ROSEANNA M. NEUPAUER
ORCID: 0000-0002-4918-810X

EDUCATION

Ph.D.	Hydrology	New Mexico Institute of Mining and Technology	2000
M.S.	Mathematics	New Mexico Institute of Mining and Technology	1999
S.M.	Civil Engineering	Massachusetts Institute of Technology	1991
B.S.	Civil Engineering	Carnegie Mellon University	1989
B.A.	Spanish	University of Colorado Boulder	2018

PROFESSIONAL APPOINTMENTS

University of Colorado
- Department of Civil, Environmental, and Architectural Engineering
  - Professor — 2016-present
  - Associate Professor — 2009-2016
  - Associate Chair for Undergraduate Studies — 2015-2019, 2020-2022
  - Faculty Director for Civil Engineering — 2014-2015
  - Assistant Professor — 2005-2009
- Environmental Engineering Program, Program Faculty — 2009-present

China University of Petroleum (East China), Qingdao, China
- School of Petroleum Engineering, Visiting Instructor — 2020, 2022

Escuela Superior Politécnica del Litoral, Guayaquil, Ecuador
- Department of Earth Science and Engineering, Visiting Scholar — 2015

University of Virginia, Department of Civil Engineering
- Visiting Assistant Professor — 2004-2008
- Assistant Professor — 2001-2004

Idaho National Engineering Laboratory
- Subsurface and Environmental Modeling Group, Senior Engineer — 1994-1995
- Environmental Engineering Group
  - Senior Engineer — 1992-1994
  - Engineer — 1991-1992

PROFESSIONAL REGISTRATION

Professional Engineer, State of New Mexico, #13877, February 1998
Professional Engineer, Commonwealth of Virginia, #0402037137, April 2002

AWARDS AND HONORS

Comprehensive

Fellow, American Society of Civil Engineers, 2023

Margaret S. Petersen Award, Environmental and Water Resources Institute of the American Society of Civil Engineers, 2022
Fellow, Environmental and Water Resources Institute of the American Society of Civil Engineers, 2022
Fulbright U.S. Scholar Grant, 2015
President's Teaching Scholar, University of Colorado, since 2015
Fellow, Geological Society of America, 2010
Founders' Award for Excellence in Scholarship, Research, and Service, New Mexico Institute of Mining and Technology, 1999, 2001
Distinguished Alumni Award, Northampton Area High School, Northampton, PA, 2023

Teaching/Education

Outstanding Mentor, Discovery Learning Apprenticeship, College of Engineering and Applied Science, CU Boulder, 2023
Student Appreciation Award, Civil Engineering, CEAE, 2015, 2017
"Best Should Teach" Faculty Gold Award, University of Colorado Boulder, 2016
Boulder Faculty Assembly Excellence in Teaching Award, 2011
John and Mercedes Peebles Innovation in Education Award, College of Engineering and Applied Science, University of Colorado, 2010
Sullivan-Carlson Innovation in Teaching Award, College of Engineering and Applied Science, University of Colorado, 2009
Charles A. Hutchinson Memorial Teaching Award, College of Engineering and Applied Science, University of Colorado, 2008
Teaching Award, CEAE Department, University of Colorado, 2007
ExCEEd New Faculty Excellence in Teaching Award, American Society of Civil Engineers, 2006
University Teaching Fellowship, University of Virginia, 2003-2004
ASCE ExCEEd Teaching Fellow, 2002

Research/Academic

BFA Leadership Institute, 2013-2014
National Academies Keck Futures Initiative conference, invited participant, 2011
National Academy of Engineering, Frontiers in Engineering Symposium, invited participant, 2007
Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers, 2006
Young Researcher Award, CEAE Department, University of Colorado, 2006
NSF CAREER Award, Hydrologic Sciences Division, 2003-2009
Science to Achieve Results Fellowship, U.S. Environmental Protection Agency, 1998-2000
Outstanding Woman Geoscience Student Award, Association of Women Geoscientists, Denver Chapter, 1998
Hantush Fellowship, New Mexico Institute of Mining and Technology, 1995-1996
Walter Deuchler Fellowship, Tau Beta Pi, 1989-1990

Ralph M. Parsons Fellowship, MIT Civil Engineering Department, 1989-1990
Harold A. Thomas Award for Outstanding Civil Engineering Undergraduate, Carnegie Mellon University, 1989

Service

2022 Editors' Citation for Excellence in Refereeing for *Water Resources Research*
Max S. Peters Faculty Service Award, College of Engineering and Applied Science, University of Colorado Boulder, 2021
2019 Editors' Citation for Excellence in Refereeing for *Water Resources Research*
CEAE Department Service Award, 2017
2015 Editors' Citation for Excellence in Refereeing for *Water Resources Research*
2013 Editors' Citation for Excellence in Refereeing for *Geophysical Research Letters*
American Society of Civil Engineers 150th Anniversary Faculty Advisor Award, 2002
Graduate Student Association Appreciation Award, New Mexico Institute of Mining and Technology, 2001
Student Appreciation Award, New Mexico Institute of Mining and Technology, 1999

Other

Carnegie Mellon University Athletics Hall of Fame (team recognition), inducted 2022

RESEARCH

PEER-REVIEWED JOURNAL PUBLICATIONS (IN PREPARATION)

(graduate student co-authors underlined; undergraduate student co-authors double-underlined)

58. Mays, D.C. and **R.M. Neupauer**, Review of chaotic advection in porous media, in preparation for submission to *Water Resources Research*, expected submission date: September 2024.
57. **Neupauer, R.M.**, A. Carter, and S. Ge. Hot Springs and Deep Geothermal Energy Extraction, in preparation, expected submission date: June 2024.
56. **Neupauer, R.M**., and J.T. Quinn, Effects of active and passive spreading on mixing and reaction during in situ groundwater remediation, in preparation for submission to *Journal of Hydrologic Engineering*, expected submission date: June 2024.
55. Turnadge, C., **R.M. Neupauer**, R.S. Crosbie, O. Batelaan, and C.T. Simmons, A review of first-order adjoint state sensitivities and their application to saturated single phase groundwater flow modeling, in preparation for submission to *Water Resources Researc*h, expected submission date: June 2024.

PEER-REVIEWED JOURNAL PUBLICATIONS (IN REVIEW OR UNDER REVISION)

(graduate student co-authors underlined)

54. Lainis, A., **R.M. Neupauer**, J.C. Koch, and M.N. Gooseff, Seasonal subsurface thaw dynamics of an aufeis feature investigated through numerical simulations, *Hydrological Processes*, submitted August 1, 2023, under revision, expected resubmission date: January 31, 2024.
53. Turnadge, C., **R.M. Neupauer**, O. Batelaan, R.S. Crosbie, and C.T. Simmons, Analytical and numerical adjoint solutions for cumulative streamflow depletion, *Water Resources Research*, under revision, expected resubmission date: January 31, 2024.

PEER-REVIEWED JOURNAL PUBLICATIONS (ACCEPTED)
(graduate student co-authors underlined)

PEER-REVIEWED JOURNAL PUBLICATIONS (graduate student co-authors underlined; undergraduate student co-authors double-underlined)

52. Zhang, Y., G.E. Fogg, H. Sun, D.M. Reeves, **R.M. Neupauer**, and W. Wei, Adjoint subordination to calculate backward travel time probability of pollutants in water with various velocity resolutions, *Hydrology and Earth System Sciences,* 28, 179–203, https://doi.org/10.5194/hess-28-179-2024, 2024.
51. **Neupauer, R.M.,** C. Turnadge, and J. Okkonen, Forward and adjoint modeling of sensitivities to periodic sources in groundwater flow and transport, *Mathematical Geosciences*, doi:10.1007/s11004-023-10074-w, 2023.
50. Sather, L.J., E.J. Roth, **R.M. Neupauer**, J.P. Crimaldi, and D.C. Mays, Experiments and simulations of plume spreading in porous media, *Water Resources Research*, 59, e2022WR032943, DOI:10.1029/2022WR032943, 2023.
49. Zhang, Y., M.L. Brusseau, **R.M. Neupauer**, W. Wei, A general backward model to identify source for contaminants undergoing non-Fickian diffusion in water, *Environmental Science & Technology*, DOI: 10.1021/acs.est.2c01873, 2022.
48. Sather, L.J., **R.M. Neupauer**, D.C. Mays, J.P. Crimaldi, and E.J. Roth, Active spreading: Hydraulics for enhancing groundwater remediation, *Journal of Hydrologic Engineering*, 10.1061/(ASCE)HE.1943-5584.0002167, 2022.
47. Hwang, H-T., **R.M. Neupauer**, S.-W. Jeen, D.T. Steinmoeller, E.A. Sudicky, S.-S. Lee, K.-K. Lee, Evaluating backward probability model for source zone identification problems under various hydrologic conditions, *Journal of Contaminant Hydrology*, doi:10.1016/j.jconhyd.2021.103909, 2022.
46. **Neupauer, R.M.,** E.J. Roth, J.P. Crimaldi, D.C. Mays, and L.J. Sather, Demonstration of reversible dispersion in a Darcy-scale push-pull laboratory experiment, *Transport in Porous Media*, DOI : 10.1007/s11242-021-01682-3, 2021.
45. Roth, E.J. , D.C. Mays, **R.M. Neupauer**, L.J. Sather, and J.P. Crimaldi, Methods for Laser-Induced Fluorescence Imaging of Solute Plumes in Quasi-Two-Dimensional, Refractive Index-Matched Porous Media, *Transport in Porous Media*, doi.org/10.1007/s11242-021-01545-x, 2021.
44. **Neupauer, R.M**., G.D. Lackey, and J. Pitlick, Exaggerated stream depletion in streams with spatio-temporally varying streambed conductance, *Journal of Hydrologic*

Engineering, 26(2), 04020066, doi:10.1061/(ASCE)HE.1943-5584.0002043, 2021. Featured as Editor's Choice for *Journal of Hydrologic Engineering* for February 2021.

