

JEFFREY A. CUNNINGHAM

Department of Civil & Environmental Engineering
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EDUCATION

Ph.D.	Stanford University	1999	Civil & Environmental Engineering
M.S.	Stanford University	1993	Civil Engineering (Environmental Engineering & Science)
B.S.	Rice University	1991	Chemical Engineering (conferred <i>magna cum laude</i>)

RESEARCH INTERESTS

Contaminant fate and transport in the (aqueous) environment
Physical, chemical, and biological processes for water treatment and water quality control
Water resources and water re-use
Mass transfer in natural and engineered environmental systems
Contaminant behavior in groundwater
Remediation of contaminated soil and groundwater
Geologic sequestration of carbon dioxide for mitigation of global climate change

RESEARCH EXPERIENCE

Associate Professor	University of South Florida, Tampa, FL	Aug. 2011 – present
Assistant Professor	University of South Florida, Tampa, FL	Jan. 2005 – Aug. 2011
Assistant Professor	Texas A&M University, College Station, TX	Aug. 2003 – Dec. 2004
Research Associate	Stanford University, Stanford, CA	Feb. 2001 – Aug. 2003
Post-Doctoral Researcher	Stanford University, Stanford, CA	Jan. 1999 – Jan. 2001
Doctoral Student	Stanford University, Stanford, CA	July 1993 – Dec. 1998

ENGINEERING EXPERIENCE

Associate Engineer	Radian Corporation, Austin, TX	Aug. 1991 – Aug. 1992
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Passed Engineer-in-Training (EIT) licensure examination, 1993 (California license XE089121).

FUNDED PROJECTS (GRANTS, AWARDS, CONTRACTS)

- Collaborative Research: Development and Testing of a Fundamentals of Environmental Engineering Concept Inventory.* S Ergas (PI), J Cunningham. Funded by the National Science Foundation, 1 Aug 2011 – 31 Jul 2013: \$64,000. Collaborative project with the University of Massachusetts at Dartmouth (\$72,780), University of Utah (\$39,732), and Purdue University (\$22,797).
- Conference: 2011 AEESP Conference and CAREER Workshop: Global Sustainability, Tampa, Florida, July 10-12, 2011.* J Cunningham (PI), M Trotz. Funded by the National Science Foundation, 1 Mar 2011 – 29 Feb 2012: \$44,350.
- Novel physical-chemical-biological treatment process for swine wastes.* O Lahav (PI), M Green, S Ergas, J Cunningham. Funded by the Binational Agricultural Research and Development (BARD) Fund, 1 Dec 2010 – 30 Nov 2012: \$300,000.
- IREs: Sustainable clean water technologies for the UN's Millennium Development Goals -- a partnership between UNESCO-IHE (Delft, Netherlands) and Univ. South Florida.* D Yeh (PI), N Alcantar, J Cunningham, R Izurieta, and M Trotz. Funded by the National Science Foundation (NSF), 1 Jun 2009 – 31 May 2012: \$149,932.
- Carbon Sequestration Evaluation and Technologies.* M Stewart (PI), J Cunningham, and M Trotz. Funded by the Florida Energy Systems Consortium (FESC), 27 Feb 2009 – 5 Aug 2011: \$479,640.
- Geochemical modeling of waste stream injection into deep aquifers.* M Trotz (PI), M Stewart, and J Cunningham. Funded by Environmental Consulting and Technology (ECT), Inc., 12 Sep 2007 – 30 Jun 2011: \$151,485.
- Development of a new engineering course for non-engineering majors: "Global warming: politics & science of a contemporary issue."* J Cunningham (PI). Funded by USF College of Engineering, summer 2007: \$10,000.
- Evaluation of subsurface sequestration of carbon dioxide (CO₂) at the Polk Power Station: Physical and chemical modeling.* J Cunningham (PI) and M Stewart. Funded by Tampa Electric Company (TECO), 16 May 2007 – 15 Aug 2008: \$107,453.
- Towards sustainable healthy communities: Communicating science and risks of emerging micropollutants in reclaimed water.* J Cunningham (PI), F Jaward, D Holtzhausen, and D Yeh. Funded by the State of Florida through the University of South Florida, 1 May 2007 – 30 Apr 2009: \$392,400.
- Optimization of reverse osmosis membrane system at the Dunedin water treatment facility: Understanding and control of membrane fouling.* D Yeh (PI) and J Cunningham. Funded by the City of Dunedin (Florida), 1 Apr 2007 – 31 Mar 2010: \$105,000.
- Macro-percolation rates in Hillsborough County closed basins.* M Nachabe (PI) and J Cunningham. Funded by Hillsborough County (Florida), 2 Jan 2007 – 31 Dec 2008: \$200,000.
- Investigation of cleaning protocol improvement and lifetime extension for reverse osmosis membranes.* D Yeh (PI), J Cunningham, and LD Duke. Funded by the City of Dunedin (Florida), 1 Jul 2006 – 31 Aug 2007: \$29,985.
- Closed-loop catalytic treatment of contaminated soils.* J Cunningham (PI). Funded by the Texas Hazardous Waste Research Center, 1 Sep 2004 - 15 Feb 2006: \$20,000.
- Effect of flow velocity on biodegradation of trichloroethene (TCE) and perchloroethene (PCE) during restoration of contaminated groundwater aquifers.* J Cunningham (PI). Funded by the Texas Water Resources Institute, 2004 – 2005: \$5000.

