

<b>Appendix A</b>
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### Curriculum Vitae of Expert Panel Members

Name	Affiliation	Specialties	Page
Professor E. Scott Bair	Ohio State University, School of Earth Sciences	Hydrogeology, aquifer hydraulics, petroleum geology	A - 3
Professor David C. Freeman	Marietta College, Department of Petroleum Engineering	Production engineering, advanced oil recovery	A - 11
Dr. Ralph J. Haefner	U.S. Geological Survey Water Sciences Center Columbus, Ohio	Groundwater chemistry, hydrogeology, statistics	A - 15
Martha L. Jagucki	U.S. Geological Survey Water Sciences Center Columbus, Ohio	Hydrogeology, aqueous geochemistry	A - 19
Professor John M. Senko	University of Akron, Department of Geology and Environmental Science	Geomicrobiology, geochemistry	A - 23

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Curriculum Vitae  
**E. SCOTT BAIR**  
 May 2010

**Address**

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 Department of Geological Sciences  
 The Ohio State University  
 Columbus, OH 43210

telephone: 614.292.6197 [office]  
 fax: 614.292.7688  
 e-mail: bair.1@osu.edu

**Education**

Ph.D., Geology, specializing in hydrogeology, The Pennsylvania State University, 1980  
 M.S., Geology, specializing in hydrogeology, The Pennsylvania State University, 1976  
 B.A., with Honors in Geology, College of Wooster, 1973  
 Geology Summer Field Camp, University of Illinois, 1971

**Continuing Education**

- U.S. Geological Survey, 1994, Training Course - Modeling Transport of Ground Water Solutes
- E<sup>3</sup> Inc., 1994, Short Course - Mathematical Modeling of Ground Water
- Princeton University, 1982, Short Course-Modeling Fluid Flow and Solute Transport
- University of Wisconsin at Madison, 1981, Short Course - Pollutant Movement in Groundwater
- University of Missouri, 1980, Short Course-Design of Dewatering and Depressurizing Systems

**Employment**

The Ohio State University, Department of Geological Sciences, Columbus, Ohio

- Chair: June 1999 to July 2005
- Full Professor: 1997; Associate Professor: 1991; Assistant Professor: 1985
- [joint appointment in the Department of Civil and Environmental Engineering]

U.S. Geological Survey-Water Resources Division, Columbus, Ohio; 1986 to 1999 – Hydrologist (part-time)

Stone & Webster Engineering Corp., Boston, Massachusetts; 1979 to 1985 – Geologist, Geotechnical Division

Bucknell University, Department of Geology & Geography, Lewisburg, Pennsylvania, Assistant in Instruction: 1975-1979

**Member of Technical Review Boards and Workshop Development Teams**

Centers for Disease Control, Agency for Toxic Substances and Disease Registry, expert panel reviewing "Methods and Analyses of for Historical Reconstruction of Groundwater Resources and Distribution of Drinking Water at Hadnot Point, Holcomb Boulevard, and Vicinity, U.S. Marine Corps Base Camp Lejeune, North Carolina," May-June 2009, Atlanta, Georgia.

Geoscience Advisory Board – Building Strong Geoscience Departments, sponsored by NSF-Division of Undergraduate Education, November 2005, Carleton College,

Teaching Hydrogeology in the 21<sup>st</sup> Century, *On the Cutting Edge – Professional Development for Geoscience Faculty*, co-leader, sponsored by NSF-Division of Undergraduate Education, Lincoln, Nebraska, July 2005.

Building Strong Geoscience Departments: Developing Pathways to Strong Programs for the Future, sponsored the NSF-Division of Undergraduate Education, College of William & Mary, Virginia, February 2005.

Geology and Human Health, *On the Cutting Edge – Professional Development for Geoscience Faculty*, NSF-Division of Undergraduate Education, Chico Hot Springs, Montana, May 2004.

### **Honors and Awards**

2000 – Birdsall-Dreiss Distinguished Lecturer, Geological Society America, Hydrogeology Division

1998 – Fellow, Geological Society of America

1997 – Ohio State University Honors Program, "Science in the Courtroom"

1991 – University's Alumni Distinguished Teaching Award, The Ohio State University

1973 – Sigma Xi Award, Outstanding Undergraduate Research, College of Wooster, Wooster, Ohio

1972 – U.S. Geological Survey/National Association of Geology Teachers Summer Fellowship

### **Professional Affiliations**

Certified Professional Geologist - Indiana, #515

Geological Society of America - Hydrogeology Section

Association of Ground Water Scientists and Engineers

American Association of Petroleum Geologists

Speleological Society of America

### **Selected Grants and Contracts**

2003 - National Science Foundation, '*A Civil Action*' – Using the Landmark Trial for Learning Environmental Geoscience and the Connection Between Geology and Human Health. Division of Undergraduate Education, Course, Curriculum & Laboratory Improvement, Educational Materials Development, \$356,000 (PI).

1999 - U.S. DOE, "Hydrologic Testing and Ground Water Flow and Contaminant Transport Modeling of the Roberts-Dawson Mine/FGD Grout Injection Site," U.S. DOE, Pittsburgh, PA, \$50,000. (Co-PI)

1997 - Ohio Coal Development Office/American Electric Power, "Groundwater and Surface Water Monitoring Program: Use of FGD Material to Mitigate Acid Mine Drainage," \$294,664 (Co-PI)

1996 - U.S. EPA Region V/Ohio DNR-Oil & Gas, "Assessment of Ground-Water Quality Impacts Caused by Recycling and Landfarming of Solid Oil and Gas Exploration and Production Wastes," \$24,900 (PI)

1994 - U.S. Department of Agriculture, "The Ohio Buried Valley Aquifer Management Systems Evaluation Area, Pike County, Ohio," project extension, \$400,000 (Co-PI)

1993 - U.S. Geological Survey, "Use of Chlorofluorocarbons to Validate Predictive Groundwater Flow Models," \$21,000 (PI)

1993 - U.S. Department of Agriculture, "The Ohio Buried Valley Aquifer Management Systems Evaluation Area," \$360,000, interdisciplinary, multi-federal agency project in Pike County, Ohio (Co-PI)

1991 - National Science Foundation, "Solute Transport with Convective Instability in Groundwater," \$166,109 (Co-PI)

1990 - U.S. Geological Survey/Ohio Water Resources Center, 1990, "Development of a Buried Valley Aquifer Management Model - Phase II," \$16,123 (Co-PI)

1990 - U.S. Department of Agriculture Cooperative State Research Service, "The Ohio Buried Valley Aquifer Management Systems Evaluation Area," \$1,600,000 over a five-year period as part of a \$6,000,000 interdisciplinary, multi-federal agency project in Pike County, Ohio (Co-PI)

1990 - U.S. Department of Agriculture Cooperative State Research Service, "Assessing and Modeling Water Quality Benefits of Water Table Management Systems," \$100,000 (Co-PI)

1989 - U.S. Department of the Interior, U.S. Geological Survey, Ohio Water Resources Center, "Development of a Buried Valley Aquifer Management Model - Phase I," \$13,654 (Co-PI)

1989 - U.S. EPA Region V, "The Effectiveness of Methods Used to Delineate Wellhead Protection Areas for Municipal Wells Using Common Hydrogeologic Settings in Ohio," \$41,028 (PI)

### **Publications – Books, Book Chapters, Websites**

Bair, E.S., and T.D. Lahm, 2006. *Applied Problems in Groundwater Hydrology*, Prentice Hall / Pearson Education, 212 p. with CD.

Bair, E.S., 2001. Chapter 3 - Models in the Courtroom, in Model Validation: Perspectives in Hydrological Science, M.G. Anderson and P.D. Bates eds., John-Wiley & Sons, Ltd., London, p. 57-77.