43. Okkonen, J., **R. Neupauer**, E. Kozlovskaya, N. Afonin, K. Moisio, K. Taewook, and E. Muurinen, Frost quakes: crack formation by thermal stress, *Journal of Geophysical Research: Earth Surface*, 125, e2020JF00516, doi:10.1029/2020JF005616, 2020.
42. **Neupauer, R.M.**, L.J. Sather, D.C. Mays, J.P. Crimaldi, and E.J. Roth. Contributions of pore-scale mixing and mechanical dispersion to reaction in radial groundwater flow*, Water Resources Research*, 56, e2019WR026276, https://doi.org/10.1029/2019WR026276, 2020.
41. Roth, E.J., **R.M. Neupauer**, D.C. Mays, L.J. Sather, and J.P. Crimaldi, Wall Effect Mitigation Techniques for Experiments with Planar Walls, *Transport in Porous Media*, 132, 423-441, https://doi.org/10.1007/s11242-020-01399-9, 2020.
40. Zhang, Y. H.G. Sun, **R.M. Neupauer**, P. Straka, J.F. Kelly, B. Lu, and C. Zheng, Identification of pollutant source for super-diffusion in aquifers and rivers with bounded domains, *Water Resources Research*, 54, 7092-7108, https://doi.org/10.1029/2018WR023011, 2018.
39. Zhang, Y., H. Sun, B. Lu, R. Garrard, and **R.M. Neupauer**, Identifying source location and release time for pollutants undergoing super-diffusion and decay, *Advances in Water Resources*, 107, 517-524, 2017.
38. Zhang, Y., C.T. Green, E.M. LaBolle, **R.M. Neupauer**, and H.G. Sun, Bounded fractional diffusion in geological media: Definition and Lagrangian approximation, *Water Resources Research*, 52, doi:10.1002/2016WR019178, 2016.
37. Okkonen, J. and **R.M. Neupauer**, Capture zone delineation methodology based on the maximum concentration - Preventative groundwater well protection areas for heat exchange fluid mixtures, *Water Resources Research*, 52, doi:10.1002/2016WR018715, 2016.
36. Piscopo, A.N., **R.M. Neupauer**, and J.R. Kasprzyk, Optimal design of in situ chemical oxidation for sorbing contaminants in groundwater, *Journal of Contaminant Hydrology*, 190, 29-43, 2016.
35. Zhang, Y., M.M. Meerschaert, and **R.M. Neupauer**, Backward fractional advection dispersion model for contaminant source prediction, *Water Resources Research*, 52, 2462–2473, doi:10.1002/2015WR018515, 2016.
34. McKnight, D.M., K. Cozzetto, J.D.S. Cullis, M.N. Gooseff, C. Jaros, J.C. Koch, W.B. Lyons, **R. Neupauer**, and A.Wlostowski, Potential for real-time understanding of coupled hydrologic and biogeochemical processes in stream ecosystems: Future integration of telemetered data with process models for glacial meltwater streams, *Water Resources Research*, 51, (8), 6275-6738, DOI: 10.1002/2015WR017618, 2015.
33. Wagner, D.E., **R.M. Neupauer**, and C. Cichowitz, Adjoint-based probabilistic source characterization in water distribution systems with transient flows and imperfect

sensors, *Journal of Water Resources Planning and Management*, DOI: 10.1061/(ASCE)WR.1943-5452.0000508, 2015.

32. **Neupauer, R.M**. and D.C. Mays, Engineered injection and extraction for in situ remediation of sorbing solutes in groundwater, *Journal of Environmental Engineering*, 141(6), DOI: 10.1061/(ASCE)EE.1943-7870.0000923, 2015.
31. Piscopo, A.N., J. Kasprzyk, and **R.M. Neupauer**, An iterative approach to many objective engineering design: Optimization of engineered injection and extraction for enhanced groundwater remediation, *Environmental Modelling & Software*, 69, 253-261, DOI: 10.1016/j.envsoft.2014.08.030, 2015.
30. Lackey, G.D., **R.M. Neupauer**, and J. Pitlick, Effects of streambed conductance on stream depletion, *Water*, 7, 271-287, doi:10.3390/2/7010271, 2015.
29. **Neupauer, R. M**., J. D. Meiss, and D. C. Mays, Chaotic advection and reaction during engineered injection and extraction in heterogeneous porous media, *Water Resour. Res*., 50, doi:10.1002/ 2013WR014057, 2014.
28. Griebling, S.A. and **R.M. Neupauer**, Adjoint modeling of stream depletion in groundwater-surface water systems, *Water Resources Research*, 49, doi:10.1002/wrcr.20385, 2013.
27. Piscopo, A.N., **R.M. Neupauer**, and D.C. Mays, Engineered injection and extraction to enhance reaction for improved in situ remediation, *Water Resources Research*, 49, doi:10.1002/wrcr.20209, 2013.
26. Mays., D.C. and **R.M. Neupauer**, Reply to Comment on "Plume spreading in groundwater by stretching and folding," *Water Resources Research*, 49, doi:10.1029/2012WR013129, 2013.
25. Mays, D.C. and **R.M. Neupauer**, Plume spreading in groundwater by stretching and folding, *Water Resources Research*, 48, W07501, doi:10.1029/2011WR011567, 2012.
24. **Neupauer, R.M**. and S.A.Griebling, Adjoint simulation of stream depletion due to aquifer pumping, *Ground Water*, doi:10.1111/j/1745-6584.2011.00901.x, 2012.
23. Koch, J., D. McKnight, and **R. Neupauer**, Simulating unsteady flow, anabranching, and hyporheic dynamics in a glacial meltwater stream using a coupled surface water routing and groundwater flow model, *Water Resources Research,*47(5), W05530, doi:10;1029/2010WR009508, 2011.
22. **Neupauer, R.M**. and N.D. Dennis, Closure on "Classroom activities to illustrate concepts of Darcy's law and hydraulic conductivity", *Journal of Professional Issues in Engineering Education & Practice*, 136(1), 17-23, DOI: 10.1061/(ASCE)1052-3928(2010)136:1(17), 2011.
21. **Neupauer, R.M**., Adjoint sensitivity analysis of contaminant concentrations in water distribution systems, *Journal of Engineering Mechanics*, 137(1), DOI: 10.1061/(ASCE) EM.1943-7889.0000197, 2011.
20. **Neupauer, R.M.,** M.K. Records, and W.H. Ashwood, Backward probabilistic modeling to identify contaminant sources in water distribution systems, *Journal of Water Resources Planning and Management*, 136(5), DOI: 10.1061/(ASCE)WR.1943-5452.0000057, 2010.

19. Qi, X and **R.M. Neupauer**, Wavelet analysis of dominant scales of two-dimensional heterogeneous porous media, *Advances in Water Resources*, 33(4), 514-524, doi:10.1016/j.advwatres.2010.02.003, 2010.
18. **Neupauer, R.M**. and N.D. Dennis, Classroom activities to illustrate concepts of Darcy's law and hydraulic conductivity, *Journal of Professional Issues in Engineering Education & Practice*, 136(1), 17-23, 2010. (Nominated for 2010 Best Paper Award)
17. Watkins, L.P., **R.M. Neupauer**, and G.P. Compo, Wavelet analysis and filtering to identify dominant orientations of permeability anisotropy, *Mathematical Geosciences*, 41:643-659, DOI 10.1007/s11004-009-9231-7, 2009.
16. **Neupauer, R. M**., J. L. Wilson, and A. Bhaskar, Forward and backward temporal probability distributions of sorbing solutes in groundwater, *Water Resources. Research*, 45, W01420, doi:10.1029/2008WR007058, 2009.
15. Qi, X. and **R.M. Neupauer**, Wavelet analysis of dominant scales of heterogeneous porous media, *Water Resources Research*, 44, W09406, doi:10.1029/2006WR005720, 2008.
14. **Neupauer, R.M.,** Integrating topics in an introductory hydrogeology course through a semester-long hydraulic containment design project, *Journal of Geoscience Education*, 56(3), 225-234, 2008.
13. **Neupauer, R.M**., R. Lin, and H. O'Shea, Conditioned backward probabilistic modeling to identify sources of groundwater contaminants subject to sorption and decay, *Water Resources Research*, 43, W11403, doi:10.1029/2006WR005580, 2007.
12. **Neupauer, R.M**., K.L. Powell, X. Qi, D.H. Lee, and D.A. Villhauer, Characterization of permeability anisotropy using wavelet analysis, *Water Resources Research*, 42, W07419, doi:10.1029/2005WR004364, 2006.
11. **Neupauer, R.M.** and R. Lin, Identifying sources of a conservative groundwater contaminant using backward probabilities conditioned on measured concentrations, *Water Resources Research*, 42(3), W03424, doi:10.1029/2005WR004115, 2006.
10. **Neupauer, R.M**. and J.L. Wilson, Backward probability model using multiple observations of contamination to identify groundwater contamination sources at the Massachusetts Military Reservation, *Water Resources Research*, 41, W02015, doi:10.1029/2003WR002974, 2005.
9. **Neupauer, R.M**. and K.L. Powell, A fully-anisotropic Morlet wavelet to identify dominant orientations in a porous medium, *Computers & Geosciences*, 31, 465-471, 2005.
8. **Neupauer, R.M.** and J.L. Wilson, Forward and backward location probabilities for sorbing solutes in groundwater, *Advances in Water Resources*, 27(7), 689-705, 2004.
7. **Neupauer, R.M.** and J.L. Wilson, Numerical implementation of a backward probabilistic model of groundwater contamination, *Ground Water*, 42(2), 175-189, 2004.

6. **Neupauer, R.M**. and J.L. Wilson, Backward location and travel time probabilities for a decaying contaminant in an aquifer, *Journal of Contaminant Hydrology*, 66(1-2), 39-58, 2003.
5. **Neupauer, R.M**. and J.L. Wilson, Backward probabilistic model of groundwater contamination in non-uniform and transient flow, *Advances in Water Resources*, 25(7), 733-746, 2002.
4. **Neupauer, R.M**. and J.L. Wilson. Adjoint-derived location and travel time probabilities for a multi-dimensional groundwater system, *Water Resources Research*, 37(6), 1657-1668, 2001.
3. **Neupauer, R.M.** and B. Borchers, A MATLAB implementation of the minimum relative entropy method for linear inverse problems, *Computers & Geosciences*, 27(7), 757-762, 2001.
2. **Neupauer, R.M.,** B. Borchers, and J.L. Wilson. Comparison of inverse methods for reconstructing the release history of a groundwater contamination source, *Water Resources Research*, 36(9), 2469-2475, 2000.
1. **Neupauer, R.M.** and J.L. Wilson. Adjoint method for obtaining backward-in-time location and travel time probabilities of a conservative groundwater contaminant, *Water Resources Research*, 35(11), 3389-3398, 1999.

PUBLISHED DATA SETS AND RESOURCES (graduate student co-authors underlined)

3. Lainis, A., **R. Neupauer**, J. C. Koch, M. Gooseff (2023). SUTRA-ICE input files for simulations of aufeis formation, HydroShare, http://www.hydroshare.org/resource/727e01d85a08419aaa3a8dee2856f005.
2. **Neupauer, R.,** C. Turnadge, J. Okkonen (2023). Forward and Adjoint Sensitivity Analysis, HydroShare, https://doi.org/10.4211/hs.030bdfa103b543c28f3ebdf9abb2da6e.
1. Sather, L. J., E. J. Roth, **R. M. Neupauer**, J. P. Crimaldi, D. Mays (2023). Plume Spreading Experiments and Simulations, HydroShare, https://doi.org/10.4211/hs.4b8575d3031c40d4a39f945db8f02ae5.

PEER-REVIEWED CONFERENCE PROCEEDINGS IN REVIEW or IN PRESS (graduate student co-authors underlined; undergraduate student co-authors double-underlined)

20. **Neupauer, R.M.** and S. Ge, Groundwater flow and heat transport simulations to evaluate the potential impact of geothermal energy production on hot springs, 2024 World Environmental and Water Resources Congress, American Society of Civil Engineers, Milwaukee, Wisconsin, May 2024.

PEER-REVIEWED CONFERENCE PROCEEDINGS (graduate student co-authors underlined; undergraduate student co-authors double-underlined)

19. **Neupauer, R.M.**, J. Okkonen, and E. Tyson, Prevention of Thermal Pollution of Groundwater near Open Loop Geothermal Systems, 2023 World Environmental

and Water Resources Congress, American Society of Civil Engineers, Henderson, Nevada.

