal actions, and characterize background distributions. Ms. Thorbjornsen has authored several papers on geochemical evaluations of metals and teaches short courses on the technique.

Brian H. Timmins is the Environmental Services Director of ETEC, LLC located in Portland, Oregon. He has over 12 years of experience in the environmental industry, and has focused the majority of that time on the remediation of fuels and chlorinated solvents using a variety of *in situ* and *ex situ* remedial approaches. He has a M.S. in Environmental Engineering from Oregon State University and a B.S. degree in Environmental Science from the University of Florida.

Cristina Toma is a professor at the School of Engineering Technology & Applied Science at Centennial College. She has extensive teaching and research experience (12 years in Europe) along with industrial research experience (9 years in Europe and Canada). She obtained her PhD degree in Engineering at INSA Lyon in France in 1997. Cristina is one of the leading experts in power transmission with a number of research topics in Europe and in Canada (Magna Ltd.) that are focused mostly on aerospace and automotives. Her research at Centennial College is focused on renewable energy, in developing new wind turbine designs.

Emily Tozzi is a Master's candidate in the Soils and Biogeochemistry Graduate Group, Department of Land, Air and Water Resources, UC Davis. She has a diverse background spanning plant and fish ecophysiology; geology and soil science; watershed and wetland ecology; and environmental toxicology. She obtained her Bachelor's from UC Davis in Environmental and Resource Science and specialized in hydrobiology. After graduation, she managed the Plant Physiological Ecology/ Soil-Root Ecology Lab at UC Davis for 2 years before transitioning to a graduate student researcher. As a manager, she worked on several projects with graduate students, undergraduate assistants and outside collaborators. During this time, she was also the Environmental Health and Safety representative and student supervisor. As a researcher, Emily focused for 4 yrs on studying cottonwood ecophysiology, survival and response to microclimate stress. She was project manager of a long-term study examining cottonwood seedling growth allocation, rooting velocity and distribution with differing rates of water table decline. This study was accompanied by field sampling and a microclimate study, which consisted of many short-term experiments that collectively examined the effects of light, heat and water stress on cottonwood photosynthesis.

Li-Chu Tsai is an associate professor of the Department of Environmental Engineering and Science at Chia-Nan University of Pharmacy and Science, Taiwan since 2001. He has a B.S. degree in Environmental Engineering from the National Chung- Hsing University, Taichung in 1986 and a M.S. degree in Environmental Engineering from the National Taiwan University, Taipei in 1988. Mr. Tsai focused on the study of heavy metals fates, binding speciation and remediation techniques in contaminated soil, ground water, and river sediments since 1996. He currently works on the enhancement of heavy metal ions biosorption from wastewater with chemically modified agricultural waste; of dispersion in zero-valent iron nanoparticles and of speciation of phosphorus in contaminated river sediment.

Stephanie Turkot has a B.S. degree in Environmental Science from William Paterson University. She completed her senior internship at the New Jersey Department of Environmental Protection during the spring of 2009. Ms. Turkot has been working with Geo-Cleanse International, Inc. (GCI) for the past year. Her roles at GCI include assisting in remedial designs and implementations of treatment programs, groundwater process monitoring, as well as assisting in the sales & marketing department.

Seema Turner is a Senior Associate at ENVIRON with over 10 years of experience in environmental investigations and analyses, engineering geology, and geotechnical engineering. Ms. Turner has performed environmental site sampling and monitoring of ground water and surface water in streams, a petroleum refinery, an amusement park, and former testing and manufacturing facilities. Since joining ENVIRON, Ms. Turner has conducted numerous remedial site investigations which included soil, soil gas, and groundwater sampling. This included low flow micro-purge, groundwater sampling and monitoring, soil sampling, installation of soil gas probes, and supervising installation of bedrock wells using Air Rotary techniques. She has sampled, monitored, and traced surface water and groundwater. She has observed and collected pertinent site data and information, performed geologic analyses of field data and historical information,

prepared geotechnical cross sections and geologic presentations for reports, mediations and court presentations, and she has prepared written reports. She has provided consultation services to public agencies, developers, insurance companies and attorneys. In addition to groundwater and soil sampling, Ms. Turner has participated in assessing indoor air quality for volatile organic compounds in residential and commercial properties and schools in Southern California. In this capacity, she has performed indoor air quality surveys by conducting chemical inventories and setting-up SUMMA™ canisters with flow controllers. Ms. Turner has an MS in Geology from Vanderbilt University and a BS in Geology from the College of William and Mary. Ms. Turner is also a California-licensed Professional Geologist and Certified Engineering Geologist.