24. Mendoza-Sanchez I, Cunningham JA. **In press.** Efficient algorithms for modeling the transport and biodegradation of chlorinated ethenes in groundwater. *Transport in Porous Media*, in press, accepted 2011. doi: 10.1007/s11242-011-9896-5.
23. Wee HY, Cunningham JA. **In press.** Remediation of contaminated soil by solvent extraction and catalytic hydrodehalogenation: Semi-continuous process with solvent recycle. *Environmental Progress & Sustainable Energy*, in press, accepted 2010. doi: 10.1002/ep.10513.
22. Wee HY, Cunningham JA. **Accepted for publication.** Soil treatment by solvent extraction and catalytic hydrodehalogenation. *International Journal of Environment and Waste Management (IJEWM)*, accepted 2009.
21. Okwen R, Stewart M, Cunningham J. **2011.** Effect of well orientation (vertical vs. horizontal) and well length on the injection of CO₂ in deep saline aquifers. *Transport in Porous Media*, 90(1), 219-232. doi: 10.1007/s11242-010-9686-5.
20. Okwen R, Stewart M, Cunningham J. **2011.** Analytical model for screening potential CO₂ repositories. *Computational Geosciences*, 15(4), 755-770. doi: 10.1007/s10596-011-9246-2
19. Okwen R, Stewart M, Cunningham J. **2011.** Temporal variations in near-wellbore pressures during CO₂ injection in confined aquifers. *International Journal of Greenhouse Gas Control*, 5, 1140-1148. doi: 10.1016/j.ijggc.2011.07.011
18. Okwen R, Pu R, Cunningham JA. **2011.** Remote sensing of temperature variations around major power plants as point sources of heat. *International Journal of Remote Sensing*, 32(13), 3791-3805. doi: 10.1080/01431161003774723.
17. Mendoza-Sanchez I, Autenrieth RL, McDonald TJ, Cunningham JA. **2010.** Effect of pore velocity on the biodegradation of *cis*-dichloroethene (DCE) in column experiments. *Biodegradation*, 21(3), 365-377. doi: 10.1007/s10532-009-9307-6.
16. Okwen R, Stewart M, Cunningham JA. **2010.** Analytical solution for estimating storage efficiency of geologic sequestration of CO₂. *International Journal of Greenhouse Gas Control*, 4, 102-107. doi: 10.1016/j.ijggc.2009.11.002.
15. Wee HY, Cunningham JA. **2008.** Palladium-catalyzed hydrodehalogenation of 1,2,4,5-tetrachlorobenzene in water-ethanol mixtures. *Journal of Hazardous Materials*, 155(1-2), 1-9. doi: 10.1016/j.jhazmat.2007.10.045
14. Cunningham JA, Fadel ZJ. **2007.** Contaminant degradation in physically and chemically heterogeneous aquifers. *Journal of Contaminant Hydrology*, 94(3-4), 293-304. doi: 10.1016/j.jconhyd.2007.07.011
13. Mendoza-Sanchez I, Cunningham JA. **2007.** Efficient algorithm for modeling transport in porous media with mass exchange between mobile fluid and reactive stationary media. *Transport in Porous Media*, 68(3), 285-300.
12. Hoelen TP, Cunningham JA, Hopkins GD, Lebrón CA, Reinhard M. **2006.** Bioremediation of *cis*-DCE at a sulfidogenic site by amendment with propionate. *Ground Water Monitoring & Remediation*, 26(3), 82-91.
11. Cunningham JA, Mendoza-Sanchez I. **2006.** Equivalence of two models for biodegradation during contaminant transport in groundwater. *Water Resources Research*, 42(2), W02416, doi: 10.1029/2005WR004205.
10. Cunningham JA, Deitsch JJ, Smith JA, Reinhard M. **2005.** Quantification of contaminant sorption-desorption time-scales from batch experiments. *Environmental Toxicology and Chemistry*, 24(9), 2160-2166.
9. Cunningham JA, Hoelen TP, Hopkins GD, Lebrón CA, Reinhard M. **2004.** Hydraulics of recirculating well pairs for ground water remediation. *Ground Water*, 42(6), 880-889.