18. **Neupauer, R.M.**, D.C. Mays, M. Ye, and J. Greene, Designing Active Spreading Protocols for In-Situ Groundwater Remediation to Match Contaminant Degradation Reactions, 2022 World Environmental and Water Resources Congress, American Society of Civil Engineers, https://doi.org/10.1061/9780784484258.013, 2022.
17. Quinn, J.T., **R.M. Neupauer,** L.J. Sather, D.C. Mays, J.P. Crimaldi, and E.J. Roth, Effects of active and passive spreading on mixing and reaction during in-situ groundwater remediation, 2022 World Environmental and Water Resources Congress, American Society of Civil Engineers, https://doi.org/10.1061/9780784484258.014, 2022.
16. **Neupauer, R.M.** and C. Turnadge, Stream depletion due to cyclical pumping, 2021 World Environmental and Water Resources Congress, American Society of Civil Engineers, https://doi.org/10.1061/9780784483466.004, 2021.
15. **Neupauer, R.M.** and R.J. Ferry, Huehuetoca tunnel drainage project in the Valley of Mexico, 2020 World Environmental and Water Resources Congress, American Society of Civil Engineers, doi.org/10.1061/9780784482995.008, 2020.
14. **Neupauer, R.M**., L.J. Sather, E.J. Roth, D.C. Mays, and J.P. Crimaldi, Numerical and experimental investigation of active and passive spreading for groundwater remediation, 2020 World Environmental and Water Resources Congress, American Society of Civil Engineers, doi.org/10.1061/9780784482964.010, 2020.
13. **Neupauer, R.M.**, J. Okkonen, and W. Sanzone, Adjoint simulation of heat transport in groundwater, 2019 World Environmental and Water Resources Congress, American Society of Civil Engineers, Pittsburgh, PA, May 2019.
12. Greene, J.A., **R.M. Neupauer**, M. Ye, J.R. Kasprzyk, D.C. Mays, and G. Curtis, Engineered injection and extraction for remediation of uranium-contaminated groundwater, 2017 World Environmental and Water Resources Congress, American Society of Civil Engineers, May 2017.
11. Ritsch, C., **R.M. Neupauer**, and D.C. Mays, Naturally-occurring chaotic advection in groundwater and surface-water systems, 2017 World Environmental and Water Resources Congress, American Society of Civil Engineers, May 2017.
10. Arias-Hidalgo, M., **R.M. Neupauer**, G. Villa-Cox, and J.L. Barcia, Comprehending dynamics of the Ecuadorian river discharge series using wavelet analysis and bandpass filters, 2016 World Environmental and Water Resources Congress, American Society of Civil Engineers, May 2016.
9. **Neupauer, R.M.,** Efficient modeling methods for estimating stream depletion, 2015 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2015.
8. Larbkich, W., **R.M. Neupauer**, D. Colvin, J. Bauer, J. Herman, Adjoint modeling of contaminant fate and transport in riverbank filtration systems, 2014 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2014.

7. **Neupauer, R.M.** and D.C. Mays, Engineered Injection and Extraction Sequences for In Situ Remediation of Sorbing Contaminants in Aquifers, 2014 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2014.
6. **Neupauer, R.M**, B. Webber, A. Piscopo, and D.C. Mays, Enhanced in-situ remediation of sorbing groundwater contaminants using engineered injection and extraction, 2013 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2013.
5. Lackey, G., **R.M. Neupauer**, and J. Pitlick, Effects of varying stream channel conductance on siting new pumping wells in an aquifer, 2013 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2013.
4. Piscopo, A.N., J.R. Kasprzyk, **R.M. Neupauer**, and D.C. Mays, Many-objective design of engineered injection and extraction sequences for in situ remediation of contaminated groundwater, 2013 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2013.
3. Wagner, D.E. and **R.M. Neupauer**, Source identification in water distribution systems using the adjoint method with non-ideal sensors and non-detect measurements, 2013 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2013.
2. Wagner, D.E. and **R.M. Neupauer**, Probabilistic contaminant source identification in water distribution systems with incomplete mixing at pipe junctions, 2013 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2013.
1. Lin, R. and **R.M. Neupauer**, Probabilistic Model for Identifying Groundwater Contamination Sources, *Groundwater Quality Modeling and Management Under Uncertainty*, Proceedings of the Symposium, American Society of Civil Engineers World Water and Environmental Congress, Philadelphia, PA, 260-272, 2003.

PEER-REVIEWED REPORTS

Anderman, E.R., K.L. Kipp, M.C. Hill, J. Valstar, and **R.M. Neupauer**, MODFLOW-2000, The U.S. Geological Survey Modular Ground-water Model – Documentation of the Model-Layer Variable-Direction Horizontal Anisotropy (VDHA) Option in the Hydrogeologic-Unit Flow (HUF) Package, U.S. Geological Survey Open-File Report 02-409, 2002.

INVITED PRESENTATIONS

Neupauer, R.M., Recent Advances in Groundwater Hydrology Research, CSIRO, Glen Osmond, Australia, March 8, 2023

Neupauer, R.M., The Effect of Natural and Induced Groundwater Flow Paths on Groundwater Remediation, International Association of Hydrogeologists, Australian Chapter, Victoria Section, Melbourne, Victoria, Australia, March 10, 2023

Neupauer, R.M., Recent Advances in Groundwater Hydrology Research, Flinders University, Adelaide, Australia, March 14, 2023

Neupauer, R.M., Recent Advances in Estimating Stream Depletion, Department of Civil Engineering, Universidad de Chile, Santiago, Chile, September 1, 2022 (presented remotely).

Neupauer, R.M., Civil Engineering Education as an Engineering Process: Personal Perspectives From Over Two Decades in the Classroom, Margaret S. Petersen Award Presentation, World Environmental and Water Resources Congress, Atlanta, Georgia, June 7, 2022.

Neupauer, R.M., Recent Advances in the Estimation of Stream Depletion, Universidad Politécnica de Valencia, Valencia, Spain, May 25, 2022.

Neupauer, R.M., Adjoint Models and their Applications in Groundwater Hydrology, Universidad Politécnica de Valencia, Valencia, Spain, May 24, 2022.

Neupauer, R.M., Theory and experiments on active spreading to enhance in situ remediation of contaminated groundwater, China University of Petroleum (East China), Qingdao, China, April 27, 2022 (presented remotely).

Neupauer, R.M., Theory and experiments on active spreading to enhance in situ remediation of contaminated groundwater, China University of Petroleum (East China), Qingdao, China, May 14, 2020 (presented remotely).

Neupauer, R.M., Experimental and Numerical Investigation of Non-Fickian Transport in Radial Flow, Lorentz Center Workshop on Mixing in Porous Media, Leiden, the Netherlands, February 4, 2020.

Neupauer, R.M., Enhanced Spreading and Mixing to Improve In Situ Remediation of Contaminated Groundwater: Theory, Numerical Simulations, Laboratory Experiments, and a Field Test, Department of Civil Engineering, Universidad de Chile, Santiago, Chile, September 23, 2019

Neupauer, R.M. Enhanced spreading and mixing to improve in situ remediation of contaminated groundwater, Vanderbilt University, Dept. of Civil and Environmental Engineering, October 2018.

Neupauer, R.M. and D.C. Mays, Chaotic advection to amplify plume spreading for accelerated chemical reactions in porous media, Environmental Protection Agency Groundwater Forum, October 19, 2017, Denver, Colorado

Mays, D.C. and **R.M. Neupauer**, Chaotic advection for groundwater remediation: Simulations, experiments, and (Future) Field Tests, Environmental Protection Agency Groundwater Forum, October 18, 2017, Denver, Colorado

Neupauer, R.M. What everyone should know about Groundwater, University Women's Club, University of Colorado Boulder, February 14, 2017.

Neupauer, R.M. Adjoint methods in groundwater hydrology, Geological Society of America Annual Meeting, September 2016.

Neupauer, R.M., Aplicaciones del método "adjoint" en la hidrología del agua subterránea, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, La Plata, Argentina, July 4, 2016.

Neupauer, R.M., Aplicaciones del método "adjoint" en la hidrología del agua subterránea, Facultad de Ingeniería y Ciencias Hídricas, Universidad Nacional del Litoral, Santa Fe, Argentina, June 24, 2016.

Neupauer, R.M., Aplicaciones del método "adjoint" en la hidrología del agua subterránea, Dept. of Hydraulic Engineering, Universidad Nacional de Rosario, Rosario, Argentina, June 16, 2016.

Panelist for Groundwater Education Panel: New Approaches to Enhance Student Learning, World Environmental and Water Resources Congress, American Society of Civil Engineers, May 2016.

Neupauer, R.M., Novel Mathematical Tools for Groundwater Modeling Applications, Escuela Superior Politécnica del Litoral, Guayaquil, Ecuador, August 18, 2015.

Neupauer, R.M., Current Research in Groundwater Hydrology, Escuela Superior Politécnica del Litoral, Guayaquil, Ecuador, July 2, 2015.

Neupauer, R.M., Chaotic flows in groundwater, Department of Civil and Environmental Engineering, Colorado School of Mines, October 2013.

Neupauer, R.M., Numerical Investigation of the Effects of Hydraulic Properties on Stream Depletion using an Adjoint Approach, Department of Environmental Science, University of Virginia, February 2013.

Neupauer, R.M., Enhanced In Situ Remediation of Contaminated Groundwater using Engineered Injection and Extraction, Department of Civil and Environmental Engineering, University of Virginia, February 2013.

Neupauer, R.M. Chaotic Advection in Homogeneous and Heterogeneous Porous Media, Department of Mathematics, University of Virginia, February 2013.

Neupauer, R.M. and D.C. Mays, Chaotic Advection, Spreading, and Contaminant Degradation Reactions in Porous Media, 4th International Conference on Porous Media, International Society for Porous Media, West Lafayette, Indiana, May 2012.

Neupauer, R.M., Principles and Recent Advances in Groundwater Modeling, Natural Resources Defense Council, October 20, 2008.

Neupauer, R.M., Principles and Applications of Backward-in-time Modeling of Contaminants in the Environment, IGERT Joint Program Colloquium, Columbia University, March 27, 2008.

Neupauer, R.M., Principles and Applications of Backward-in-time Modeling of Contaminants in the Environment, Geochemistry seminar, Columbia University, March 26, 2008.

Neupauer, R.M., Wavelet Analysis of Dominant Scales of Aquifer Properties and Groundwater Flow, Geological Society of America, Denver, Colorado, October 2007.

Neupauer, R.M., Applications of Backward-in-time Modeling of Groundwater Contaminants, MODFLOW and More Conference, Golden, Colorado, May 24, 2006.

Neupauer, R.M., Investigating Spatial Variability of Aquifers using Wavelet Analysis, New Mexico Institute of Mining and Technology, Hydrology Program Seminar Series, November 21, 2005.

Neupauer, R.M., Backward Probabilistic Modeling to Identify Sources of Environmental Contamination, Colorado State University, Department of Civil Engineering, June 23, 2005.