Richard A. Vogl, PG, CHG, CEG, is a Principal Hydrogeologist with GeoHydrologic Consultants, Inc. in Huntington Beach, California. Mr. Vogl is a licensed professional geologist in California, Arizona, and Oregon, and a certified hydrogeologist and certified engineering geologist in California. Mr. Vogl completed both his B.S. and M.S. in Geology from California State University Los Angeles and completed the certificate program in Environmental Site Assessment and Remediation from the University of California Irvine. Mr. Vogl has over 20 years of experience performing environmental assessment and remediation projects on the west coast. His current focus has been assessment and remediation of petroleum contaminated sites involving MTBE, TBA, and other oxygenates. In addition, Mr. Vogl has a very diverse background in remediation of other recalcitrant compounds using cutting edge innovative technologies, as well as the more classical remedial technologies.

Michael J. Wade is Principal Scientist of Wade Research, Inc., a small business started in 1992 that provides geochemical consulting services to a variety of government agencies, industrial clients, and law firms. Dr. Wade was educated as an organic geochemist and has 33 years of post-doctoral experience conducting a variety of research programs with special emphasis on organics pollution in the environment. He regularly provides expert testimony services both through the deposition process as well as in court testimony in the areas of petroleum product identification, hydrocarbon fingerprinting techniques, and age-dating of petroleum product releases. Periodically, Dr. Wade publishes research articles in the peer-reviewed technical literature on various aspects of forensic geochemistry.

Jeff Wagner is a research scientist in the Microscopy/Special Studies Unit within the Environmental Health Laboratory of the California Department of Public Health. His work over the past 20 years has focused on characterizing airborne particulate matter (PM) exposures and sources using novel analytical techniques, including investigations of PM in smoking rooms, factories, residences, go-kart facilities, and rural communities. He also identifies unknowns in dust, food, drugs, building materials, drinking water, and suspicious white powders for various state, federal, and university clients, using polarized light, infrared, and electron microscopy. Jeff received his PhD from University of North Carolina in Environmental Science and Engineering, and his MS and two BS

degrees from University of Illinois in Environmental Engineering, Engineering Physics, and Philosophy, respectively.

Stephen Wall is the Chief of the Outdoor Air Quality Research Program for the California Department of Public Health, which is located on the Marina Bay Richmond Laboratory Campus. The OAQ Research Program has a staff of nine research scientists, which conduct ground breaking investigations to elucidate the sources and environmental fate of toxic particles, to assess the potential for human exposure. These air environment forensics investigations employ state-of-the-art sampling devices and analytical instrumentation, including micro-scale spectroscopy and electron microscopy. Dr. Wall received his B.S. in physical chemistry from the University of California at Davis, and his Ph.D. in Engineering Physics from the University of California at Berkeley. He is the author of more than 50 scientific publications, and has presented over 30 research papers at international conferences on aerosol chemistry and physics.

Yi Wang is Director of ZymaX Forensics Isotope, an environmental isotope laboratory serving clients in all 50 states as well as numerous international locations. He has a B.S. in Environmental Science, an M.S. in Environmental Chemistry, and a Ph.D. in Environmental Geochemistry. He received his postdoctoral training on the state-of-art technology Compound-Specific Stable Isotope Analysis (CSIA) at Brown and Princeton University. He has over twenty years of experience in environmental research and development on issues related to air, soil, and water contamination. Dr. Wang is an organic geochemist plus a specialist in the analysis of isotope ratios for carbon, chlorine, hydrogen, nitrogen, oxygen, and sulfur. He has published over 45 peer-reviewed articles and books on air, soil, and water contamination topics and has shared this information via lectures throughout the world. He is an author of Chapter 3 "Sampling and Analysis" in the Environmental Law Series "Environmental Science Desk Book" published by the West Group. Dr. Wang has worked as an expert for the U.S. Environmental Protection Agency (EPA) and the State Coalition for Remediation of Drycleaners (SCRD) on organic contaminant cases especially chlorinated solvent where advanced site diagnostic tool 3D-CSIA was successfully used to locate source zones, allocate responsibility, assess the viability of in situ remediation, and optimize remediation strategy, which is consistent with "Green Remediation".

Zhong-Min Wang is a Research Scientist at Environmental Health Laboratory of California Department of Public Health. His research area includes nanoparticle synthesis and characterization, aerosol sampling and generation, indoor or ambient air PM monitoring, unknown powder identification, asbestos identification and quantification. He is also a *microscopist* and has been working in the microscopy lab for many years. Dr. Wang holds a bachelor, master and doctor degree in Chemical Engineering and a PhD degree of Environmental Engineering from University of Cincinnati. He has been a professor at Department of Chemical Engineering of South China University of Technology for 15 years before he came to the USA. After he came to the USA, he has worked at University of North Carolina, US EPA and CDC for various environmental and health related projects. He has published about 30 papers at peer reviewed journals and holds two patents.