Bair, E.S., 1995. Chapter 9 - Hydrogeology, in Environmental Hydrology, A. Ward and W. Elliot, eds., CRC Press, Boca Raton, FL, p. 285-310.

Bair, E.S., A.E. Springer, and G.S. Roadcap, 1992. **CAPZONE** - An Analytical Flow Model for Simulating Confined, Leaky Confined, and Unconfined Flow to Wells with Superposition of Regional Water Levels: International Ground Water Modeling Centers, Colorado School of Mines, Golden, Colorado, 193 pp.

*Science in the Courtroom – Woburn Toxic Trail Website*, E.S. Bair and K. Svitana, Ohio State University, NSF Division of Undergraduate Education, <http://serc.carleton.edu/woburn>

**Publications – Selected Refereed Papers**

Bair, E.S., and M.A. Metheny, 2002. Remediation of the Wells G & H Superfund Site, Woburn, Massachusetts, *Ground Water*, vol. 40, no 6, p. 657-668.

Englemann, C., A. Ward, A. Christy, and S. Bair, 2002. Application of the BASINS database and NPSM model on a small Ohio watershed, *Journ. American Water Resources Assoc.*, vol. 38, no. 1. p. 289-300.

Metheny, M.A., and E.S. Bair, 2001. The Science Behind *A Civil Action* – The Hydrogeology of the Aberjona River, Wetland and Woburn Wells G and H, West, D.P. and R.H. Bailey, eds., in *Guidebook for the Geological Field Trips in New England*, 2001 Annual Meeting of the Geological Soc. America, p. D1-D25, Boston, MA.

Bair, E.S., 2000. Developing analytical and communication skills in a mock trial course based on the famous Woburn, Massachusetts, case. *Journal of Geosciences Education*, vol. 48, p. 450-454.

Lahm, T.D. and E.S. Bair, 2000. Regional depressurization and its impact on the sustainability of freshwater resources in an extensive midcontinent variable-density aquifer. *Water Resources Research*, vol. 36, no. 11, p. 3167-3177.

Lahm, T.D., and E.S. Bair, and J. VanderKwaak. 1998. Role of salinity-derived variable-density flow in the displacement of brine from a shallow, regionally extensive aquifer. *Water Resources Research*, vol. 34, no. 6, p. 1469-1480.

Sheets, R.A., E.S. Bair, and G.L. Rowe, 1998. Use of  $^3\text{H}/^3\text{He}$  ages to evaluate and improve groundwater flow models in a complex buried-valley aquifer. *Water Resources Research*, vol. 34, no. 5, p. 1077-1089.

Gupta, N., and E.S. Bair, 1997. Variable-density flow in the midcontinent basins and arches region: *Water Resources Research*, vol. 33, no. 8, p. 1785-1802.

Springer, A.E., E.S. Bair, and D. Beak, 1996. Surface-applied tracer test at the Ohio Management Systems Evaluation Area: *Environmental & Engineering Geosciences*, vol. 2, np. 4, pp. 453-464.

Bair, E.S., and T.D. Lahm, 1996. Variations in capture-zone geometry of partially penetrating wells in unconfined aquifers: *Ground Water*, vol. 34, no. 6, p. 842-852.

Cunningham, W.L., E.S. Bair, and W.P. Yost, 1996. Hydrogeology and simulation of ground-water flow at the South Well Field, Columbus, Ohio: U.S. Geological Survey Water-Resources Invest. Report 95-4279, 56 pp.

Jagucki, M.L., C.D. Finton, A.E. Springer, and E.S. Bair, 1995. Hydrology and water quality of the Management Systems Evaluation Area near Piketon, Ohio: U.S. Geological Survey Water-Resources Investigation Report 95-4139, 117 pp.

Lahm, T.D., E.S. Bair, and F.W. Schwartz, 1995. Use of stochastic simulation and geophysical logs to characterize spatial heterogeneity in hydrogeologic parameters: *Math. Geology*, vol. 27, no. 2, p. 259-278.

- Cunningham, W.L., E.S. Bair, and W.P. Yost, 1996. Hydrogeology and simulation of ground-water flow at the South Well Field, Columbus, Ohio: U.S. Geological Survey Water-Resources Invest. Report 95-4279, 56 pp.
- Jagucki, M.L., C.D. Finton, A.E. Springer, and E.S. Bair, 1995. Hydrology and water quality of the Management Systems Evaluation Area near Piketon, Ohio: U.S. Geological Survey Water-Resources Investigation Report 95-4139, 117 pp.
- Lahm, T.D., E.S. Bair, and F.W. Schwartz, 1995. Use of stochastic simulation and geophysical logs to characterize spatial heterogeneity in hydrogeologic parameters: *Math. Geology*, vol. 27, no. 2, p. 259-278.
- Dumouchelle, D.H., and E.S. Bair, 1994. Ground-water levels and directions of flow near the Industrial Excess Landfill, Uniontown, Ohio: U.S. Geological Survey Water-Resources Investigation 94-4136, 17 pp.
- Nortz, P.E., E.S. Bair, A. Ward, and D. White, 1994. Interactions between an alluvial-aquifer wellfield and the Scioto River, Ohio, USA: *Hydrogeology Journal*, vol. 2, no. 4, p. 23-34.
- Bair, E.S., 1994. Model (*in*)validation -- a view from the courtroom: *Ground Water*, vol. 32, no. 4, p. 530-531.
- Chapman M.J., and E.S. Bair, 1992. Mapping a brine plume using surface geophysical methods in conjunction with ground-water-quality data: *Ground Water Monitoring Review*, vol. 12, no. 3, p. 203-209.
- Springer, A.E., and E.S. Bair, 1992. Comparison of methods used to delineate capture zones of wells: 2. confined/unconfined stratified-drift aquifer: *Ground Water*, vol. 30, no. 5, p. 908-917.
- Bair, E.S., and G.S. Roadcap, 1992. Comparison of methods used to delineate capture zones of wells: 1. leaky-confined fractured-carbonate aquifer: *Ground Water*, vol. 30, no. 2, p. 199-211.
- Gupta, N., and E.S. Bair, 1992. Regional variable-density flow in the Mt. Simon waste injection reservoir: *Proceedings, Fifth International Conference - Solving Ground Water Problems with Models*, IGWMC-NGWA, Dallas, TX, p. 497-510.
- Bair, E.S., C.M. Safreed, and E.A. Stasny, 1991. A Monte-Carlo-based strategy for determination of traveltime-related capture zones of wells using convex hulls as confidence regions: *Ground Water*, vol. 29, no. 6, p. 849-855.
- Bair, E.S., A.E. Springer, and G.S. Roadcap, 1991. Delineation of traveltime-related capture areas of wells using semianalytical flow models and particle-tracking analysis: *Ground Water*, vol. 29, no. 4, p. 387-397.
- Childress, C.J.O., R.A. Sheets, and E.S. Bair, 1991. Hydrology and water quality near the South Well Field, Southern Franklin County, Ohio, with emphasis on the simulation of ground-water flow and transport of Scioto River: U.S. Geological Survey Water-Resources Investigations Report 91-4080, 78 pp.

Bair, E.S., R.A. Sheets, and S.M. Eberts, 1990. Particle-tracking analysis of flow paths and traveltimes from hypothetical spill sites within the capture zone of a well field: *Ground Water*, vol. 28, no. 6, p. 884-892.

Eberts, S.M., E.S. Bair, and J.T. de Roche, 1990. Geohydrology, ground-water quality, and simulated ground-water flow, Geauga County, Ohio: U.S. Geological Survey Water-Resources Invest. Report 90-4026, 117 pp.

Bair, E.S., and S.E. Norris, 1990. Expert testimony for the plaintiffs in the case that brought Ohio ground-water law into the 20<sup>th</sup> century: *Ground Water*, vol. 28, no. 5, p. 767-774.