Neupauer, R.M., Identification of Sources of Environmental Contamination, Workshop on Control of Distributed Systems and Environmental Applications, International Institute for Applied Systems Analysis, Laxenburg, Austria, May 27, 2003.

Neupauer, R.M., Receptor-based Modeling to Identify Pollution Sources, Center for Environmental and Applied Fluid Mechanics, Johns Hopkins University, October 26, 2001.

Neupauer, R.M. and J.L. Wilson, Travel Time Probabilities of Groundwater Tracers and Contaminants, American Geophysical Union, Spring Meeting, May 29, 2001.

PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONFERENCES

(graduate student co-authors underlined; undergraduate student co-authors double-underlined)

Mays, D.C., **R.M. Neupauer**, M. Killingstad, S.T. Potter, Bust A Move: Can the Dynamic Dance of Pumping and Reinjection Accelerate PFAS Removal?, 2024 Chlorinated Conference, Battelle, June 2-6, 2024, Denver, Colorado.

Neupauer, R.M. and C. Turnadge, Adjoint Modeling of Groundwater Systems: From the Pioneering Work of Dr. William Yeh to the Present, 2024 World Environmental and Water Resources Congress, American Society of Civil Engineers, Madison, Wisconsin, May 2024.

Turnadge, C., **R. Neupauer**, O. Batelaan, R. Crosbie, and C. Simmons, Increasing our understanding of the adjoint state method of model sensitivity calculations, MODSIM2023, 25th International Congress on Modelling and Simulation, Darwin, Northern Territory, Australia, July, 2023.

Okkonen, J. N. Afonin, E.-R. Kokko, E. Kozlovkaya, K. Moisio, and, **R.M. Neupauer**., Connection between thermal stress and frost quakes. European Geophysical Union General Assembly 2023, Vienna, Austria, April 27, 2023, EGU23-12531, 2023.

Neumann, D., E. Zagona, **R.M. Neupauer**, N. Mander, J. Craven, Deep Aquifer Modeling within an Operations and Planning Decision Support Tool on the Rio Grande River, New Mexico, 2023 World Environmental and Water Resources Congress, American Society of Civil Engineers, Henderson, Nevada, May 2023.

Neupauer, R.M. and R.J. Ferry, First Attempt at Draining of the Valley of Mexico, 2023 World Environmental and Water Resources Congress, American Society of Civil Engineers, Henderson, Nevada, May 2023.

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Neupauer, R.M., A. Lainis, J. Koch, M.N. Gooseff, Effects of Climate Change on Aufeis Formation in Arctic Regions, Frontiers in Hydrology Meeting, June 2022, San Juan, Puerto Rico.

Neupauer, R.M., A. Lainis, J. Koch, M.N. Gooseff, Aufeis Formation and Climate Change, The XI Scientific Assembly of the International Association of Hydrological Sciences (IAHS 2022), Montpellier, France, May 31, 2022.

Mays, D.C. and **R.M. Neupauer**, Hydraulic building blocks for enhanced groundwater remediation, Twelfth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, May 22-26 2022, Palm Springs, California.

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Lainis, A., **R.M. Neupauer,** J.C. Koch, and M. Gooseff, Numerical simulation of groundwater flow in partially frozen soils to investigate aufeis formation, American Geophysical Union Fall Meeting, December 2021.

Neupauer, R.M., E.J. Roth, J.P. Crimaldi, D.C. Mays, L.J. Sather, Experiments and Simulations of Reversible Fickian Dispersion in Periodic Radial Subsurface Flow, American Geophysical Union Fall Meeting, December 2021.

Sather, L.J., **R. Neupauer**, E.J. Roth, J.P. Crimaldi, and D.C. Mays, Engineering groundwater remediation by active plume spreading, American Geophysical Union Fall Meeting, December 2020.

Roth, E.J., **R. Neupauer**, L.J. Sather, J.P. Crimaldi, and D.C. Mays, Reversible dispersion in periodic radial subsurface flow, American Geophysical Union Fall Meeting, December 2020.

Neupauer, R.M., G. Lackey, and J. Pitlick, Exaggerated stream depletion due to spatio-temporal periodic variations in streambed conductance, American Geophysical Union Fall Meeting, December 2020.

Sather, L.J., E.J. Roth, J.P. Crimaldi, **R.M. Neupauer**, D.C. Mays, How Plume Interfaces, Velocity Fields, and Heterogeneity Structures Interact to Enhance Mixing and Reaction, American Geophysical Union Fall Meeting, San Francisco, California, December 2019.

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Roth, E.J., **R.M. Neupauer**, L.J. Sather, J.P. Crimaldi, and D.C. Mays. Validation of Wall Effect Mitigation Techniques for Porous Media Experiments, American Geophysical Union Fall Meeting, San Francisco, California, December 2019.

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Neupauer, R.M., L.J. Reising, E.J. Roth, J. Crimaldi, and D.C. Mays, Laboratory and Numerical Investigation of Active Spreading, Mixing, and Reaction in Porous Media, MODFLOW and More 2019, Golden, CO, June, 2019.

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Okkonen, J. **R.M. Neupauer**, and W. Sanzone, Adjoint method of heat transport in groundwater, 2019 European Geophysical Union Meeting, Vienna, Austria, April 2019.

Reising, L.J., **R.M. Neupauer**, D.C. Mays, J. Crimaldi, and E.J. Roth, Effects of active and passive spreading on mixing and reaction during groundwater remediation by engineered injection and extraction, American Geophysical Union Fall Meeting, Washington, D.C., December 2018.

Roth, E.J., J.P. Crimaldi, D.C. Mays, **R.M. Neupauer**, L.J. Reising, Laboratory Simulations of Engineered Injection and Extraction in Porous Media using Laser-Induced Fluorescence, American Geophysical Union Fall Meeting, Washington, D.C., December 2018.

Neupauer, R.M., J. Okkonen, and W. Sanzone, Application of adjoint methods for the protection of contaminated aquifers, 10th International Perspective on Water Resources and the Environment, Cartagena, Colombia, December 2018.

Neupauer, R.M., S. Waers, J.R. Kasprzyk, and D.C. Mays, Monitoring design for in situ remediation of contaminated groundwater using engineered injection and extraction, 2018 World Environmental and Water Resources Congress, American Society of Civil Engineers, June 2018.

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Roth, E.J., D.C. Mays, **R. Neupauer**, and J. Crimaldi, Quantification and control of wall effects in porous media experiments, American Geophysical Union Fall Meeting, December 2017.

Greene, J.A., **R.M. Neupauer**, M. Ye, J.R. Kasprzyk, D.C. Mays, and G.R. Curtis, Bioremediation of uranium-contaminated groundwater using Engineered Injection and Extraction, American Geophysical Union Fall Meeting, December 2017.

Mays, D.C., V.L. Freedman, S.K. White, Y. Fang, and **R.M. Neupauer**, Linking chaotic advection with subsurface biogeochemical processes, American Geophysical Union Fall Meeting, December 2017.

Neupauer, R.M. G.D. Lackey, and J. Pitlick, Analytical solution for stream depletion with time-varying streambed hydraulic conductivity, American Geophysical Union Fall Meeting, December 2017.

Mays, D.C. and **R.M. Neupauer**. Chaotic advection and unsteady flow in groundwater remediation, Waste Management 2017, Phoenix, Arizona, March 2017.

Reising, L., **R.M. Neupauer**, D.C. Mays, Relative contribution of heterogeneity and imposed time-varying flows on spreading and contaminant degradation in groundwater, American Geophysical Union Fall Meeting, December 2016.

Meerschaert, M., **R Neupauer**, and Y. Zhang. Backward fraction diffusion equation, 2016 SIAM Annual Meeting, July 2016.

Piscopo, A.N., **R.M. Neupauer**, and J.R. Kasprzyk, Guidelines for active spreading during in situ chemical oxidation to remediate contaminated groundwater, 2016 World Environmental and Water Resources Congress, American Society of Civil Engineers, May 2016.

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Greene, J., A. Piscopo, **R. Neupauer**, J. Kasprzyk, Optimal well placement for enhanced degradation during in situ groundwater remediation, American Geophysical Union Fall Meeting, December 2015.

Tigera, R.G., E.J. Roth, **R.M. Neupauer**, and D.C. Mays, Graphical user interface for engineered injection and extraction for groundwater cleanup, American Geophysical Union Fall Meeting, December 2015.

Neupauer, R.M. and J. Okkonen, Groundwater well protection using concentration-based capture zones, American Water Resources Association Annual Water Resources Conference, Denver, Colorado, November 2015.

Piscopo A.N., J.M. Pflug, **R.M. Neupauer**, J.R. Kasprzyk, and, Multi-Objective Optimization of Engineered Injection and Extraction with Simultaneous Well Operation for In Situ Groundwater Remediation, MODFLOW and More Conference, June 2015.

Okkonen, J. and **R. Neupauer**, Uusi vedenottamoiden suojavyöhykkeiden arviointimenetelmä - esimerkkinä lämmönsiirto aineiden kulkeutuminen pohjavedessä, XXVII Geophysics Days 2015, Geophysical Society of Finland, Oulu, Finland, May 2015.

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Neupauer, R.M., Efficient modeling methods for estimating stream depletion, 2015 World Environmental and Water Resources Congress, American Society of Civil Engineers, May 2015.

Larbkich, W. and **R.M. Neupauer,** Adjoint Simulation of Solute Age to Evaluate the Persistence of Groundwater Well Contamination, American Geophysical Union, Fall Meeting, December 2014.

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Piscopo, A.N., **R.M. Neupauer**, and J.R. Kasprzyk, Multi-Objective Optimization of Engineered Injection and Extraction to Remediate Sorbing Contaminants in Homogeneous and Heterogeneous Aquifers, American Geophysical Union, Fall Meeting, December 2014.

Jones, M., R.G. Tigera, D.C. Mays, and **R. Neupauer,** Experiments on plume spreading by engineered injection and extraction, American Geophysical Union, Fall Meeting, December 2014.

Schutte, M., J. Pitlick, and **R. Neupauer**, Geomorphic Response of Roaring River and Fall River to the September 2013 Flood, American Geophysical Union, Fall Meeting, December 2014.

McKnight, D.M., W.B. Lyons, M.N. Gooseff, J.C. Koch, **R. Neupauer,** K. Cozzetto, K. Bencala and J.D. Cullis, Quantifying the dynamic coupling of hydrologic and biogeochemical processes in stream ecosystems: examples from streams in the McMurdo Dry Valleys, Antarctica, American Geophysical Union, Fall Meeting, December 2014.

Mays, D.C., M.N. Jones, and **R.M. Neupauer**, Practical Application of Chaotic Advection to Groundwater Remediation, Complex Soil Systems Conference, Berkeley, California, September, 2014.

Mays, D.C. and **R.M. Neupauer,** Plume spreading by chaotic advection: Simulations and experiments, 6th International Conference on Porous Media, International Society for Porous Media, Milwaukee, Wisconsin, May 2014.

Piscopo, A.N. J.R. Kasprzyk, **R.M. Neupauer**, and D.C. Mays, An iterative approach to many objective engineering design: a case study on engineered injection and extraction, 2014 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2014.