REFEREED JOURNAL PUBLICATIONS (CONTINUED)

8. Lin A, Debroux JF, Cunningham JA, Reinhard M. **2003**. Comparison of rhodamine WT and bromide in the determination of hydraulic characteristics of constructed wetlands. *Ecological Engineering*, 20(1), 75–88.
7. Cunningham JA, Reinhard M. **2002**. Injection-extraction treatment well pairs: An alternative to permeable reactive barriers. *Ground Water*, 40(6), 599–607.
6. Cunningham JA, Rahme H, Hopkins GD, Lebrón CA, Reinhard M. **2001**. Enhanced *in situ* bioremediation of BTEX-contaminated groundwater by combined injection of nitrate and sulfate. *Environmental Science & Technology*, 35(8), 1663–1670.
5. Cunningham JA, Hopkins GD, Lebrón CA, Reinhard M. **2000**. Enhanced anaerobic bioremediation of groundwater contaminated by fuel hydrocarbons at Seal Beach, California. *Biodegradation*, 11(2-3), 159–170.
4. Cunningham JA, Goltz MN, Roberts PV. **1999**. Simplified expressions for spatial moments of groundwater contaminant plumes. *Journal of Hydrologic Engineering*, 5(4), 377–380.
3. Cunningham JA, Roberts PV. **1998**. Use of temporal moments to investigate the effects of non-uniform grain-size distribution on the transport of sorbing solutes. *Water Resources Research*, 34(6), 1415–1425.
2. Werth CJ, Cunningham JA, Roberts PV, Reinhard M. **1997**. Effects of grain-scale mass transfer on the transport of volatile organics through sediments, 2: Column results. *Water Resources Research*, 33(12), 2727–2740.
1. Cunningham JA, Werth CJ, Reinhard M, Roberts PV. **1997**. Effects of grain-scale mass transfer on the transport of volatile organics through sediments, 1: Model development. *Water Resources Research*, 33(12), 2713–2726.

MANUSCRIPTS IN REVIEW/PREPARATION

- Ticknor JT, Cunningham JA. Simplified analysis of chlorinated ethenes in water samples by GC/FID. Under review at *Environmental Engineering Science*, submitted April 2011.
- Kim WS, Do AT, Yeh DH, Cunningham JA. Comparison of extraction and derivatization methods for use in GC/MS analysis of endocrine-disrupting compounds in water. Under review at *Water and Environment Journal*, submitted June 2011.
- Thomas MW, Trotz MA, Stewart M, Cunningham JA. Geochemical modeling of CO₂ sequestration in deep, saline, dolomitic-limestone aquifers: 1, Critical evaluation of thermodynamic sub-models. Under review at *Chemical Geology*, submitted July 2011.

PUBLISHED CONFERENCE PROCEEDINGS (SELECTED)

