MICHAEL WIREMAN

Prepared: June, 2014

EDUCATION

Bachelor of Science, 1976, Geology, Western Michigan University, Kalamazoo, MI

Master of Science, 1987, Western Michigan University, Kalamazoo, MI

Post MS: Advanced Ground-Water Hydrology, Colorado School of Mines, Geochemistry of Ground-Water Systems (USGS advanced short course), numerous ground-water related classes and seminars on various aspects of hydrogeology, ground-water protection, remediation and management

PROFESSIONAL EMPLOYMENT RECORD

2014 – present

Consulting Hydrogeologist

Consultant to The World Bank - Working on hydrologic restoration project in lower Yangzi River basin.

Active member of Sub-Committee on Groundwater (Advisory Committee on Water information)

Director – NGWA Science and Engineering Division

Director – GWPC Ground Water Research and Education Foundation

1987 to 2014

National Ground-Water Expert, US EPA Region VIII. Provides scientific and technical support to EPA programs (including Superfund, RCRA, Enforcement, NEPA and Water programs), other Federal agencies, International programs and ground-water protection / management programs in several western states. Extensive experience in hydrogeology of hardrock mine sites, remediation of hardrock mine sites. hydrology of mountain watersheds,

DNAPL sites and fractured rock settings, nutrients in ground water, ground-water monitoring, ground-water sensitivity /vulnerability assessment, source-water / wellhead protection. Position includes working closely with policy makers, decision makers and attorneys.

Teaching – Currently teaching Basic Principles of Groundwater and Contaminant Transport for Ground- Water Protection Council. Has served as adjunct professor at Metropolitan State College in Denver where he taught a class in Contaminant hydrology. Founder and co-instructor of EPA class entitled Basic Principles of Hydrogeology and Contaminant Hydrology. This class is offered to State DEQ and Environmental protection staff and has been delivered 12 times in eight states. He also teaches classes for the National Ground -Water Association and Geological Society of America. Has developed and taught workshops in Eastern Europe and Middle East.

Expert testimony - Has served numerous times as an expert witness and advisory witness in federal court, State court, State Water Quality Control Commission and State Water court.

International Experience – Has worked extensively in Eastern Europe (Estonia, Ukraine, Romania, and the Republic of Georgia), Russia, the Middle East (Oman, Bahrain and Iraq), and China as a Technical Expert with EPA Office of External Affairs, EPA Office of Research and Development, US AID and The World Bank.

1981-1986

Hydrogeologist, Leonard Rice Consulting Water Engineers, Inc. Responsible for ground-water geology studies including interpretation and evaluation of hydrogeologic systems, aquifer testing, water supply development, water well drilling, ground-water contamination and monitoring and western water rights. Duties required collection and analyses of data, report preparation and expert testimony.

AFFILIATIONS

Colorado Ground-Water Association
Geological Society of America
National Ground Water Association
International Association of Hydrogeologists – Past Chair US National Chapter
Member of the Subcommittee on Ground Water – Advisory Committee on Water Information
Member, Board of Directors, NGWA Science and Engineering Division

PUBLICATIONS

2014 in press, Cowie, Rory, Williams, Mark W., Wireman, Mike, Runkle, Robert L., Use of

natural and artificial tracers to guide de targeted remediation effort in an acid mine drainage system, Colorado Rockies, USA, Water 2013

2011, Mirtskhulava, Merab, Wireman, Mike, Report of Findings –Evaluation of mining-related metals contamination and ecological and human health risks associated with manganese mining and processing in Chiatura, Georgia

2011, Caruso, Brian S., Mirtskhulava, Merab, Wireman, Mike, Schroeder, William, Griffin, Susan, Effects of Manganese Mining on Water Quality in the Caucacus Mountains, Republic of Georgia, Mine Water and Environment, DOI 10.1007/s 10230-011-0163-3, 13p

2011, Wireman, M., Stover, B., Hard-rock Mining and Water Resources, Ground Water News and Views, Ground Water, NGWA

2011, Moore, J., Wireman, M., Carillo-Rivera, J.J., Field Hydrogeology –A Guide for Site Investigations and Report Preparation, CRC Press, Taylor and Francis Group