Foster, M.T., D.C. Mays, and **R.M. Neupauer**, Hele-shaw experiments on plume stretching and folding, American Geophysical Union, Fall Meeting, December 2013.

Accardo, M., **R.M. Neupauer**, J.D. Meiss, D.C. Mays, Spreading of three-dimensional plumes in two-dimensional chaotic flows in groundwater, American Geophysical Union, Fall Meeting, December 2013.

Lackey, G.D., **R.M. Neupauer**, and J. Pitlick, Representing a spatially and temporally variable streambed in stream depletion models, American Geophysical Union, Fall Meeting, December 2013.

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Neupauer, R.M., J. Brodt, D.C. Mays, Engineered Injection and Extraction for Remediation of Sorbing Solutes in Groundwater, American Geophysical Union, Fall Meeting, December 2013.

Accardo, M., **R.M. Neupauer**, J.D. Meiss, D.C. Mays, Chaotic advection and contaminant degradation during engineered injection and extraction in heterogeneous porous media, Geological Society of America Annual Meeting, October 2013.

Larbkich, W. and **R.M. Neupauer**, Solute age as a tool for assessing aquifer vulnerability, Geological Society of America Annual Meeting, October 2013.

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Colvin, D. and **R.M. Neupauer**, Riverbank filtration feasibility modeling, MODFLOW and More Conference, 2013.

Lackey, G., **R.M. Neupauer**, and J. Pitlick, Effects of spatial and temporal variations of streambed hydraulic conductivity on stream depletion calculations, MODFLOW and More Conference, 2013.

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Dankovich, L., **R.M. Neupauer,** and D.C. Mays, An interactive software tool for examining the effect of well placement and pumping rate on reaction fronts for in situ remediation, American Geophysical Union, Fall Meeting, 2012.

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Dillin, M.F. and **R.M. Neupauer**, Using wavelet analysis to investigate statistical properties in hydraulic conductivity and head fields, American Geophysical Union Fall meeting 2008

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Qi, X. and **R.M. Neupauer**, Identification of dominant scales of permeability heterogeneity using wavelet analysis, American Geophysical Union, Fall Meeting, 2005.

Neupauer, R.M., K.L. Powell, D.A. Villhauer, and D.H.Lee, Identification of principal directions of anisotropy in porous media, Proceedings of the American Society of Civil Engineers World Water and Environmental Congress, Anchorage, Alaska, 2005.

Neupauer, R.M. and K.L. Powell, Wavelet analysis of permeability anisotropy of Massillon sandstone, *Eos Trans AGU*, Fall Meeting Suppl, 2004.

Neupauer, R.M., Identifying sources of sorbing solutes in groundwater using backward location probabilities conditioned on measured concentrations, *Proceedings of the XVth International Conference on Computational Methods in Water Resources*, 1251-1262, Chapel Hill, North Carolina, June 15, 2004.

Powell, K.L. and **R.M. Neupauer**, Using a fully-anisotropic Morlet wavelet to characterize permeability anisotropy, XVth International Conference on Computational Methods in Water Resources, Chapel Hill, North Carolina, June 16, 2004.

Culver, T.B., B. Zhang, and **R. Neupauer**, Optimal Groundwater Remediation Design and Reuse, Conference on Revitalizing Land and Restoring Communities: Interdisciplinary Approaches to Contaminated Sites, U.S. Environmental Protection Agency and the Center of Expertise in Superfund Site Recycling, Charlottesville, Virginia, April 3, 2004.

Powell, K. and **R.M. Neupauer**, Wavelet analysis of permeability anisotropy, *Eos Trans. AGU*, Fall Meeting Suppl., F609, November 18, 2003.

Neupauer, R.M. and R. Lin, Backward-in-Time Modeling to Identify Sources of Reactive Solutes in Groundwater Using Probabilities Conditioned on Concentration Measurements, *Eos Trans. AGU*, Fall Meeting Suppl., F628, November 18, 2003.

Neupauer, R.M. and J.L. Wilson, Adjoint Method for Delineating a Probabilistic Zone of Contribution, *Abstracts with Programs – Geological Society of America*, 34(6), 2002 GSA Annual Meeting, 2002.

Anderman, E.R., M.C. Hill, K.L. Kipp, and **R.M. Neupauer**, Importance and Simulation of Horizontal Anisotropy in Ground-Water Systems, *Abstracts with Programs – Geological Society of America*, 34(6), 2002 GSA Annual Meeting, 2002.

Lin, R. and **R.M. Neupauer**, Using Concentration Measurements to Improve a Probabilistic Model of Prior Locations of Groundwater Contamination, *Eos Trans. AGU*, 83(19), Spring Meet. Suppl., Abstract H42A-06, 2002.

Neupauer, R.M., Probabilistic Identification of Groundwater Contamination Sources, *Proceedings First Symposium on Environmental and Water Resources Systems Analysis*, G-1-224, Roanoke, VA, May, 2002.

Neupauer, R.M. and J.L. Wilson, Backward Probability Model for Sorbing Solutes in Groundwater, *Eos Trans. AGU,* 82(47), Fall Meeting Suppl., F437, 2001.

Neupauer, R.M. and J.L. Wilson. Travel Time Probabilities of Groundwater Tracers and Contaminants, *Eos Trans. AGU*, 82(20), Spring Meeting Suppl., S28, 2001.

Neupauer, R.M. and J.L. Wilson. Identifying Possible Groundwater Contamination Sources at the Massachusetts Military Reservation, *Eos Trans. AGU*, 82(20), Spring Meeting Suppl., S202, 2001.

Wilson, J.L. and **R.M. Neupauer.** Concepts and Principles for Backward-in-time-and-space Modeling of Location and Travel Time Probabilities, *Eos Trans. AGU*, 82(20), Spring Meeting Suppl., S202, 2001.

Neupauer, R.M. and J.L. Wilson. Probabilistic Model of Prior Locations of Groundwater Contamination, *Eos, Trans. AGU*, 81(48), Fall Meeting Suppl., F501, 2000.

Neupauer, R.M. Receptor-based Modeling of Groundwater Contamination, STAR Graduate Fellowship Conference 2000, Abstracts, EPA/600/R-00/055, 205-206, July 2000.

Neupauer, R.M. and J.L. Wilson. Backward-in-time Location and Travel Time Probabilities Using Multiple Detections of Groundwater Contamination, *Eos Trans. AGU*, 81, Spring Meeting Suppl., S210, 2000.

Neupauer, R.M., B. Borchers, and J.L. Wilson. Comparison of Inverse Methods for Reconstructing the Release History of a Groundwater Contamination Source, *Eos Trans. AGU*, 80, Fall Meeting Suppl., F343, 1999.

Neupauer, R.M. Receptor-based Modeling of Groundwater Contamination, 1999 Science to Achieve Results (STAR) Graduate Fellowship Conference Abstracts, EPA/600/R-99/046, 187-188, July 1999.

Neupauer, R.M. and J.L. Wilson. Using the Adjoint Method to Develop a Multi-dimensional Probabilistic Model of Prior Locations of Groundwater Contamination, *Eos Trans. AGU*, 80, Spring Meeting Suppl., 1999.

Neupauer, R.M. and J.L. Wilson. Application of the Backward-in-time Advection Dispersion Theory Revisited. In *Proceedings, WERC Conference on the Environment*, 26-29 April 1999, Albuquerque, NM, 25-29, 1999.

Neupauer, R.M. and B. Borchers. A Comparison of Two Methods for Recovering the Release History of a Groundwater Contamination Source, Fifth SIAM Conference

on Mathematical and Computational Issues in the Geosciences, 1999, San Antonio, TX.

Neupauer, R.M. and J.L. Wilson. Development of a Probabilistic Adjoint Model for Identifying Prior Locations of Groundwater Contamination, *Eos Trans. AGU*, 79, Fall Meeting Suppl., 1998.

Phillips, F.M., J.M.H. Hendrickx, R.S. Bowman, M.A. Plummer, M.A. Walvoord, B. Harrison, J. Sterling, and **R. Neupauer.** Testing Paradigms for the Nature of Hydrological Processes in Arid-Region Vadose Zones: Recent Results From New Mexico Tech, *Abstracts with Programs – Geological Society of America*, 30(7), 203, 1998 GSA Annual Meeting, 1998.

ARTICLES DISCUSSING MY WORK

Pinson, J. (2020), Predicting the Next Big Frost Quake, Eos, 101, https://doi.org/10.1029/2020EO151183. Published on 30 October 2020.

INTERVIEWS IN THE MEDIA

"Weather likely behind large booms heard in Wisconsin", Accuweather Network, https://www.accuweather.com/en/videos/weather-likely-behind-large-booms-heard-in-wisconsin/w1smJIZW, Aired December 29, 2020.

SELECTED LOCAL TALKS (student co-authors underlined)

Neupauer, R.M. and M. Arias-Hidalgo, Patrones temporales de caudales en ríos en la cuenca del río Guayas, Ecuador, presentation to SPAN 3060, Spanish for Careers in Environmental Studies and Sustainable Development, March 2020, April 2021, April 2022

Greene, J.A., **R.M. Neupauer**, M. Ye, J.R. Kasprzyk, and D.C. Mays, Remediation of uranium-contaminated groundwater using engineered injection and extraction, CU Boulder Hydrologic Sciences Student Symposium, April 2017

Reising, L.J., **R.M. Neupauer**, and D.C. Mays, A mechanistic approach to designing active spreading injection and extraction sequences for in situ remediation of contaminated groundwater, CU Boulder Hydrologic Sciences student symposium, April 2017.

Neupauer, R.M., G. Lackey, and J. Pitlick, Effects of Time-varying Streambed Hydraulic Properties on Stream Depletion, 10th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 3, 2015.

Piscopo, A., J. Greene, **R. Neupauer,** and J. Kasprzyk, Optimization of active spreading strategies to remediate contaminated groundwater during in situ chemical oxidation, 10th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2015.

Lackey, G.D., **R.M. Neupauer**, and J. Pitlick, Varying Stream Channel Conductance and its Effects on Stream Depletion Estimations, 8th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2013.

Larbkich, W. and **R.M. Neupauer,** Introduction of Solute Age To Assess Aquifer Vulnerability And Direct Simulation Of Mean Groundwater Age, 8th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2013.

Piscopo, A.N., **R.M. Neupauer**, J.R. Kasprzyk, and D.C. Mays, Many-objective design of engineered injection and extraction sequences to optimize in situ remediation of contaminated groundwater, 8th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2013 (received Best Student Presentation Award).

Traylor, J.H., **R.M. Neupauer**, and A.N. Piscopo, Optimal Initial Configuration of Treatment Solution for In Situ Remediation with Engineered Injection and Extraction in Homogeneous and Heterogeneous Aquifers, 8th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2013.

Griebling, S.A. and **R.M. Neupauer**, Quantifying Stream Depletion Due To Groundwater Pumping Using Adjoint Methodology, 7th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2012 (received Best Student Presentation Award).

Kulha, K.H., **R.M. Neupauer**, and D.C. Mays, Investigation of chaotic advection in a groundwater remediation system, 7th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2012 (received Best Student Poster Award).