William E. Wertz received his B.S. and Ph.D. in Geology from Penn State University. For over 20 years, he served as the NYSDEC's technical advisor and project manager on the IBM Endicott site, a site where approximately 500 structures have been mitigated for vapor intrusion. In that role, he developed a decision matrix for interpreting the results of subslab, indoor and outdoor air samples and determining the appropriate actions to address potential vapor intrusion related exposures. He has participated in the development of New York State's vapor intrusion guidance and policy documents, and helped develop and lead New York State's vapor intrusion training seminars for State and EPA Region 2 staff, consultants and industry representatives. Prior to leaving NYSDEC, Bill conducted research on the spatial and temporal variability of VOCs in the sub-slab environment, alternate VI mitigation techniques, and passive VI sampling.

Bill recently joined Geosyntec as a Senior Consultant with the Subsurface Vapor Intrusion to Indoor Air Practice Group. He also serves as an advisor on the USEPA's vapor intrusion technical workgroup.

Alan Weston, Ph.D. - Dr. Alan Weston is Director of Remedial Technology and heads the Innovative Technology Group at CRA. He has over 20 years of experience in hazardous waste site remediation. In particular, Dr. Weston's experience includes the identification, evaluation, and application of innovative approaches for the remediation of chemical contamination. Dr. Weston performs remedial technology assessments including conceptual designs and preliminary cost estimates for technologies such as enhanced aerobic and anaerobic biodegradation, chemical oxidation, permeable reactive barriers, phytoremediation, and engineered wetlands. Dr. Weston also manages the treatability study laboratory and provides expert opinions to client legal teams on issues related to petroleum hydrocarbon biodegradation and spill dating, chemistry, analysis, QA/QC and statistical analysis of chemicals including dioxins, PCBs, PAH, and mercury in water, soil, sediment, plastic materials, and food ingredients. Previously, he was Director of Remedial Programs for Occidental Chemical Corporation (OxyChem), managing investigation and remediation at all OxyChem's active plant sites, including selection of remedial alternatives and treatability studies.

Raymond K. Will, P.E., D.WRE is a Principal Engineer with Todd Engineers (2490 Mariner Square Loop, Suite 215, Alameda, California 94501) He received a Bachelor and Master of Science degree in Mining Engineering from the University of Texas and Colorado School of Mines respectively. He is a registered engineer in Arizona, California, and Colorado. Mr. Will has over 35 years of experience including management of surface water and ground water investigations and remediation of hazardous waste. Previous experience includes geologic exploration, environmental evaluation, design, construction, operation and reclamation of domestic and international mining and construction projects. He has specific experience in matters involving surface water/ground water relationships, including stormwater recharge, seepage, flooding, and drainage issues. His experience also includes water rights and litigation support as an expert witness in numerous hearings, mediations and trials.

Sam Williams is a principal hydrogeologist for Geosyntec Consultants. He has over 26 years of professional environmental consulting experience and is the manager of Geosyntec's San Diego and Phoenix operations. For the last several years he has been involved in several environmental legal cases which have required the use of soil vapor and groundwater flow and transport models at sites with complex hydrogeologic conditions. Mr. Sam Williams has a B.S. in Geophysics and an M.S. in Hydrogeology from San Diego State University. Mr. Williams is a Certified Hydrogeologist and Professional Geologist in the State of California, and a Certified Environmental Manager in the State of Nevada. For 10 years, Mr. Williams was also an instructor at the University of California at San Diego for the Regulatory Framework of Hazardous Materials and Toxic Substances course. Sam is also the current Chairman of the San Diego County Site Assessment and Mitigation Forum. Current professional responsibilities include supervision of hydrogeologists and engineers in the performance of environmental assessments, remedial investigations/feasibility studies, and remedial design; and characterization and remediation of State and Federal Superfund sites and former aerospace manufacturing facilities. Areas of specialization include assessment of groundwater conditions at landfills, development and implementation of innovative remedial technologies, vapor intrusion assessments and mitigation, risk-based corrective action, and litigation support.

Josef Winter is a professor at KIT, Karlsruhe Institute of Technology in Germany. He got a PhD in microbiology and holds now the chair of solid waste management. He is the principal investigator of several national and international research projects dealing with soil sanitation, biotechnological conversion of wastes into value-added products and waste-/wastewater treatment technologies appropriate for developed and emerging countries.