- Trotz MA, Thomas KD, Cunningham JA, Zhang Q. "Improving writing in Civil and Environmental Engineering courses using CLAQWA, an online tool for writing improvement." American Society of Engineering Education, Proceedings of the 2010 ASEE Annual Conference and Exposition, paper number AC2010-675. Presented in Louisville, KY, June 20–23, 2010. Available on-line at: <http://soa.asee.org/paper/conference/paper-view.cfm?id=23224>
- Okwen RT, Stewart M, Cunningham JA. "Storage of CO₂ in deep saline aquifers via injection in horizontal wells." Proceedings of the TOUGH Symposium 2009, edited by G Moridis, C Doughty, S Finsterle, and E Sonnenthal, pp 102–107. Published by Lawrence Berkeley National Laboratory (LBNL-2790E), Berkeley, CA. Presented in Berkeley, CA, Sept 14–16, 2009. Available on-line at: <http://escholarship.org/uc/item/1zf1b81h>
- Reinhard M, Hopkins GD, Cunningham J, Lebron CA. "From laboratory study to full scale application: Treating groundwater for TCE removal using catalyzed reductive dechlorination." American Chemical Society, Division of Environmental Chemistry, Preprints of Extended Abstracts, vol 46, no 2, pp 444–447. Presented at the 232nd ACS National Meeting, San Francisco, CA, Sept 10–14, 2006.
- Munakata N, Cunningham JA, Reinhard M, Ruiz R, Lebrón C. "Palladium catalysis in horizontal flow treatment wells: Field-scale design and laboratory study." Proceedings of the Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds, edited by AR Gavaskar and ASC Chen. Published by Battelle Press, Columbus, OH. Presented in Monterey, CA, May 20–23, 2002.
- Hoelen TP, Cunningham J, Lebrón CA, Reinhard M. "Coupling of toluene oxidation with PCE dechlorination under sulfidogenic conditions." *Anaerobic Degradation of Chlorinated Solvents*, volume 6(7) of the Proceedings of the Sixth International In Situ and On-Site Bioremediation Symposium, edited by V Magar, D Fennell, J Morse, B Alleman, and A Leeson, pp 95–102. Published by Battelle Press, Columbus, OH. Presented in San Diego, CA, June 4–7, 2001.
- Cunningham JA, Hopkins GD, Reinhard M, Lebrón CA. "Enhanced anaerobic in situ bioremediation of fuel hydrocarbons in groundwater at Seal Beach, California." *Groundwater 2000*, Proceedings of the International Conference on Groundwater Research, edited by PL Bjerg, P Engesgaard, and TD Krom, pp 411–412. Published by A.A. Balkema Publishers, Rotterdam, Denmark. Presented in Copenhagen, Denmark, June 6–8, 2000.
- Cunningham JA, Freyberg DL, Roberts PV. "Solute transport at the Borden field experiment: Grain- and field-scale rate limitations." *Groundwater: An Endangered Resource*, Proceedings of Theme C of the 27th Congress of the International Association for Hydraulic Research, Water for a Changing Global Community, edited by AN Findikakis and F Stauffer, pp 65–70. Published by the American Society of Civil Engineers, New York, NY. Presented in San Francisco, California, August 10–15, 1997.
- Thompson PA, Berry CA, Espenscheid AP, Cunningham JA, Evans JM. "Estimating hydrocarbon emissions from triethylene glycol dehydration of natural gas." Proceedings of the SPE/EPA Exploration & Production Environmental Conference, pp 187–198. Published by the Society of Petroleum Engineers (SPE), Richardson, TX. Presented in San Antonio, TX, Mar. 7–10, 1993.

OTHER PUBLICATIONS (SELECTED)