Piscopo, A.N., **R.M. Neupauer**, D.C. Mays, Engineered injection and extraction for enhanced mixing in groundwater to improve in-situ remediation, 7th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2012.

Neupauer, R.M. and S.A. Griebling, Quantifying Stream Depletion Due to Aquifer Pumping, 6th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 31, 2011.

Griebling, S.A. and **R.M. Neupauer**, Adjoint Based Approach to Quantifying Stream Depletion Due to Aquifer Pumping Using a One-Dimensional Coupled Surface and Groundwater Model Quantifying Stream Depletion Due to Aquifer Pumping, 6th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2011.

Piscopo, A.N., D.C. Mays, and **R.M. Neupauer**, Contrasting Advective Spreading and Dispersive Mixing in Groundwater, 6th Annual Hydrologic Sciences Student Symposium, Boulder, Colorado, March 2011.

Abeysinghe, N.P., **R.M. Neupauer**, D.C. Mays, and A.N. Piscopo, Numerical Simulation of Engineered Injection and Extraction, 6th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2011.

Fuller, K.F., **R.M. Neupauer**, and D.C. Mays, Genetic algorithm optimization of injection and extraction patterns using two wells for in-situ remediation of groundwater, 6th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2011.

Neupauer, R.M., C.R.Radabaugh, D.C. Mays, Groundwater Mixing using Pulsed Dipole Injection/Extraction Wells, 4th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2009.

Dillin, M.F. and **R.M. Neupauer,** Using wavelet analysis to investigate statistical properties in hydraulic conductivity and head fields, 4th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2009.

Moreira, A., **R.M. Neupauer**, G.S. Weissmann, T.F. Wawrzyniec, and J.D. Frechette, Identifying Material Property Boundaries From LIDAR Data Using Wavelet Analysis, 4th Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2009.

Dillin, M.F, and **R.M. Neupauer**, Using wavelet analysis to identify dominant scales of hydraulic conductivity and head fields, 3rd Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, April 2008.

Cozzetto**,** K., M. Gooseff, **R. Neupauer,** J. McNamara, T. Brosten, J. Bradford, and B. Bowden, Investigations of Hyporheic Temperature Regimes in Arctic Alaska Streams Using Time Series Analysis Techniques, 2nd Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2007.

Neupauer, R.M., Challenges in Groundwater Modeling, Building Systems Program Seminar Series, University of Colorado, October 2007.

Koch, J.C., D. M. McKnight, **R. Neupauer**, J. Baseman, M. Gooseff, and B. Rajagopalan, Quantifying Nitrate Uptake in an Unsteady, Anabranching, Antarctic Stream, 2nd Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2007.

Watkins, L.P. and **R.M. Neupauer**, Wavelet analysis and filtering to identify principal directions of permeability anisotropy, 2nd Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2007.

Neupauer, R.M., Wavelet Analysis to Characterize Hydraulic Properties of Porous Media, Applied Mathematics Department Colloquia, University of Colorado, Boulder, Colorado, September2006.

Neupauer, R.M., Applications of Wavelet Analysis in Hydrology, 1st Annual Hydrologic Sciences Student Symposium, University of Colorado, Boulder, Colorado, March 2006.

RESEARCH FUNDING (PENDING)

RESEARCH FUNDING

Danish Field Test of Chaotic Advection for Groundwater Remediation
Funding Source: Capital Region (Denmark)

Principal Investigator: Roseanna Neupauer
Total amount to CU Boulder: $26,299; Amount to Neupauer: $26,299
Cancelled due to COVID

Collaborative Research: Data Worth Analysis for Groundwater Remediation Design under Model Uncertainty

Funding Source: National Science Foundation, Hydrologic Sciences
Principal Investigator: Roseanna Neupauer
Co-PI: Joseph Kasprzyk,
Total amount to CU Boulder: $183,760; Amount to Neupauer: $124,450
Dates: 8/1/2016-7/31/2021
Collaborator: Ming Ye, Florida State University

An integrated modeling and decision framework to evaluate adaptation strategies for sustainable drinking water utility management under drought and climate change

Funding Source: Environmental Protection Agency
Principal Investigator: R. Balaji
Co-PIs: S. Summers, F. Rosario-Ortiz, R. Neupauer, J. Kasprzyk, E. Zagona, B. Livneh
Total amount to CU Boulder: $1,161,125
Dates: 10/15-9/18

Collaborative Research: Coupled Numerical and Laboratory Investigations of Chaotic Advection to Enhance Spreading and Reaction in Three-Dimensional, Heterogeneous Porous Media

Funding Source: National Science Foundation, Hydrologic Sciences
Principal Investigator: Roseanna Neupauer
Co-PI: John Crimaldi
Total amount to CU Boulder: $493,443; Amount to Neupauer: $223,251
Dates: 8/1/2014-7/31/2018
Collaborator: David Mays, UC Denver

Collaborative Research: Innovative Injection and Extraction Schemes to Enhance Mixing in Aquifers for Improved In Situ Remediation

Funding Source: National Science Foundation, Hydrologic Sciences
Principal Investigator: Roseanna Neupauer
Total Amount to CU Boulder: $256,197; Amount to Neupauer: $256,197
Dates: 8/1/11-8/31/15
Collaborator: David Mays, UC Denver

Adjoint Model to Quantify Stream Flow Changes Due to Aquifer Pumping

Funding Source: National Institutes for Water Resources
Principal Investigator: Roseanna Neupauer
Total amount to Neupauer: $117,847

Dates: 2009-2012

Investigating remediation strategies for Warden Gulch
Funding Source: Council on Research and Creative Work, CU Boulder
Principal Investigator: Roseanna Neupauer
Amount: $600
Dates: 2006-2007

Wavelet Analysis of Permeability Heterogeneity and Anisotropy
Funding Source: The Petroleum Research Fund of the American Chemical Society
Principal Investigator: Roseanna Neupauer
Amount to Neupauer: $35,000
Dates: 7/2003 – 8/2005

CAREER: Wavelet Analysis of Scale Effects of Subsurface Flow and Transport
Funding Source: National Science Foundation, Hydrologic Sciences
Principal Investigator: Roseanna Neupauer
Amount to Neupauer: $402,964
Dates: 2003-2008

Interdisciplinary Education and Research in Contaminant Hydrogeology
Funding Source: U.S. Department of Education
Principal Investigator: Teresa Culver
Co-PIs: R.M. Ford, J.S. Herman, J.A. Smith, S.E. Burns, G.M. Hornberger, W.B. McAllister, and A.L. Mills.
Total Amount: $1,011,456
Dates: 2003-2006

Superfund Site Recycling: *Relationship between Remedy and Reuse*
Funding Source: Environmental Protection Agency
Principal Investigator: Jon Cannon
Co-PIs: R. Neupauer, T. Culver, J. Herman
Amount to Neupauer: $21,600
Dates: 2001-2003

TEACHING

COURSES TAUGHT

CVEN 3323	Hydraulic Engineering	F05, F06, F07, F09, F10, F11, F13, F14, F15, F16, F17, F18*, F20, F21, F22, F23
CVEN 4353/5353	Groundwater Hydrology	F05, F06, F07, F08, F09, F10, F11, F13, F14, F15, F16, F17, F18*, F20, F21, F22, F23
CVEN 4383/5383	Groundwater Modeling	S06, S07, S08, S09, S10, S11, S12, S14, S15, S16, S17, S18, S19, S21, S22
APMA 213 (UVA)	Differential Equations	F01, F02
CE 232 (UVA)	Dynamics	F03
CE 315 (UVA)	Fluid Mechanics	S02, S03, S04
CE 365 (UVA)	Fluid Mechanics Lab	S02, S03, S04
CE 440/665 (UVA)	Groundwater Hydrology	S01, F04
MATH 103 (NMT)	College Algebra	F99

*on leave, but supervised adjunct instructors, wrote homework assignments and solutions, wrote and graded exams, projects, and labs

SHORT COURSE TAUGHT

Fate and Transport of Petroleum-Derived Contaminants in the Subsurface, 15-hr short course for the international graduate program at China University of Petroleum, Qingdao, China, April, 2022

Fate and Transport of Petroleum-Derived Contaminants in the Subsurface, 20-hr short course for the international graduate program at China University of Petroleum, Qingdao, China, May 11-15, 2020

PUBLICATIONS ON TEACHING

Books Edited

$H_2Oh!$: *Classroom Demonstrations for Water Concepts*, A.B. Chan-Hilton and **R.M. Neupauer**, eds., American Society of Civil Engineers, Reston, Virginia, 2013, ISBN 978-0-78444-1254-1 (print), 978-0-7844-7022-1 (E-Book).

Book Chapters

Neupauer, R.M., wrote 23 sections on classroom activities and demonstrations for inclusion in *$H_2Oh!$*: *Classroom Demonstrations for Water Concepts*, A.B. Chan-Hilton and R.M. Neupauer, eds., American Society of Civil Engineers, Reston, Virginia, 2013, ISBN 978-0-78444-1254-1 (print), 978-0-7844-7022-1 (E-Book).

Educational Videos/Recordings

Bernoulli's Paradise, available on Amazon music and other streaming services, October 11, 2023

Darcy's Law Rap, CU Engineering YouTube channel, published November 14, 2014, https://www.youtube.com/watch?v=cuJP4kdi6Og.

Articles/Videos Discussing My Work

McMartin, D. W., H2Oh! Classroom demonstrations for water concepts, Canadian Water Resources Journal / Revue canadienne des ressources hydriques, 38:3, 251-252, DOI: 10.1080/07011784.2013.794516, 2013.

LaSage, D.M., Book Review, H2Oh! Classroom demonstrations for water concepts, edited by Amy B. Chan Hilton and Roseanna M. Neupauer, *Groundwater*, doi: 10.1111/gwat.12043, 2013.

Video shown on the jumbotron at the CU Boulder football game on Sept 9, 2017. https://www.youtube.com/watch?v=o-7jAKA71es&feature=youtu.be

Invited Presentations

Invited speaker for panel discussion: Groundwater Education: New approaches to enhance student learning, World Environmental and Water Resources Congress, West Palm Beach, Florida, May 2016.

Neupauer, R.M., A.B. Chan Hilton, A. Sciortino, P. Mathisen, H_2Oh! Interactive Classroom Demonstrations, World Environmental and Water Resources Congress, San Antonio, Texas, May 2015.

Neupauer, R.M., A.B. Chan Hilton, S. Burian, H_2Oh! Interactive Demonstrations, World Environmental and Water Resources Congress, Portland, Oregon, June 2014.

Neupauer, R.M., Communication Skills 1: Writing, ASCE ExCEEd Teaching Workshop, American Society of Civil Engineers, West Point, New York, July 2012.

Neupauer, R.M., Communication Skills 3: Questioning, ASCE ExCEEd Teaching Workshop, American Society of Civil Engineers, West Point, New York, July 2012.

Neupauer, R.M., Planning a Class, ASCE ExCEEd Teaching Workshop, American Society of Civil Engineers, West Point, New York, July 2011.