Nele Witters holds a degree in Commercial Engineering (Université de Rennes, France, and Hasselt University, Belgium). Early 2011, she will finish her PhD in Economics, which she prepared at the Centre for Environmental Sciences (CES) (Hasselt University, Belgium) and The School of Forestry & Environmental Studies (Yale University, USA). The topic of her PhD is "Cost-benefit analysis of phytoremediation of metal enriched agricultural land: Crop choice model and impact of policy concerning soil remediation, renewable energy, and waste management". During her research Nele has been working on several (European) projects focused on diffusely contaminated soils combined with the production of biofuels. Recently, she has spent one year at the School of Forestry & Environmental Studies at Yale University (USA) to study the externalities of phytoremediation. Nele has published several articles and reports on the economic viability of the use of agricultural crops for phytoremediation of metal contaminated land, and has given numerous presentations on this subject. Her fields of expertise are economics of phytoremediation, sustainability, externalities, renewable energy, and policy development using cost-benefit analysis, life cycle analysis, and optimization models. The research institute she is working for, CES, is a multidisciplinary research centre that combines high-quality fundamental environment-related research and applied research. Since one of the core competences of the CES is remediation and management of contaminated soils, it is a

partner in many initiatives for European research projects with regard to sustainable management, use and decontamination of polluted soils and (ground) water. The research group Environmental Biology focuses on the (eco-) physiological effects and the molecular and biochemical sequence of events after application of pollutants to plants. Phytoremediation of organics also belongs to the research area of the group, especially on nitro aromatics, oils and BTEX. Special attention is paid to the interaction between plants (especially poplar and willow) and their associated microorganisms.

Jeffrey Wong, Ph.D., is the Chief Scientist for the California Department of Toxic Substances Control (DTSC) at the California Environmental Protection Agency in Sacramento, California. For more than 20 years, he has managed DTSC's efforts in the areas of environmental measurements, biological and exposure monitoring, toxicology and risk assessment, pollution prevention and technologies. Prior to this, Dr. Wong was involved in forensic investigations for law enforcement. Dr. Wong has served on Study Committees for the National Academy of Sciences, the US EPA and US DOE. He also served by appointment of President Clinton in areas related to the management and disposal of nuclear materials and continues to work in related areas with the National Academy of Sciences. Dr. Wong did his graduate work at the University of California, Davis and is currently leading efforts focused on nanotechnologies, emerging contaminants and green chemistry.

Kathleen Yager is an Environmental Engineer with EPA's Office of Superfund Remediation and Technology Innovation in North Chelmsford, Massachusetts. Ms. Yager received a B.S. from the University of Massachusetts in 1992 and a M.S. from the Pennsylvania State University in 1997 in environmental engineering. Since joining EPA in 1997, Yager has focused on advancing the understanding and national awareness of innovative ground-water remediation technologies through the completion of demonstration projects, coordination of public/private partnerships, and publication of technology evaluation reports. Currently her focus is on identification and evaluation of optimization strategies for long-term remedial actions including pump and treat.

David Yogi has been an employee of U.S. EPA HQ's Office of Superfund Remediation and Technology Innovation's site assessment program since 2008 and has worked in various capacities at EPA since joining the Agency in 2006. Mr. Yogi began work for EPA in its San Francisco regional office where he worked in various programs including civil investigation, Brownfields/site redevelopment, and public affairs.

Matthew Young is an Environmental Protection Specialist in the Implementation Division of the EPA's Office of Underground Storage Tanks (OUST). His responsibilities include leading OUST's efforts in the development of petroleum vapor intrusion guidance for federally regulated underground storage tank sites and is responsible for working with states and regions for collecting and reviewing performance measures associated with OUST semi-annual and Recovery Act reporting. He is a professional geologist, and received his bachelors of science from the University of Toledo in 1999. He has worked in OUST since 2008.

Gabriel A. Zainescu is Senior Researcher at the National Research and Development Institute for Textile and Leather, Division - Leather and Footwear Research Institute from Bucharest Romania. Dr. Phys. Gabriel A. Zainescu is an expert in the field of research & innovation for the national /international leather sector.

Dr. Zainescu has published relevant research papers in the field of remediation of wastewater from tanneries, and reuse of active components of sludge resulted from tanneries' wastewaters. His recent interests focused on studies and applied research for SMEs in terms of leather wastes from the leather and footwear industry. In this context, he conducted research on remediation of degraded soil using organic polymers systems.