Eberts, S.M., and E.S. Bair, 1990. Simulated effects of quarry dewatering near a municipal well field: *Ground Water*, vol. 28, no. 1, p. 37-47.

Bair, E.S., and R.K. Digel, 1990. Subsurface transport of inorganic and organic solutes from experimental road spreading of oil-field brine: *Ground Water Monitoring Review*, vol 10, no. 3, p. 94-105.

Sedam, A.C., S.M. Eberts, and E.S. Bair, 1989. Ground-water levels, water quality, and potential effects of toxic-substance spills or cessation of quarry dewatering near a municipal ground-water supply, southern Franklin County, Ohio: U.S. Geological Survey Water-Resources Investigations Report 88-4138, 111 pp.

Bair, E.S., and S.E. Norris. 1989. Ground-water levels and flow near the Industrial Excess Landfill, Uniontown, Ohio: U.S. Geological Survey Open-File Report 89-272, 11 pp.

Bair, E.S., 1987. Analysis of hydraulic gradients across the host rock at the proposed Texas Panhandle nuclear-waste repository site: *Ground Water*, vol. 25, no. 4, p. 440-447.

Bair, E.S., 1987. Regional hydrodynamics of the proposed high-level nuclear-waste repository sites in the Texas Panhandle: *Journal of Hydrology*, vol. 92, p. 146-179.

Bair, E.S., T.P. O'Donnell, and L.W. Picking, 1985. Potentiometric mapping from incomplete drill-stem test data: Palo Duro Basin Area, Texas and New Mexico: *Ground Water*, vol. 23, no. 2, p. 198-211.

Bair, E.S., and T.P. O'Donnell, 1983. Uses of numerical modeling in the design and licensing of dewatering and depressurizing systems: *Ground Water*, vol. 21, no. 4, p. 411-420.

Bair, E.S. and R.R. Parizek, 1981. Numerical simulation of potentiometric surface changes caused by a proposed open-pit anthracite mine: *Ground Water*, vol. 19, no. 2, p. 190-200.

Bair, E.S., and R.R. Parizek, 1976. Detection of permeability variations revealed by a shallow geothermal technique: *Ground Water*, vol. 16, no. 5, p. 254-263.

### **Publications - Government Reports and Conference Proceedings**

U.S. EPA, 2001, "*Study of the Risks Associated with Class I Underground Injection Wells, Class I UIC Program*," Office of Ground Water and Drinking Water Report to Congress, 77 p.

Bair, E.S., R.K. Digel, and M.S. Chapman, 1989. Ground-Water Quality Changes Resulting from Surface Application of Oil-Field Brine: Ohio Dept. Natural Resources, Brine Management Research Report, 69 p.

Report of the State of Ohio Oil and Gas Regulatory Review Commission, 1987, pursuant to Executive Order 86-35, submitted to Governor Richard Celeste.

**Selected Invited Colloquia, Seminars, and Presentations**

AGI / AGU / GSA, Policy Makers Workshop, Washington, D.C., "Teaching Science to UnScientists – Lessons Learned from Teaching a Mock Trial Course," May 2007

National Science Foundation / National Association of Geology Teachers "Teaching Hydrogeology in the 21<sup>st</sup> Century, "Woburn Flow & Transport Model – A Spreadsheet Tool for Teaching the General Concepts of Modeling," Lincoln, Nebraska, July 2005.

State University of New York – Geneseo, "Beyond the Famous 'A Civil Action' Trial – What the Judge, Jury, and John Travolta Didn't Know," American Rock Salt Distinguished Lecturer, 2005.

National Research Council, "TCE and PCE Concentrations Delivered to the Plaintiffs' Homes in the Landmark 'A Civil Action' Trial, Washington, D.C., February 2005.

Ohio Bar Association, "What the Judge, Jury, and John Travolta Didn't Know in the Famous 'A Civil Action' Trial," Environmental Law Section Annual Meeting, Maumee State Park, April 2004

U.S. Geological Survey, Reston, Virginia, GeoHealth Seminar Series, "How Much Contamination was Delivered to Residents of Woburn from Wells G & H: Results from Linked Transport and Water-Distribution Models," September 2003

Keynote Speaker, NGWA Ground Water Expo 2002, "Intoxicating Cases of Ground Water under the Influence of Surface Water," Las Vegas, Nevada, December 2002

Stanford University, Department of Earth Sciences, April 2000, "The Science Behind & Beyond the Woburn Toxic Trial"

Harvard Law School, Harvard University, Lessons From Woburn Project, "Using Woburn to Teach Integrative Science Through A Mock Trial," Berkman Center for Internet & Society, January 1999

**Academic Teaching - Ohio State University**

Earth Sci. 100 – How Earth Works

Earth Sci. 203 – Environmental Geology

Earth Sci. 204 – Water Resources

Earth Sci. 451 – Science in the Courtroom

Earth Sci. 651 – Hydrogeology

Earth Sci. 652 – Hydrogeologic Field Studies

Earth Sci. 661 – Petroleum Geology

Earth Sci. 751 – Ground-Water Flow Modeling

Earth Sci. 752 – Contaminant Hydrogeology

Earth Sci. 851 – Karst & Caves, Springs & Geysers

**Professional Teaching – National Ground Water Association**

- Principles of Ground Water Flow, Transport & Remediation, with T. Naymik, 1988 to present
- Design & Analysis of Aquifer Tests in Porous and Fractures Rocks, with T. Naymik and J. Williams, 1989 to present
- Construction Dewatering and Ground Water Control: Design and Application, with D. Neuman, 2008 to present
- Artificial Recharge and Induced Infiltration, 2009 to present

**Academic Advising**

Ph.D. dissertations – 4, M.S. theses – 31, B.S. senior theses – 15

**Professional Service - Advisory Committees & Boards**

- Chair, Hydrogeology Division (1400 members, Geological Society of America, 2009 to 2010
- Associate Editor, Ground Water, National Ground Water Association, September 1996 to 2006
- Birdsall-Dreiss and O.E. Meinzer Awards Selection Com., Geol. Soc. of America, 1999-2003
- Horton Scholarship Award Committee, American Geophysical Union, 1997, 1998, 1999
- Hazardous Waste Facility Board, Member, 1993 to 2001 (appt. by Gov. Voinovich and Taft)
- Ohio Geology Advisory Commission, 1990 to 1996 (appt. by Gov. Celeste and Voinovich)
- Ohio Interagency Ground-Water Advisory Council, Executive Committee, 1988 to 1990
- Member, Oil and Gas Regulatory Review Commission, 1986-1987 (appt. by Gov. Celeste)

**DAVID CHARLES FREEMAN**  
(Spring, 2010)

**Education:**

May 1982 Bachelor of Science in Chemistry, Marietta College, Marietta, OH  
May 1984 Master of Science in Petroleum Engineering, University of Oklahoma,  
Norman, OK

**Professional Licensure:**

EIT, California (passed 1986)  
Professional Engineering Exam, Ohio (passed 1997)

**Service at Marietta College (1992-2010):**

Appointed Instructor of Petroleum Engineering in August 1992. Promoted to Assistant Professor of Petroleum Engineering and received tenure in 1997. Appointed Assistant Dean of Assessment and Accreditation in 2004. Promoted to Associate Professor of Petroleum Engineering in 2005.

**Industrial Experience:**

1993 - present	Consultant
1990-1992	Reservoir Engineer Mobil Oil Corporation
1987-1990	Research Engineer Mobil Research and Development Corporation
1984-1987	Production Engineer Mobil Oil Corporation
Summer 1983	Reservoir Engineer Assistant Mobil Oil Corporation
Summer 1982	Roustabout Union Oil Company
1981-1982	Analyst Kemron Environmental Services

**Publications:**

Freeman, D. C., "A Practical Methodology for Evaluating Appalachian Basin Waterfloods," SPE #124310, SPE Eastern Regional Meeting, September 2009, Charleston, WV.