Conference Presentations

Neupauer, R.M., A.B. Chan Hilton, S. Burian, J.W. Lauer, P. Mathisen, D.C. Mays, J. Nicklow, M.S. Olsen, B. Ruddell, and A. Sciortino, H2Oh!: collection of classroom demonstrations and activities for improving student learning of water concepts, Geological Society of America Annual Meeting, October 2013.

Chan Hilton, A.B., **R.M. Neupauer**, S. Burian, J.W. Lauer, P. Mathisen, D.C. Mays, M.S. Olsen, C. Pomeroy, B. Ruddell, and A. Sciortino, H_2Oh!: Classroom demonstrations and activities for improving student learning of water concepts, 2013 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2013.

Chan Hilton, A.B**., R.M. Neupauer**, D.C. Mays, S. Burian, J.W. Lauer, M.S. Olsen, B. Ruddell, A. Sciortino, and P. Mathisen, H_2Oh!: Classroom demonstrations and activities for improving student learning of water concepts, American Geophysical Union, Fall Meeting, 2012.

Neupauer, R., S. Burian, W. Lauer, P. Mathisen, D. Mays, C. Pomeroy, B. Ruddell, A. Sciortino, and A. Chan Hilton, Classroom Demonstration Activities for Improving Student Learning of Hydraulics and Fluid Mechanics Concepts, 2012 World

Environmental and Water Resources Congress, American Society of Civil Engineers, 2012.

Chan Hilton, A. W. Lauer, D. Mays, M. Olson, B. Ruddell, A. Sciortino, and **R. Neupauer**, Classroom Demonstration Activities for Improving Student Learning of Surface Water Concepts, 2012 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2012.

Chan Hilton, A. P. Mathisen, M. Olson, P. Omur-Ozbek, and **R. Neupauer,** Classroom Demonstration Activities for Improving Student Learning of Water Quality Concepts, 2012 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2012.

Neupauer, R., A. Chan Hilton, D. Mays, M. Olson, B. Ruddell, P. Mathisen, and A. Sciortino, Classroom Demonstration Activities for Improving Student Learning of Groundwater Concepts, 2012 World Environmental and Water Resources Congress, American Society of Civil Engineers, 2012.

Neupauer, R.M., Hydraulic Containment Design Project, Geological Society of America Annual Meeting, Philadelphia, Pennsylvania, October 2006.

.

ADVISING AND MENTORING

Doctor of Philosophy

Chris Turnadge, Co-Advised 2018-present, Application of adjoint sensitivity to hydrologic systems, Ph.D. candidate at Flinders University, Ph.D. expected 2024

Brian Straight Unmanned aerial system advances in remote sensing harmful algal blooms and water sampling environments with health and safety risks, (co-advised with Diane McKnight), Ph.D. 2020

Lauren Reising, Advised 2015-2018, Numerical investigations of active and passive spreading to enhance mixing and reaction in porous media, Ph.D. 2018

Amy Piscopo, Advised 2012-2015, Engineered injection and extraction for enhanced in situ remediation, (co-advised with J. Kasprzyk), Ph.D. 2015

Warangkana Larbkich, Advised 2009-2014, Adjoint simulation of solute age to assess groundwater well vulnerability, Ph.D. 2014

David Wagner, Advised 2010-2013, Adjoint-based probabilistic method for source identification in water distribution systems, Ph.D. 2013

Xing Qi, Advised 2003 – 2008, Wavelet analysis of dominant scales of heterogeneous porous media, Ph.D. 2008

Master of Science (Thesis Option)

Alexi Lainis, Advised 2019 – 2021, Numerical simulation of partially frozen soils to understand aufeis formation in polar regions, M.S. 2021.

John Greene, Advised 2016 – 2017, An investigation of Engineering Injection and Extraction as a remediation scheme for uranium contaminated groundwater, M.S. 2017.

Greg Lackey, Advised 2012-2013, The effects of stream channel conductance on stream depletion, M.S. 2013

Amy Piscopo, Advised 2010-2012, Engineered injection and extraction to enhance reaction for improved in-situ remediation, M.S. 2012

Scott Griebling, Advised 2010-2012, Adjoint-based modeling to quantify stream depletion due to pumping in an aquifer, M.S. 2012

Alan Moreira, Advised 2008-2010, Delineating Material Property Boundaries from LiDAR Data Using Wavelet Analysis, M.S. 2010

Cristyn Radabaugh, Advised 2008-2010, Groundwater Mixing using Pulsed Dipole Injection/Extraction Wells, (co-advised with David Mays, CU-Denver), M.S. 2010.

Matthew Dillin, Advised 2006-2009, Wavelet Analysis of Spatial Variability of Hydraulic Conductivity and Hydraulic Head, M.S. 2009

Heather O'Shea, Advised 2005-2007, Backward Modeling to Prioritize Sources of Acid Mine Drainage for Remediation: Application to Warden Gulch, Summit County, Colorado, M.S. 2007

Loring Watkins, Advised 2005-2007, Wavelet Analysis and Filtering to Identify Principal Directions of Permeability Anisotropy, M.S. 2007

Kaye Powell, Advised 2002-2004, Wavelet Analysis of Permeability Anisotropy, M.S. 2004

Bin Zhang, Advised 2002-2004, Robust Groundwater Remediation Design and Reuse, (co-advised with Teresa Culver), M.S. 2004

Ranhao Lin, Advised 2001-2003, Identification of Groundwater Contamination Sources using Probabilities Conditioned on Measured Concentrations, M.S. 2003

Master of Science (Report Option)

Emily Lodolce, Advised 2013-2014, Effects of climate change on well yields in Larimer County, Wyoming, M.S. 2014

Taylor Adams, Advised 2011-2012, Hill tunneling optimization: Applications to optimal channel networks, M.S. 2012

Katherine Kulha, Advised 2012, Investigation of chaotic advection in a groundwater remediation system, M.S. 2012

Nadeeka Abeysinghe, Advised 2011, Reactive transport modeling of injection and extraction schemes in contaminated aquifers, M.S. 2011

Kathleen Fuller, Advised 2011, Genetic algorithm optimization of injection and extraction patterns for in situ remediation of contaminated groundwater, M.S. 2011

Christine Brewer, Advised 2008-2009, Flood inundation comparison using different bridge geometry input techniques, M.S. 2009

Other Graduate Research Advising

Adarshya Sharadha, Advised 2016, Delineating travel-time-based capture zones for wells with time-varying pumping, M.S., 2016.

Bachelor of Science Thesis

Douglas Winter, Advised 2011-2012, Permeable Reactive Barriers for Groundwater Remediation, B.S. 2012

Louis Dankovich, Advised 2012-2013, Towards Development of a Hybrid Solar Water Heating and Electric System, B.S. 2013.

Alexis Burton, Advised 2004-2005, Green Roofing Applications in Low-Income Housing, B.S. 2005

Douglas Lee, Advised 2004-2005, Wavelet Analysis of Permeability Anisotropy Using the Mexican Hat Wavelet, B.S. 2005

Frederick Townsend, Advised 2004-2005, Drainage Pattern Improvements in Western Ridge Subdivision: Improved Flow and Reduced Erosion, B.S. 2005

Danylo Villhauer, Advised 2004-2005, Wavelet Analysis of Permeability Anisotropy Using the Cauchy Wavelet, B.S. 2005

Justine Gozzi, Advised 2003-2004, Drainage Investigation Case Study, B.S. 2004

Christine Rutkowski, Advised 2003-2004, Improving Groundwater Contaminant Tracing, B.S. 2004

Aron Wedekind, Advised 2003-2004, Probabilistic Model for Identifying Sources of Groundwater Contamination, B.S. 2004

Cecilia Corrigan, Advised 2002-2003, Validation of a Non-linear Receptor-based Model for Sorptive Solutes in Groundwater, B.S. 2003

James Klapmust, Advised 2002-2003, Siting Study for Pedestrian Bridge Connecting Darden Towe and Pen Parks, B.S. 2003

Kenton Martin, Advised 2002-2003, Alternatives to Sandbags in Flood Protection around Residential Housing, B.S. 2003

Jesse Robinson, Advised 2002-2003, A Low-cost Immersive Driving Simulator, B.S. 2003

Stephanie Brock, Advised 2001-2002, Wastewater Treatment Plant Design, B.S. 2002

Chris Duesterberg, Advised 2001-2002, Modeling of Subsurface Contaminant Sites Using Partitioning Interwell Tracer Tests, B.S. 2002

Margaret Ferguson, Advised 2001-2002, An Evaluation of Remediation Technologies for Various Contaminants Found on Superfund Sites, B.S. 2002

Jennifer Lewis, Advised 2001-2002, Improving Backward Probability Modeling Using Data From the Massachusetts Military Reservation, B.S. 2002

Katie Ritz, Advised 2001-2002, Remediation of the Deep Soils at the Greenwood Chemical Superfund Site, B.S. 2002

Other Undergraduate Research Supervision

Elizabeth Tyson, Protecting Temperature-sensitive Ecosystems from Heat Pollution by Groundwater, Aug 2022 – May 2023

John Quinn, Role of active and passive spreading to enhance in situ groundwater remediation, July 2021 – June 2022

Hamad AlSager, Estimation of longitudinal and transverse dispersivity in push-pull engineered injection and extraction experiments, Fall 2018

William Sanzone, Verification of performance functionals for adjoint simulations of heat transport, 2018-2019

Samuel Waers, Monitoring network design for in situ remediation of contaminated groundwater, Fall 2017 – Spring 2018

Andrew Seamone, Effects of temporal variation of hydraulic conductivity on in situ remediation of contaminated groundwater, Summer 2017

Erin Johnson, Investigation of chaotic advection in natural subsurface flows, 2017

Colter Ritsch, Investigation of chaotic advection in natural subsurface flows, 2016 - 2017

John Greene, Optimization of well placement in Engineered Injection and Extraction systems, 2015 - 2016

John Behan, Effects of time-varying streambed conductance on stream depletion, Spring 2015.

Andrew Hoeschele, Stream depletion in a stream with time-varying origin, Fall 2014 – Summer 2015

Justin Pflug, Design and simulation of engineered injection and extraction remediation of contaminated groundwater, Summer 2014, REU

Mathew Accardo, Simulation of reactive transport during engineered injection and extraction remediation of contaminated groundwater, Summer and Fall, 2013

Garrett Bundick, Optimization of well placement in Engineered Injection and Extraction systems, Fall 2014

Renata Chaves, Stream depletion in a stream with time-varying origin, Summer 2014

John Brodt, Optimization of engineered injection and extraction for remediation of sorbed groundwater contaminants, Summer 2013, REU

Julia Traylor, Investigation of injection and extraction sequences for enhanced in situ remediation of contaminated groundwater, 2012 – 2013

Brie Webber, Engineered injection and extraction for enhanced in situ remediation of sorbing contaminants in groundwater, Summer 2012, REU

Michael Wetterau, Chaotic advection and bifurcation in engineering injection and extraction, Summer 2012

Damien Allen, Code Modification of Backward Tracking in Water Distribution Systems, Spring 2012

Tracy Haniff, Quantifying stream depletion due to pumping in an aquifer, Fall 2010

Andrea Yarberry, Adjoint sensitivity model of reactive transport in water distribution systems, Summer 2010, REU

Cody Cichowitz, Adjoint-based modeling of contamination in water distribution systems under transient flow conditions, Sept 2009 – July 2010

Michael Records, Identification of contaminant source locations in water distribution systems, Sept 2008 – May 2009

Wesley Ashwood, Identification of contaminant source locations in water distribution systems, Sept 2007 – March 2008

Aditi Bhaskar, Travel Time Probability Density Functions of Sorbing Solutes, Summer 2006, REU

Zachary Wengrovius, Scale Effects on Subsurface Transport, June 2006 – May 2007

STUDENT AWARDS

John Greene, Outstanding Graduate for Research, College of Engineering and Applied Science, December 2017.