- Cunningham JA, Okwen RT, Thomas MW, Trotz MA, Stewart M. "Expected CO₂-water-rock interactions and changes in formation porosity in a deep saline aquifer in Florida, United States." *Eos, Transactions of the American Geophysical Union*, vol 90, Fall meeting supplement, Abstract H13A-0919. Presented at the American Geophysical Union 2009 Fall Meeting, San Francisco, CA, December 14–18, 2009.
- Goldman JE, Ferlita RE, Keen M, Cunningham J, Duke LD, Yeh D. "A multi-level, systematic evaluation of cleaning protocols for reverse osmosis membranes in drinking water treatment." *Solutions* [American Membrane Technology Association], Spring 2009, pp 10–16.
- Cunningham JA, Mendoza-Sanchez I. "Efficient algorithms for modeling the transport and biodegradation of chlorinated ethenes in groundwater." *Eos, Transactions of the American Geophysical Union*, vol 89, Fall meeting supplement, Abstract H21D-0838, December 2008. Presented at the American Geophysical Union 2008 Fall Meeting, San Francisco, CA, December 15–19, 2008.
- Okwen RT, Cunningham JA. "Evaluating the effect of gravity on CO₂ plume behavior in deep confined saline aquifers." *Eos, Transactions of the American Geophysical Union*, vol 89, Fall meeting supplement, Abstract H23D-1010, December 2008. Presented at the American Geophysical Union 2008 Fall Meeting, San Francisco, CA, December 15–19, 2008.
- Kim WS, Cunningham JA. "Comparison of analytical methods with solid-phase extraction and solid-phase micro-extraction with derivatization for detecting and quantifying bisphenol-A in water." Society of Environmental Toxicology and Chemistry (SETAC), Abstract Book, SETAC North America 29th Annual Meeting. Presented in Tampa, FL, November 16–20, 2008.
- Cunningham JA, Mendoza-Sanchez I. "How can we account for micro-scale biodegradation processes in macro-scale models of contaminant transport and degradation?" *Eos, Transactions of the American Geophysical Union*, vol 88, no 52, Fall meeting supplement, Abstract H32D-05, December 2007. Presented at the American Geophysical Union 2007 Fall Meeting, San Francisco, CA, December 10–14, 2007.
- Okwen R, Nordbotten J, Stewart M, Cunningham JA. "Analytical model for screening potential repositories for subsurface sequestration of CO₂." *Eos, Transactions of the American Geophysical Union*, vol 88, no 52, Fall meeting supplement, Abstract U43C-1393, December 2007. Presented at the American Geophysical Union 2007 Fall Meeting, San Francisco, CA, December 10–14, 2007.
- Guswa AJ, Cunningham JA, Freyberg DL. "A two-region model to account for slow advection through low-permeability lenses." *Eos, Transactions of the American Geophysical Union*, vol 80, Fall meeting supplement, Abstract H32A-08, December 1999. Presented at the American Geophysical Union 1999 Fall Meeting, San Francisco, CA.
- Cunningham JA, Guswa AJ, Freyberg DL, Roberts PV. "Use of temporal moment analysis to determine the importance of sorption kinetics for contaminant transport through heterogeneous groundwater aquifers." *Eos, Transactions of the American Geophysical Union*, vol 79, no 45, Fall meeting supplement, pg. F257, November 1998. Presented at the American Geophysical Union 1998 Fall Meeting, San Francisco, CA, Dec. 6–10, 1998.
- Cunningham JA, Ball WP, Roberts PV. "Series diffusion model for the sorption kinetics of halogenated organic compounds on Borden aquifer sand." *Eos, Transactions of the American Geophysical Union*, vol 79, no 17, Spring meeting supplement, pg. S97, April 1998. Presented at the American Geophysical Union 1998 Spring Meeting, Boston, MA, May 26–29, 1998.
- Thompson PA, Cunningham JA, Berry CA, Evans JM. "PC program estimates BTEX, VOC emissions." *Oil and Gas Journal*, vol 91, no 24, pp 36–41, June 14, 1993.

GRADUATE STUDENT ADVISEES

- Allen, Whitney (co-advised by Prof A Ashmawy). **M.S.**, University of South Florida, 2005. Thesis title: *Relationship between plasticity ratio and hydraulic conductivity for bentonite clay during exposure to synthetic landfill leachate.*
- Engleson, Joel. **Ph.D.**, University of South Florida, expected 2012.
- Fadel, Ziad. **M.S.**, Texas A&M University, 2005. Thesis title: *Stochastic modeling of transport and degradation of reactive solutes in heterogeneous aquifers.*
- Goldman, Josh (co-advised by Prof L Donald Duke). **M.S.**, University of South Florida, 2007. Thesis title: *Relationship between biofilm removal and membrane performance using Dunedin Reverse Osmosis Water Treatment plant as a case study.*
- Kim, Won-Seok. **Ph.D.**, University of South Florida, 2011. Dissertation title: *Biodegradation of bisphenol-A and 17 β -estradiol in soil mesocosms under alternating aerobic/anoxic/anaerobic conditions.*
- Mendoza, Itza. **Ph.D.**, Texas A&M University, 2007. Dissertation title: *Effects of pore-scale velocity and pore-scale physical processes on contaminant biodegradation during transport in groundwater: Modeling and experiments.*
- Okwen, Roland. **Ph.D.**, University of South Florida, 2009. Dissertation title: *Enhanced CO₂ Storage in Confined Geologic Formations.*
- Osborn, Claire. **M.S.**, University of South Florida, 2011. Thesis title: *Catalytic hydrodehalogenation and hydrogenation of halogenated aromatic organic contaminants for application to soil remediation.*
- Thomas, Mark. **M.S.**, University of South Florida, 2010. Thesis title: *Geochemical Modeling of CO₂ Sequestration in Dolomitic Limestone Aquifers.*
- Thomas, Mark. **Ph.D.**, University of South Florida, expected 2014.
- Ticknor, Jonathan. **M.S.**, University of South Florida, expected 2012.
- Wee, Hun-Young. **Ph.D.**, Texas A&M University, 2007. Dissertation title: *Remedial extraction and catalytic hydrodehalogenation for treatment of soils contaminated by halogenated hydrophobic organic compounds.*