Freeman, D. C., Blomberg, J. R., Tardivo, J. J., Knobloch, T. S., James, J. J., "The Colfax Field Rose Run: A Reservoir Study," SPE #84,833, SPE Eastern Regional Meeting, September 2003, Pittsburgh, PA.

Schneider, B., Freeman, D.C., "The Use of Brine as an Injection Fluid to Reduce Disposal Cost and Increase Gas Production," SPE #65,615, SPE Eastern Regional Meeting, October 2000, Morgantown, WV.

Weber, L. C., Freeman, D.C., "The Applicability of Waterflooding in the Appalachian Basin," SPE #51,088, SPE Eastern Regional Meeting, November 1998, Pittsburgh, PA.

Freeman, D. C., "The Fundamentals Can Still Solve Engineering Problems," SPE Paper #37,349, Eastern Regional Meeting, October 1996, Columbus, Ohio.

Djabbarah, N. F., Weber, S. L., Freeman, D. C., Muscatello, J. A., Ashbaugh, J. P., and Covington, T. E., "Laboratory Design and Field Demonstration of Steam Diversion with Foam," SPE #20,067, 60th California Regional Meeting, April 1990, Ventura, CA.

Raiders, R. A., Freeman, D. C., Jenneman, G. E., Knapp, R. M., McInerney, M. J., and Menzie, D. E., "The Use of Microorganisms to Increase the Recovery of Oil from Cores," SPE #14,336, 60th Annual Technical Conference and Exhibition of the Society of Petroleum Engineers, September 1985, Las Vegas, NV.

**Patents:**

Freeman, D. C. and Djabbarah, N. F., "Method for Preventing Bitumen Backflow in Injection Wells When Steam Injection is Interrupted," July 1989.

**Professional Societies:**

Society of Petroleum Engineers

**Honors and Awards:**

Douglas Putnam Service Award, 2006

Harness Fellow, 1998

Mobil Grant, 1983-1984

Phillip's Petroleum Fellowship, 1982-1984

Presidential Honor Scholarship, 1978-1982

E. B. Krause Chemistry Achievement Award, 1979

Cum Laude Graduate, 1982

**Other Academic and Professional Duties:**

Marietta College Board Representative, Ohio State Board of Registration for Professional Engineers & Surveyors Agency

**Professional Development (Short Courses):**

Applied Petroleum Geology and Geochemistry for Thermogenic Shale-Gas Evaluation, Pennsylvania Geological Survey, September 2009

Geology and Geophysics Applied in Industry, AAPG, October 2008

Hydraulic Fracturing/Pressure Analysis, SPE, September 2008

Value-Added CCS: CO<sub>2</sub> EOR and CO<sub>2</sub> ECBM, PTTC, February 2008

Nuclear Power-Making a Comeback?, Titan Continuing Education, January 2008

Well Test Interpretation, Fekete Associates, January 2008

Well Analysis and Echometer School, Echometer Company, October 2006

Formation Damage-Mechanisms, Diagnosis, and Prevention, SPE, September 2006  
Hydraulic Fracture Treatment Design, SPE, October 2005  
Appalachian Basin Logging Workshop, AAPG, February 2004  
Natural Gas: Beyond All Expectations, SPE, October 2002  
Reservoir Characterization: From the Laboratory to the Field, SPE, October 2000  
Prognosis of Waterfloods, SPE, September 2000  
Real Time Stimulation Solutions for the Appalachian Basin, PTTC, June 2000  
Well Analysis and Echometer School, SPE Echometer, October 1999  
Reservoir Geology, Mobil Oil Corporation, June 1991  
Coring and Core Analysis, Mobil Oil Corporation, April 1991  
Waterflooding, J. T. Smith, June 1990  
Introduction to Reservoir Simulation, Mobil Oil Corporation, March 1990  
Petroleum Reservoir Engineering, J. T. Smith, February 1990  
Oil and Gas Reserve Evaluation, Mobil Oil Corporation, February 1990  
Therms Workshop, Mobil Oil Corporation, July 1988  
Reservoir Engineering, Mobil Oil Corporation, January 1988  
Geophysics Seminar, September 1987  
Project Economics and Risk Analysis, Mobil Oil Corporation, March 1987  
Perforating Design and Technology, Mobil Oil Corporation, March 1987  
Thermal Recovery, J. M. F. Ali and R. F. Meldau, February 1987  
Pressure Analysis, Mobil R & D Corporation, December 1986  
Primary Cementing, Mobil Oil Corporation, July 1986  
Practical Stimulation Designs, Western Tech., February 1986  
Completions and Workovers, Rike, September 1985  
Corrosion Engineering and Scale Control, Mobil R & D Corporation, February 1985  
Surface Production Operations and Equipment, Rike, November 1984  
Rod Pumping System Analysis, Delta-X Corporation, September 1984  
Mobil R & D Thermal Recovery Workshops, 1987-1991  
Mobil on-campus and on-site Interviewer, 1991-1992  
Regular attendance at SPE local, regional, and national meetings  
Numerous workshops related to teaching, leadership, assessment, and accreditation

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## Curriculum Vitae Ralph J. Haefner

### Contact Information

U.S. Geological Survey, Ohio Water Science Center  
6480 Doubletree Avenue  
Columbus, Ohio 43229-1111  
Office: (614) 430-7709  
Mobile: (614) 579-4105

### Employment History

- **2006-present:** Supervisory Hydrologist and Groundwater Specialist, U.S. Geological Survey Ohio Water Science Center, Columbus, Ohio.
  - As a Supervisory Hydrologist, I supervise 6 groundwater hydrologists and participate as a member of the Ohio Water Science Center Management Staff.
  - As Groundwater Specialist, I serve as a Center expert on all matters related to groundwater and general hydrology. I am responsible for maintenance of groundwater data collected by Center personnel. I review and approve all proposals and publications that released through the Center.
- **1990-2006:** Hydrologist, U.S. Geological Survey Ohio Water Science Center, Columbus, Ohio
  - As a Hydrologist, I developed proposals, secured grant funding, conducted hydrologic research and data collection, and prepared final reports for over 20 projects. I also served as a Geographic Information Systems Specialist for five years.
- **1986-1989:** Hydrologist, U.S. Geological Survey, New York District, Syosset, New York
  - As a Hydrologist, I was primarily involved in data collection, groundwater sampling, and GIS data compilation and programming.

### Primary Fields of Competence and Expertise

- Groundwater hydrogeology and flow modeling
- Inorganic geochemistry of groundwater systems and water-rock interactions
- Geographic information systems
- Peer reviewer for
  - Ground Water (journal of the National Ground Water Association)
  - Journal of the American Water Resources Association
  - Ohio Environmental Protection Agency Division of Drinking and Ground Waters
  - U.S. Army Corps of Engineers, Louisville District

### Education

- Doctor of Philosophy, Geology, 1998, The Ohio State University, Columbus, Ohio
  - Major: Geology
  - Minor: Hydrology and geochemistry
  - Dissertation: *Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed With Pressurized Fluidized Bed Combustion By-Products* (Dr. Gunter Faure, Advisor)
- Master of Science, Geology, 1986, Bowling Green State University, Bowling Green, Ohio
  - Major: Geology
  - Thesis: *Mississippi Valley-Type Mineralization in the Trenton Limestone* (Dr. Joseph Mancuso, Advisor)
- Bachelor of Science, Geology, 1982, State University of New York, College at Oneonta
  - Major: Geology