2010,Wireman**,** M., Griffin, S. Mirtskhulava, M., Schroeder, W., Water Resources Characterization and Risk Assesment: Tchiatura mining district, Republic of Georgia, Georgia Chemical Journal. V.10.N 4, P-23-29

2010, Moore, J., Wireman, M., LaMoreaux, P.E., Summers, P, A Field Guide For Characterization And Evaluation Of Public Water Supply Springs, US EPA, in preparation

2010, Kornilovich, B., Wireman, M., Caruso, B., Koshik, Y., The Use of Permeable Reactive Barrier Against Contaminated Groundwater In Ukraine ,Central European Journal of Occupational and Environmental Medicine 15(1-2)

2008, Penoyer, P., Rosenlieb, G, Noon, K., Wireman, M., Thackston, J., Recommendations for Retoration and Rehabilitation of Turbidity and Sediment Impacts to the Sylvan Pass Hydrologic System, National Park Service, Natural Resource Report NPS/NRPC/NRR – 2008/054, 44p.

2007, United State Department of Agriculture, Forest Service, Technical guide to Managing Ground Water Resources, Wireman was one of several authors.

2005, Hermann, K., Wireman, Mike, editors, Aquatic Assessment of Willow Creek Watershed – US EPA Region 8

2002, Hazen, J.M., Williams, M.W., Stover, B. and Wireman, Mike, Characterization of Acid Mine Drainage Using A Combination Of Hydrometric, Chemical And Isotopic Analyses, Mary Murphy Mine, Colorado, Environmental Geochemistry and Health

2001, Potential Water Quality Impacts of Hardrock Mining, Summer edition of Ground-Water Monitoring and Remediation, NGWA, Dublin, OH

2002, Tracing Techniques, Section 5.7 in Moore, J.E., Field Hydrogeology - A guide for Site Investigations and Report Preparation, Lewis Publishers

2000, Effects of Mining on Water Quality, Chapter 18, Hardock Mining and Chapter 19 Coal Mining, in Drinking Water From Forests and Grasslands, A Synthesis of the Scientific Literature, George E. Dissmeyer, Editor, USDA Forest Service, Southern Research Station, Asheville, North Carolina

2000, South Platte Valley-Fill Aquifer, Chapter 5 - Colorado Ground-Water Atlas, Andrea Aiken, et.al, Editors, Colorado Ground-Water Association, Lakewood, CO

1999, Wyoming Ground-Water Vulnerability Assessment Handbook: Volume I - Background, Model Development and Aquifer Sensitivity, University of Wyoming Spacial Data and Visualization Center

1999, Wyoming Ground-Water Vulnerability Assessment Handbook: Volume II - Assessing Ground Water Vulnerability to pesticides, University of Wyoming Spacial Data and Visualization Center

1998, Land Uses Which Affect Ground-Water Management - Greater Denver Area, USEPA

1997, Determining the Risk to Public Water Supply Wells from Infective Microorganisms, NGWA Water Well Journal

1997, Investigation of Hydrogeologic Mapping to Delineate protection Zones Around Springs, EPA/600/R-97/023, US EPA ORD, Cincinnati, OH

1997, The Use of Ground Water Sensitivity Assessments for Purposes of the ground Water Disinfection Rule, Ground- Water Monitoring Review, NGWA

1997, Chalk Creek Project, Report on Results of Investigation – Mary Murphy Mine – Groundwater Hydrology Characterization Study, Chaffee County, CO, EPA Region VIII Headwaters Initiative Assistance Agreement No. MM998404-01-1

1995, Vulnerability of the Uppermost Aquifer to Contamination in the Greater Denver Area, Colorado, USGS WRI 92-4143

1989, Bibliography of Geology and ground Water Geology for the Denver Basin, Colorado, Colorado Division of Water Resources< Colorado Department of Natural Resources

1987, Nitrate Pollution of Ground Water in Glacial Sediments Underlying a Fertigated Site, Master's Thesis, Western Michigan University, Kalamazoo, MI

1982, Hydrogeology of the Western Upper Peninsula of Michigan, Western Michigan university Geology Department, EPA Underground Injection Control Program