COURSES TAUGHT

- Environmental Systems Engineering.* Undergraduate-level class introducing students to the most important topics of environmental engineering, including environmental chemistry, water quality and treatment, wastewater treatment, air pollution, and solid waste management.
- Global Warming: Science and Politics of a Contemporary Issue.* Undergraduate-level class designed to engage students of all disciplines (i.e., non-science/non-engineering) in critical analysis of scientific evidence and proposed policy options related to global climate change.
- Physical and Chemical Principles in Environmental Engineering.* Graduate-level class emphasizing the chemical properties, physical processes, and environmental characteristics that determine the fate and transport of contaminants in the environment.
- Physical and Chemical Processes in Environmental Engineering.* Graduate-level class covering unit processes commonly used to treat domestic water supply and/or to treat contaminated environmental media.
- Transport in Porous Media.* Graduate-level class examining the fundamental phenomena governing scalar transport in porous media, with particular application to contaminant transport in groundwater.
- Groundwater Engineering.* Graduate-level class presenting analytical and numerical methods for solving practical groundwater problems under steady and non-steady flow conditions, e.g., flow to and from wells, delineation of capture zones, design of simple capture systems.

PROFESSIONAL SERVICE

Manuscript reviewer for several prominent scientific journals (listed alphabetically):

Advances in Water Resources (Elsevier)
Applied Catalysis B: Environmental (Elsevier)
Environmental Engineering Science (Mary Ann Liebert, Inc.)
Environmental Progress & Sustainable Energy (American Institute of Chemical Engineers)
Environmental Science & Technology (American Chemical Society)
Environmental Toxicology and Chemistry (Society of Environmental Toxicology and Chemistry)
Ground Water (National Ground Water Association)
Ground Water Monitoring & Remediation (National Ground Water Association)
Hydrological Processes (Wiley)
Journal of Contaminant Hydrology (Elsevier)
Journal of Environmental Engineering (American Society of Civil Engineers)
Journal of Hazardous Materials (Elsevier)
Journal of Hydrologic Engineering (American Society of Civil Engineers)
Journal of Hydrology (Elsevier)
Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management (ASCE)
Soil and Sediment Contamination (Taylor & Francis)
Water Resources Research (American Geophysical Union)
Water Science and Technology: Water Supply (International Water Association)

Proposal reviewer for national and international funding agencies:

Department of Energy (DoE)
National Institutes of Health (NIH)
National Science Foundation (NSF)
U.S. Civilian Research & Development Foundation (CRDF)

Member of professional organizations (*note: not all memberships are current*):

American Chemical Society (ACS)
American Geophysical Union (AGU)
American Institute of Chemical Engineers (AIChE)
American Society for Engineering Education (ASEE)
American Water Works Association (AWWA)
Association of Environmental Engineering and Science Professors (AEESP)

HONORS AND AWARDS

Distinguished Service Award, Association of Environmental Engineering and Science Professors, 2011.
Outstanding Undergraduate Teaching Award, USF, 2008–09 academic year.
Editor's Citation for Excellence in Refereeing, awarded by *Water Resources Research*, 2006.
Editor's Citation for Excellence in Refereeing, awarded by *Water Resources Research*, 1999.
Invited Speaker, American Geophysical Union 1997 Fall Meeting.
Outstanding Student Paper, Hydrology Section, American Geophysical Union 1996 Fall Meeting.
U.S. Environmental Protection Agency (EPA) Graduate Fellowship, 1995–1998.
National Science Foundation (NSF) Graduate Fellowship, 1992–1995.
B.S. conferred *Magna Cum Laude*, Rice University, May 1991.
Member of Phi Beta Kappa and Tau Beta Pi scholastic honor societies.