### **Other Education and Training**

- Groundwater and Geologic Processes
- Geochemistry of Groundwater Systems
- Probability and Statistics for Data Analysis
- Modeling Groundwater Flow Using Finite-Difference Methods
- Aquifer Test & Design
- Applied Drilling Engineering
- Arc/INFO and Advanced Arc Macro Language Programming
- Leadership and Supervisory training

### **Grant Funding History**

- U.S. Bureau of Mines, 1992, *Water-quality at an abandoned coal mine reclaimed with FGD by-products*. Funded for \$200,000 over 2 years.
- National Aeronautics and Space Administration, 1994, *Analysis of sediment concentrations and water temperatures in near-lake areas and tributaries to Lake Erie using LANDSAT satellite imagery*. Funded for \$76,000 over 2 years.
- Ohio Coal Development Office and U.S. Department of Energy, 1995, *Continued monitoring at an abandoned mine site reclaimed with FGD by-products*. Funded for \$243,000 over 3 years.
- U.S. Department of Agriculture, Forest Service, 1997, *Hydrologic assessment of the Upper Dorr Run Watershed, Hocking County, Ohio*. Funded for \$45,000.
- Ohio Environmental Protection Agency, 1998, *Resource characterization for the source water assessment program*. Funded for \$49,000.
- U.S. Geological Survey, Biologic Resources Division, 1999, *The Gap Analysis Program, an approach to assessing the aquatic biodiversity of Ohio's Streams*. Funded for \$900,000 over 4 years.
- City of Columbus, Ohio, 1999, *Simulation of ground-water flow at the South Franklin County wellfield, Columbus, Ohio*. Funded for \$250,000 over two years. Continued funding at \$110,000 per year since 2000.
- Ohio Environmental Protection Agency, 2001, *Ground-Water Metadata Database for Ohio*. Funded for \$475,000 over three years.
- Stark-Tuscarawas-Wayne Solid Waste Management District, 2004, *Hydrologic Characterization of the Tuscarawas River Basin*. Funded for 375,000 over three years.
- Metropolitan Sewer District of Greater Cincinnati, 2009, *Investigation of Hydrologic Influences of Storm-Water Best-Management Practices at the Cincinnati Zoo, Hamilton County, Ohio*. Funded for \$366,000 over three years

### **Bibliography**

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- Franke, O.L., Reilly, T.E., Haefner, R.J., and Simmons, D.L., 1990, Study guide for a beginning course in ground-water hydrology: Part I-course participants: U.S. Geological Survey Open File Report 90-183, 180 p.
- Haefner, R.J., 2002, Water quality and geochemical modeling of water at an abandoned coal mine reclaimed with coal-combustion by-products: U.S. Geological Survey Water-Resources Investigations Report 02-4216, 28 p.
- Haefner, R.J., 2001, Evolution of ground-water-flow modeling at the South Well Field, Columbus, Ohio [abstract]: 46th Midwest Ground Water Conference Program & Abstracts, Madison, WI, p. 18.
- Haefner, R.J., 2001, Effects of PFBC byproducts on water quality: Ashlines (a newsletter of the Combustion Byproducts Recycling Consortium sponsored by the Department of Energy), Vol. 2, No. 1, pp. 1-4, on: [http://www.wri.nrcce.wvu.edu/programs/cbrc/publications/2001/Spring\\_01.pdf](http://www.wri.nrcce.wvu.edu/programs/cbrc/publications/2001/Spring_01.pdf)
- Haefner, R.J., 2001, A sulfur-isotope mixing model to trace leachate from pressurized fluidized bed combustion byproducts in an abandoned-coal-mine setting: FUEL, vol. 80, pp. 829-836.
- Haefner, R.J., 2000, Characterization methods for fractured glacial tills: The Ohio Journal of Science, vol. 100, no. 3/4, pp. 73-87.
- Haefner, R.J., 1999, Hydrologic assessment of the Upper Dorr Run Watershed, Hocking County, Ohio, 1998: U.S. Geological Survey Water Resources Investigations Report 99-4137, 13 p., 1 plate.

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- Haefner, R.J., 1998, Geochemistry and ground-water flow beneath an abandoned coal mine reclaimed with pressurized fluidized bed combustion by-products: unpublished Ph.D. Dissertation, The Ohio State University, Columbus, Ohio, 238 p.
- Haefner, R.J., 1996, GIS analysis of LANDSAT thematic mapper data for estimating sediment concentrations in two Ohio rivers: in Proceedings of the Water Management Association of Ohio Spring Meeting, Akron, Ohio, May 16, 1996, p. 10.
- Haefner, R.J., 1990, Use of a geographic information system to evaluate potential sites of public-water-supply wells on Long Island, New York: U.S. Geological Survey Open-File Report 91-182, 33 p.
- Haefner, R.J., Jackson, K.S., and Sherwood, J.M., 1994, Expedition of water-surface-profile computations by use of a geographic information system: Proceedings of the EPA National Conference on Environmental Problem Solving with GIS, EPA/625/R-95/004, p. 295-298.
- Haefner, R.J., Mancuso, J.J., Frizado, J.P., Shelton, K.L., and Gregg, J.M., 1988, Crystallization temperatures and stable isotope compositions of Mississippi Valley-type carbonates and sulfides of the Trenton Limestone, Wyandot County, Ohio: Economic Geology, v. 83, p. 1061-1069.
- Haefner, R.J., and Rowe, G.L. Jr., 1997, Water quality at an abandoned Ohio coal mine reclaimed with dry flue-gas desulfurization by-products: U.S. Geological Survey Fact Sheet FS-051-97, 4 p.
- Haefner, R.J., and Rowe, G.L. Jr., 1992, Geochemical and geophysical analysis of shallow aquifer materials in Pennsylvanian coal-bearing strata in east-central Ohio: in Geological Society of America 1992 Annual Meeting, Program with Abstracts, v. 24, no. 7, p. A283.
- Haefner, R.J., and Simonson, L.A., 2010, Hydrologic data assessment of the Tuscarawas River Basin with an annotated bibliography: U.S. Geological Survey Scientific Information Report 2010-5010, 115 p.
- Nalley, G.M. and Haefner R.J., 1999, Simulation of the effects of nearby quarrying operations on ground-water flow at the South Well Field, Franklin County, Ohio: U.S. Geological Survey Water Resources Investigations Report 99-4136, 23 p.
- Stehouwer, R., Dick, W., Bigham, J., Forster, L., Hitzhusen, F., McCoy, E., Traina, S., Wolfe, W., and Haefner, R., 1995, Land Application Uses for Dry FGD By-Products, Phase 1: Electric Power Research Institute TR-105264, 254 p.
- Stehouwer, R., Dick, W., Bigham, J., Forster, L., Hitzhusen, F., McCoy, E., Traina, S., Wolfe, W., Haefner, R., and Rowe, G., 1998, Land Application Uses for Dry FGD By-Products, Phase 2: Electric Power Research Institute TR-109652, 302 p.

**Membership and Activities in Professional Societies**

- National Ground Water Association, 1987 - present
- Ohio Geological Society, 1990 - present
- Water Management Association of Ohio (Ohio Chapter of AWRA), Member: 1990 - present; Board of Directors: 1998 - present; President: 2005 - 2007
- Geological Society of America, 1992 - present
- Ohio Minelands Partnership, 1998 - present

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## Curriculum Vitae

# Martha L. Jagucki

### **Contact Information**

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### **Employment History**

- **1990-present:** Hydrologist, U.S. Geological Survey Ohio Water Science Center, Columbus, Ohio.  
I develop proposals, manage budgetary and scientific aspects of hydrologic investigations, collect and analyze groundwater and water quality data, and write and review reports that communicate the results of hydrologic investigations. I also am in charge of archiving project data for the Science Center and I prepare outreach brochures and display materials that communicate capabilities and investigative activities of the Ohio Water Science Center.
- **1987-1989:** Staff Geologist, ENSR Consulting and Engineering, Dallas, Texas and Minneapolis, Minnesota  
Responsibilities included developing work plans, conducting field investigations, and reporting results of hydrologic studies to industrial clients. Designed and implemented underground storage tank investigations and soil vapor surveys using a portable gas chromatograph. Conducted due diligence property transfer audits of commercial and industrial properties.

### **Primary Fields of Competence and Expertise**

- Groundwater hydrology
- Groundwater chemistry

### **Education**

- Master of Science, Geology, 1987, The Ohio State University, Columbus, Ohio
  - Major: Geology
  - Thesis: *Petrogenesis of the Bonanza Tuff* (Dr. Mike Barton, Advisor)
- Bachelor of Science, Geology, 1984, Trinity University, San Antonio, Texas
  - Major: Geology

### **Other Education and Training**

- Stray gas workshop
- Well rehabilitation
- Water quality concepts
- Probability and statistics for data analysis
- Arc/INFO capabilities/ geographic information systems
- Groundwater geochemistry
- Electronic equipment for continuous monitoring of water resources
- Environmental auditing
- Transport and fate of contaminants in the subsurface
- Soil vapor analysis (gas chromatography)
- Health and safety at hazardous materials sites

**Publications**

Jagucki, M.L., Brown, C.J., Starn, J.J., and Eberts, S.M., 2010, Assessing the vulnerability of public-supply wells to contamination: Glacial aquifer system in Woodbury, Connecticut: U.S. Geological Survey Fact Sheet FS 2010–3002, 6 p.

Jagucki, M.L., Katz, B.G., Crandall, C.A., and Eberts, S.M., 2009, Assessing the vulnerability of public-supply wells to contamination: Floridan aquifer system near Tampa, Florida: U.S. Geological Survey Fact Sheet 2009–3062, 6 p.

Jagucki, M.L., Jurgens, B.C., Burow, K.R., and Eberts, S.M., 2009, Assessing the vulnerability of public-supply wells to contamination: Central Valley aquifer system near Modesto, California: U.S. Geological Survey Fact Sheet 2009–3036, 6 p.

Jagucki, M.J., Landon, M.K., Clark, B.R., and Eberts, S.M., 2008, Assessing the vulnerability of public-supply wells to contamination: High Plains aquifer near York, Nebraska: U.S. Geological Survey Fact Sheet FS 2008-3025, 6 p.

Reutter, David C., Puskas, Barry M., and Jagucki, M.L., 2006, Simulation of streamflow and water quality to determine fecal coliform and nitrate concentrations and loads in the Mad River Basin, Ohio: U.S. Geological Survey Water-Resources Investigations Report 2006-5160, 94 p.

Jagucki, M.L., and Darner, R.A., 2001, Ground-water quality in Geauga County, Ohio—Review of previous studies, status in 1999, and comparison of 1986 and 1999 data: U.S. Geological Survey Water-Resources Investigations Report 01-4160, 61 p.

Jagucki, M.L., and Lesney, L.L., 1995, Ground-water levels and directions of flow in Geauga County, Ohio, September 1994, and changes in ground-water levels, 1986-94: U.S. Geological Survey Water Resources Investigation Report 95-4194, 26 p.

Jagucki, M.L., Finton, C.D., Springer, A.E., and Bair, E.S., 1995, Hydrogeology and water quality at the Management Systems Evaluation Area near Piketon, Ohio: U.S. Geological Survey Water Resources Investigation Report 95-4139, 117 p.

Bradley, P.M., Chapelle, F.H., Jagucki, M.L., and McMahon, P.B., 1994, Effect of atrazine on potential denitrification in aquifer sediments: *Soil Biol. and Biochem.*, v. 26, not. 4, p. 523-524.

Jagucki, M.L., Finton, C.D., Springer, A.E., and Bair, E.S., 1993, Characterization of hydrology and water quality at the Ohio management systems evaluation area: Proceedings of the Ohio Buried Valley Aquifer Management Systems Evaluation Area Colloquium (October 27, 1993), p. 13-16.

McMahon, P.B., Chapelle, F.H., and Jagucki, M.L., 1993, Atrazine mineralization potential of alluvial aquifer sediments under aerobic conditions [abstract]: Conference handout: Agricultural Research to Protect Water Quality, Soil and Water Conservation Society, February 21-24, 1993.

O'Laughlin, E., Xue, Y., Traina, S., and Jagucki, M.L., 1993, Sorption of atrazine by Ohio MSEA soil and subsurface sediment samples [abstract]: Conference handout: Agricultural Research to Protect Water Quality, Soil and Water Conservation Society, February 21-24, 1993.

Ward, A., Nokes, S., Workman, S., Fausey, N., Bair, E.S., Jagucki, M., Logan, T., and Hindall, S., 1993, Description of the Ohio buried valley aquifer management systems evaluation area [extended abstract]: Conference proceedings: Agricultural Research to Protect Water Quality, Soil and Water Conservation Society, p. 69- 79.

McMahon, P.B., Chapelle, F.H., and Jagucki, M.L., 1992, Atrazine mineralization potential of alluvial-aquifer sediments under aerobic conditions: *Environmental Science & Technology*, vol. 26, p. 1556-1559.

**Awards**

USGS Performance Award (2008)

USGS Performance Award (2007)

USGS Performance Award and Special Service (STAR) Award (2006)

USGS Special Service (STAR) Award (2000)

USGS Special Service (STAR) Award (1999)

USGS Performance Award (1992)

USGS PMRS Performance Award (1991)

**Additional Activities**

Science content consultant for the 6<sup>th</sup> grade textbook Focus on Earth Science, 2007, The McGraw-Hill Companies, Inc., New York, 707 p.

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Curriculum Vitae  
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### **CURRENT POSITION**

Assistant Professor, Department of Geology & Environmental Science, University of Akron, Akron, OH

### **RESEARCH INTERESTS**

The ecology and physiology of microorganisms that mediate important geochemical reactions; microbially mediated redox cycling of elements, with particular emphasis on metal cycling; exploitation of microbiological activity for the bioremediation of metals.

### **EDUCATION**

Ph.D., Microbiology, 2004, University of Oklahoma, Norman, OK

Thesis: "Microbially-mediated redox cycling of uranium: implications for the bioremediation of U(VI)-contaminated aquifers," Advisors: Lee R. Krumholz and Joseph M. Suflita

M.S., Biology, 1999 Duquesne University, Pittsburgh, PA

Thesis: "Characterization of proteins involved in dissimilatory nitrate reduction by *Geobacter metallireducens*," Advisor: John F. Stolz

B.S., Biology, 1997 Saint Vincent College, Latrobe, PA

Thesis: "The effects of non-acidic mine drainage on the introduced freshwater bivalve, *Corbicula fluminae*," Advisor: Cynthia Walter

### **POSITIONS HELD**

**8/08-present** Assist. Professor, Department of Geology & Environmental Science, University of Akron, Akron, OH

**10/05-8/08** Post-Doctoral Research Associate, Department of Civil and Environmental Engineering, The Pennsylvania State University, University Park, PA

**10/04-10/05** Post-Doctoral Research Associate, Center for Environmental Chemistry and Geochemistry, The Pennsylvania State University, University Park, PA

**1/00-10/04** Graduate Research Assistant, University of Oklahoma, Norman, OK

**8/03-12/03** Graduate Teaching Assistant, Geomicrobiology, University of Oklahoma, Norman, OK

**8/99-12/99** Graduate Teaching Assistant, Fundamentals of Microbiology Laboratory, University of Oklahoma, Norman, OK

**8/97-5/99** Graduate Teaching Assistant, Biology I and II Laboratories, Introductory Microbiology Laboratory, Duquesne University, Pittsburgh, PA

**6/97-8/97** Undergraduate Researcher, Duquesne University, Pittsburgh, PA

**8/96-12/96** Undergraduate Teaching Assistant, Ecology Laboratory, St. Vincent College, Latrobe, PA

**5/96-7/96** Undergraduate Researcher, University of Northern Iowa, Cedar Falls, IA

### **COURSES TAUGHT**

University of Akron, Introduction to Environmental Science (Fall 2008, Fall 2009, Spring 2010, Fall 2010)

University of Akron, Seminar in Geology (Spring 2009)

University of Akron, Geochemistry (Fall 2009)

University of Akron, Geomicrobiology (Spring 2010)

University of Akron, Introduction to Microbiology (in UA Biology Department) (Fall 2010)

**PROFESSIONAL SERVICE ACTIVITIES**

Ad hoc reviewer: *American Society for Mining and Reclamation, Applied Geochemistry, Canadian Journal of Earth Sciences, Electronic Journal of Biotechnology, Environmental Science and Technology, Geobiology, Geochemical Journal, Geomicrobiology Journal, Hydrometallurgy, Journal of Contaminant Hydrology, Journal of Environmental Quality, Nature Geoscience, PLoS Biology.*

Proposal reviewer for the National Science Foundation's Geobiology and Low-Temperature Geochemistry and Education and Human Resources (Earth Sciences) Programs, Stanford Synchrotron Radiation Lightsource.

Judge, Ohio Branch American Society for Microbiology Meeting, April 2009.

Judging Coordinating Staff Member Center for Environmental Chemistry and Geochemistry Student Symposium, April 2005, University Park, PA.

Coordinating Staff Member, Pennsylvania Natural History Conference, May, 1997, Ligonier, PA.

**STUDENT SUPERVISION**

Guided the work of three undergraduate researchers at the University of Oklahoma and the Pennsylvania State University.

Assisted in the supervision of three Master's-level students at the Pennsylvania State University.

Mentored two undergraduate research projects at the University of Akron.

Currently advising two M.S. students in Geology at the University of Akron.

**PROFESSIONAL SOCIETIES**

American Chemical Society

American Geophysical Union

American Society for Microbiology

American Society for Mining and Reclamation

Ohio Branch American Society for Microbiology

Geological Society of America

International Society for Subsurface Microbiology

International Society for Microbial Ecology

Northern Ohio Geological Society

**AWARDS**

Department of Energy, Natural and Accelerated Bioremediation Research (NABIR) PI Mtg Student Travel Grant, 2003.

**WORKSHOP ATTENDANCE**

"4<sup>th</sup> Annual Penn State Bioinformatics Workshop" University Park, PA. July, 2006.

"Do Species Matter In Microbial Communities?" Bozeman, MT. July 2007.

**PUBLICATIONS**

Zhang, G., **J. M. Senko**, S. D. Kelly, H. Tan, K. M. Kemner, W. D. Burgos. 2009. Microbial reduction of iron(III)-rich notronite and uranium(VI). *Geochimica et Cosmochimica Acta*. 73: 3523-3538.

**Senko, J. M.**, G. Zhang, M. A. Bruns, W. D. Burgos. 2009. Metal reduction at low pH by a *Desulfosporosinus* species: implications for the biological treatment of acidic mine drainage. *Geomicrobiology Journal*. 26: 71-82.

Burgos, W. D., McDonough, J. T., **J. M. Senko**, G. Zhang, A. C. Dohnalkova, S. D. Kelly, K. M. Kemner, Y. A. Gorby. 2008. Characterization and reactivity of uraninite nanoparticles produced by *Shewanella oneidensis* MR-1. *Geochimica et Cosmochimica Acta*. 72: 4901-4915.

**Senko, J. M.**, M. A. Bruns, W. D. Burgos. 2008. Characterization of Fe(II) oxidizing bacterial communities at two acidic Appalachian coal mine drainage impacted sites. *The International Society for Microbial Ecology Journal*. 2: 1134-1145.

**Senko, J. M.**, S. D. Kelly, A. C. Dohnalkova, J. T. McDonough, K. M. Kemner, W. D. Burgos. 2007. The effect of U(VI) bioreduction kinetics on subsequent reoxidation of U(IV). *Geochimica et Cosmochimica Acta*. 71: 4644-4654.

- Burgos, W. D., **J. M. Senko**, J. J. Stone, B. A. Dempsey, E. E. Roden, K. M. Kemner, S. D. Kelley, B. Gu. 2007. Humic materials decrease biological U(VI) reduction by *Shewanella putrefaciens* CN32. *Environmental Engineering Science*. 24: 755-761.
- Senko, J. M.**, T. A. Dewers, L. R. Krumholz. 2005. The effect of Fe(II) form and oxidation rate on microbial nitrate-dependent Fe(III) mineralogy. *Applied and Environmental Microbiology*. 71:7172-7177.
- Senko, J. M.**, J. M. Suflita, L. R. Krumholz. 2005. Geochemical controls on microbial nitrate-dependent U(IV) oxidation. *Geomicrobiology Journal*. 22: 371-378.
- Senko, J. M.**, Y. Mohammed, T. A. Dewers, L. R. Krumholz. 2005. Role for Fe(III) minerals in nitrate-dependent microbial U(IV) oxidation. *Environmental Science and Technology*. 39:2529-2536.
- Senko, J. M.**, B. J. Campbell, J. R. Henriksen, M. S. Elshahed, T. A. Dewers, L. R. Krumholz. 2004. Barite deposition resulting from phototrophic sulfide-oxidizing bacterial activity. *Geochimica et Cosmochimica Acta*. 68: 773-780.
- Istok, J. D., **J. M. Senko**, L. R. Krumholz, D. Watson, M.-A. Bogle, A. Peacock, Y.-J. Chang, D. C. White. 2003. In-situ bio-reduction of technetium and uranium in a nitrate-contaminated aquifer. *Environmental Science and Technology*. 38: 468-475.
- Elshahed, M. S., **J. M. Senko**, T. A. Dewers, J. A. Spear, F. Z. Najar, S. M. Kenton, B. A. Roe, L. R. Krumholz. 2003. Bacterial diversity and sulfur cycling in a mesophilic sulfide-rich spring. *Applied and Environmental Microbiology*. 69: 5609-5621.
- Elias, D. A., **J. M. Senko**, L. R. Krumholz. 2003. A procedure for the quantitation of total oxidized uranium for bioremediation studies. *Journal of Microbiological Methods*. 53: 343-353.
- Senko, J. M.**, J. D. Istok, J. M. Suflita, L. R. Krumholz. 2002. In-situ evidence for uranium immobilization and remobilization. *Environmental Science & Technology*. 36: 1491-1496.
- Senko, J.**, J. Stolz. 2001. Evidence for iron-dependent nitrate respiration in the dissimilatory iron-reducing bacterium *Geobacter metallireducens*. *Applied & Environmental Microbiology*. 67: 3750-3752.
- Martinez Murillo, F., T. Gugliuzza, **J. Senko**, P. Basu, J. Stolz. 1999. A heme-C-containing enzyme complex that exhibits nitrate and nitrite reductase activity from a dissimilatory iron-reducing bacterium *Geobacter metallireducens*. *Archives of Microbiology*. 172: 313-320.
- Bumpus, J. A., **J. Senko**, G. Lynd, R. Morgan, K. Sturm, J. Stimpson, S. Roe. 1998. Biomimetic solubilization of a low rank coal: implications for its use in methane production. *Energy and Fuels*. 12: 664-671.

## REPORTS

- Burgos, W. D., **Senko, J. M.**, Bruns, M. A. 2008. Improving Passive Mine Treatment Through Better Understanding of Biogeochemistry and Mineralogy Associated with low-pH Fe(II) Oxidation. Commonwealth of Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation, Division of Acid Mine Drainage Abatement. PA DEP\_AMD 42(0420)102.1

## INVITED SEMINARS AND GUEST LECTURES

- Microbially mediated Fe cycling in acidic mine drainage. The University of Pittsburgh, February 2010. Pittsburgh, PA.
- Anaerobic microbial processes associated with acid mine drainage. The University of Akron Department of Biology, January 2010. Akron, OH.
- Microbial communities in coal mine derived acidic mine drainage. Ohio University, May 2009. Athens, OH.
- Metal-munching microbes: what do they do with uranium? Northern Ohio Geological Society. April 2009. Cleveland, OH.
- Microbially-mediated redox cycling of Fe in coalmine-derived acidic mine drainage (AMD). Kent State University, March 2009. Kent, OH.
- Microbially-mediated redox cycling of Fe in coalmine-derived acidic mine drainage (AMD). Miami University, December 2008. Oxford, OH.
- Microbially-mediated redox cycling of Fe in coalmine-derived acidic mine drainage (AMD). University of Akron, Department of Biology, October 2008. Akron, OH
- Fe(II) oxidizing bacterial communities and activities associated with Appalachian coal mine drainage. American Chemical Society National Meeting, August 2008. Philadelphia, PA.
- Microbially Mediated Metal Cycling. Saint Vincent College. March 2007. Latrobe, PA
- Guest Lecturer, Evolution and Systematics, (BL 234), Saint Vincent College. Biogeochemistry of Early Earth.
- Life on Earth: Vladimir Vernadsky, Todd Townsend, and Energy. Saint Vincent College. October 2006. Latrobe, PA.
- Guest Lecturer, Introduction to Environmental Engineering (CE 370), The Pennsylvania State University. Remediation of Acid Mine Drainage.

Microbially mediated, nitrate-dependent U(IV) oxidation: mechanisms and controls. American Chemical Society National Meeting, September 2006. San Francisco, CA.

Guest Lecturer, Biogeochemical Analysis (GEOSC 597), The Pennsylvania State University. Geomicrobiology of AMD Genesis and Treatment.

Guest Lecturer, Geochemistry of Aqueous Systems (GEOSC 522), The Pennsylvania State University. Biogeochemistry of Fe(III) Respiration.

Geomicrobiological characterization of Fe(II)- and Mn(II)-oxidizing activity at two mine drainage treatment sites. Mine Drainage Treatment Technology Conference, August 2005. Pittsburgh, PA.

Rates and mechanisms of nitrate-dependent U(VI) oxidation. DOE-NABIR PI Workshop, March, 2004. Warrenton, VA.

Factors influencing nitrate-dependent U(VI) oxidation. DOE-NABIR PI Workshop, March 2003. Warrenton, VA.

## ABSTRACTS

The effects of acid-tolerant sulfate reducing activities on Fe speciation. Bertel, D., Senko, J. M. National Meeting of the American Society of Mining and Reclamation. June 2010. Pittsburgh, PA.

Long-term biostimulation in uranium-contaminated iron-rich saprolite, followed by reoxidation. Zhang, G., J. Senko, K. Kemner and W.D. Burgos. American Chemical Society National Meeting. March 2009. Salt Lake City, UT.

Improving Passive Mine Treatment through better understanding of Biogeochemistry and Mineralogy associated with Mn(II) Oxidation. Burgos, W.D., C. Hansel and J. Senko. Appalachian Region States/US Office of Surface Mining Meeting. June 2009. Pittsburgh, PA.

Microbial reduction of uranium in the presence of nontronite and chlorite. Burgos, W. D., Zhang, G., **Senko, J. M.**, Tan, H. Kelly, S., Kemner, K. American Chemical Society National Meeting. August 2008. Philadelphia, PA.

Characterization of Fe(II)-oxidizing bacterial communities in Appalachian coal mine drainage. **Senko, J.**, Burgos, W., Bruns, M. European Geosciences Union General Assembly. April 2008. Vienna, Austria.

Microbial reduction of iron(III)-rich smectite and uranium(VI). Zhang, G., **Senko, J.**, Tan, H., Burgos, W. European Geosciences Union General Assembly. April 2008. Vienna, Austria.

Characterization of uraninite nanoparticles produced by different *Shewanella* species. Burgos, W., **Senko, J.**, Dohnalkova, A., Kelly, S., Kemner, K. European Geosciences Union General Assembly. April 2008. Vienna, Austria.

Use of genes involved in Fe(II) oxidation to assess abundance of iron-oxidizing bacteria in acid mine drainage. Wanjugi, P., Bruns, M. A., **Senko, J.**, Lucas, M., Burgos, W. Allegheny Branch American Society for Microbiology Meeting Abstracts. October, 2007. Pittsburgh, PA.

Cryogenic laser-induced time-resolved fluorescence spectroscopy studies of uranium adsorbed at minerals and soil sediments. Wang, Z., Zachara, J. M., Chang, H.-S., Korshin, G., **Senko, J. M.**, Burgos, W. D., Wang, J. 2007. American Chemical Society National Meeting Abstracts. August, 2007. Boston, MA.

Use of Fe(II)-Oxidizing Genes to Assess Iron-Oxidizing Prokaryotes in Acid Mine Drainage. Wanjugi, P., Bruns, M. A., **Senko, J.**, Burgos, W. 2007. American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America International Annual Meetings. November 2007. New Orleans, LA.

Characterization of Fe oxidizing microbial communities from two acid mine drainage impacted sites. Wanjugi P.; **Senko, J.**, Burgos, W., Bruns, M. A. 2006. Allegheny Branch American Society for Microbiology Meeting Abstracts. October, 2006. Latrobe, PA.

Microbially mediated Fe(II) removal from acidic coal mine drainage. Burgos, W. D., **Senko, J. M.**, Bruns, M. A. American Chemical Society National Meeting Abstracts. September, 2006. San Francisco, CA.

The effect of U(VI) bioreduction rate on subsequent biological and abiotic reoxidation of biogenic U(IV). **Senko, J. M.**, McDonough, J. T., Burgos, W. D. American Society for Microbiology General Meeting Abstracts. May, 2006. Orlando, FL.

Kinetics of U(VI) reduction control kinetics of U(IV) reoxidation. **Senko, J. M.**, Minyard, M. L., McDonough, J. T., Dempsey, B. A., Roden, E. E., Yeh, G.-T., Burgos, W. D. U.S. Department of Energy Environmental Remediation Science Program PI Meeting, April, 2006, Warrenton, VA.

Geomicrobiological characterization of Fe(II)- and Mn(II)-oxidizing activity at two mine drainage treatment sites. **Senko, J. M.**, Davidson, A., Burgos, W. D. Allegheny Branch American Society for Microbiology Branch Meeting. October, 2005. Clearfield, PA.

Mechanisms of nitrate-dependent, Fe-mediated U(IV) oxidation. **Senko, J. M.**, Krumholz, L. R. American Society for Microbiology General Meeting Abstracts. May, 2004. New Orleans, LA.

- Geochemical and microbiological factors influencing nitrate-dependent U(IV) oxidation. **Senko, J. M.**, McKinley, J. P., Heald, S. M., Suflita, J. M., Krumholz, L. R. American Society for Microbiology General Meeting Abstracts. May, 2003. Washington, DC.
- Bacterial diversity and sulfur cycling in an anaerobic sulfide-rich spring in Southwestern Oklahoma. Krumholz, L. R., Elshahed, M. S., **Senko, J. M.**, Campbell, B. J., Henriksen, J. R., Dewers, T. A., Spear, J. R., Najjar, F. Z., Kenton, S., Roe, B. A. American Society for Microbiology General Meeting Abstracts. May, 2003. Washington, DC.
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