John Greene, 3rd place, Student Technical Paper Competition, graduate division, American Society of Civil Engineers, Environmental and Water Resources Institute, 2016

Amy Piscopo, 2nd place, best student abstract, MODFLOW and More Conference, 2013

Amy Piscopo, Best Student Presentation Award, Hydrologic Sciences Student Symposium, 2013

Julia Traylor, 1st place, Student Technical Paper Competition, undergraduate section, American Society of Civil Engineers, Environmental and Water Resources Institute, 2013

Douglas Winter, Outstanding Graduate for Research, College of Engineering and Applied Science, 2012

Katherine Kulha, Best Student Poster Award, Hydrologic Sciences Student Symposium, 2012

Scott Griebling, Best Student Presentation Award, Hydrologic Sciences Student Symposium, 2012

Amy Piscopo, National Science Foundation Graduate Fellowship, Honorable Mention, 2012

Amy Piscopo, Harland Erker Memorial Scholarship, Colorado Ground Water Association, 2010

EDUCATION FUNDING

Groundwater Modeling Software, Engineering Excellence Fund, College of Engineering and Applied Science, CU Boulder, 2011, $1000, funds to purchase software for use in Groundwater Hydrology and Groundwater Modeling courses.

Experimental and Computational Modules for Flow and Transport in Groundwater, Soils and Porous Media, Engineering Excellence Fund, CU Boulder, 2007-2008, $15,750, with H. Rajaram.

SERVICE AND PROFESSIONAL ACTIVITIES

NATIONAL /INTERNATIONAL

Editorial Boards

- Associate Editor, *Water Resources Research,* 2001 – 2008
- Associate Editor, *Journal of Hydrology*, 2012 – 2018
- Associate Editor, *Journal of Hydrologic Engineering*, 2019 – present

International Association of Hydrological Sciences

- Vice President, International Commission on Groundwater, 2019 – 2023
- Co-Convener, Improving Understanding of Hydrological Processes Through Water Quality, IUGG Berlin 2023, 28th General Assembly of the International Union of Geodesy and Geophysics, Berlin, Germany, July 2023

American Geophysical Union

- Panelist, Professional Opportunities for Students and Early Career Researchers: When to Jump and When to Duck!, Frontiers in Hydrology Meeting, June 22, 2022
- Fall Meeting Program Committee, Hydrology Section, 2009 – 2010, Chair, 2010
- Horton Research Grant Committee, 2005 – 2008
- Langbein Lecture Committee, 2011 – 2014, Chair, 2013 - 2014
- Co-Coordinator, Outstanding Student Paper Award Committee, 2004
- Groundwater Technical Committee, 2001 – 2012
- Fall Meeting Session Co-convener
    - Periodic Subsurface Flows across Scales, 2019

American Society of Civil Engineers (Technical Activities)

- Groundwater Council, Secretary, 2012 – 2014, Vice Chair, 2014 – 2016, Chair, 2016 – 2018, Past Chair 2018 - 2020
- Environmental and Water Resources Institute, Technical Executive Committee member, 2018 - 2020
- Groundwater Management Committee, Member, 2003 – present; Chair-Elect, 2008 – 2009, 2021 - 2022; Chair, 2009 – 2011, 2022 - present; Past Chair, 2011 – 2012
- Groundwater Hydrology Committee, Member, 2014 – present
- Groundwater Symposium Committee, Member, 2007 – present
- Standards Committee on Hydraulic Conductivity, Member 2003 –2013
- Session Moderator, World Environmental and Water Resources Congress
    - Groundwater Hydrology and Quality Modeling, 2007
    - Groundwater Management, 2008
    - Groundwater Quality and Human Health, 2009
    - Interactions between Groundwater and Surface Water, 2009

    - Groundwater Management and Uncertainty, 2010
    - Pioneers in Groundwater Plenary Session, 2011
    - Groundwater Quality, Characterization, Monitoring, Management and its Uncertainty, 2011
    - Groundwater Management, Monitoring, and its Uncertainty, 2012
    - Groundwater Remediation Technologies, 2013
    - Groundwater Management, Monitoring, and its Uncertainty, 2014
    - Environmental and Water Resources Engineering Education, 2015
    - Groundwater Management and Monitoring, 2015
    - Groundwater Modeling Tools and Techniques, 2015
    - Groundwater Remediation: New Technologies and Emerging Trends, 2017
    - Groundwater Modeling for Regional Systems, 2018
    - Groundwater Modeling: Applications, Tools, and Techniques, 2019
    - Groundwater Protection: Quality, Treatment, and Reuse, 2021
    - Groundwater and Surface Water Interactions, 2022
    - Land Subsidence and Managed Aquifer Recharge, 2023
- Secretary, Blue Ridge Branch, 2002 – 2004

American Society of Civil Engineers (Educational Activities)

- Committee on Faculty Development, Member, 2009 – 2016; Secretary, 2013-2014, Chair 2014-2015, Past Chair 2015 - 2016
- Director, ExCEEd Teaching Workshop, University of Colorado, Boulder, 2010
- Mentor and presenter, ExCEEd Teaching Workshop, United States Military Academy, 2007, 2008, 2011, 2012
- Mentor, ExCEEd Teaching Workshop, University of Arkansas, Fayetteville, 2006
- Assistant Mentor, ExCEEd Teaching Workshop, University of Arkansas, Fayetteville, 2003, 2004, 2005
- Vice Chair, Excellence in Water Resources Education Task Committee, 2008 – 2014
- Faculty Advisor, University of Colorado Student Chapter, 2006-2011
- Faculty Advisor, University of Virginia Student Chapter, 2001-2004

National Ground Water Association

- Session Moderator, Hydrogeologic Characterization in Mountainous Regions, 2010 Ground Water Summit, Denver, Colorado, 2010

Society for Industrial and Applied Mathematics

- Selection Committee for SIAM Geosciences Career Prize, 2023

Conference Planning Committees

- Organizing Committee, U.S. National Congress of Theoretical and Applied Mechanics, Boulder, CO, 2006

- Technical Committee, MODFLOW and More Conference, Golden, CO, 2006

Advisory Committees

- Advisory Board, New Mexico Institute of Mining and Technology, Department of Earth and Environmental Science, 2017
- Dean's Leadership Council, Carnegie Mellon University, Carnegie Institute of Technology, 2003 – 2006
- General Education Committee, Dean's Leadership Council, Carnegie Mellon University, 2004-2005

UNIVERSITY OF COLORADO SYSTEM

President's Teaching Scholar Program, Selection Committee, 2015 – 2016, 2023 - present
President's Teaching Scholar Advisory Board, 2016 - 2021

UNIVERSITY OF COLORADO BOULDER

Honor Code Appeals Committee, Faculty Representative, 2018 – 2022
Hydrologic Sciences Faculty Steering Committee, 2014 - present
University Representatives on CUAHSI, (Consortium of Universities for the Advancement of Hydrologic Science, Inc.), 2014 - present
RAP Task Force, 2016 – 2017
Boulder Faculty Assembly, CEAE Department representative, 2013 – 2017, 2018
BFA Budget and Planning Committee, 2015 – 2016
BFA Intercollegiate Athletics Committee, Chair 2016 – 2018; Member 2014 – 2018
Gender Equity Committee, CU Athletics Department, Member 2016
NCAA Financial Aid Appeals Committee, 2016 – 2018
Academic Risk and Rewards Assessment Committee, Dept. of Athletics, 2017 – 2018
GPTI Teaching Award Selection Committee, 2013 - 2019
RAPs internal review committee, 2013- 2014

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

Vice Chair of Faculty Governance Council, 2023 - present
Max S. Peters Award selection committee, 2022, 2023
College-wide faculty search committee, 2021
Writing Committee, 2021 – 2022
Undergraduate Education Council, 2015 – 2019, 2020 - 2022
Presenter, Active Learning with Classroom Demonstrations, ACTIVE workshop, 2019
Undergraduate Education Council, 2010 – 2012, 2014, 2015 – 2019
Sub-committee on writing, 2016
Panelist, Academic Expectations and Success, New Student Welcome Day, July 22, 2016
Flash Seminar, Teaching with Demonstrations, March 2014

Taught “Exciting Engineering” for Aspire Summer Bridge Program, 2013
Presenter, Teaching with Demonstrations, for CEAS New Faculty Orientation, 2013
Applied Math Review Subcommittee, Chair, 2010 – 2011
Hutchinson Teaching Award Committee, 2009, 2010
Best Dissertation Award Committee, Chair, College of Engineering and Applied Science, 2008, 2009
Presenter, College of Engineering and Applied Science CAREER Proposal Workshop, 2008
Teach Engineering Teacher Workshop, co-taught two-day workshop on Engineering and Earth Sciences, for elementary and middle school teachers, 2007
High School Honors Institute, Presenter, 2006, 2007
High School Honors Institute, Boat Race Judge, 2006

DEPARTMENT OF CIVIL, ENVIRONMENTAL, & ARCHITECTURAL ENGINEERING

Department representative to the CEAS Faculty Governance Council, 2023 - present
Associate Chair for Undergraduate Education, 2015 – 2019, 2020 - 2022
Curriculum Committee, 2010 – 2012, 2013 – 2019, 2020 – present, Chair 2015 – 2019, 2020 - 2022
Undergraduate Student Pathways committee, member 2020 – present
Teaching Quality Framework Coordinator, 2023
Teaching Quality Framework Committee, 2020 – 2022
Teaching Quality Framework Course Assessment Facilitator – 3 classes in Fall 2021; 5 classes in Spring 2022;
Primary Unit Evaluation Committee
Sherri Cook, promotion to Assoc. Professor, 2022
Aditi Bhaskar, hire with tenure, 2022
Joseph Kasprzyk, reappointment
Faculty Advisor, Chi Epsilon, 2020 – present
Chair of CEAE sub-committee for college-wide faculty diversity search, 2021
Member, CEAE search committee for college-wide faculty diversity search, 2021-2022
Organized faculty panel on graduate school, 2021
Executive Committee, 2019
Program Coordinator, Joint Civil Engineering program between CU and Colorado Mesa University, 2015 – 2016
Coordinator of Joint Evaluation Committee for Environmental and Water Resources Engineering, 2015
Faculty Mentoring Committee, Chair, 2010 – 2011, Member 2010 – 2012
Environmental Engineering Steering Committee, 2011 – 2012
Graduate Committee, 2008 – 2009
Departmental Search Committee, 2007-2008
Computing Committee, CEAE, 2006 – 2008
American Society of Civil Engineers, Faculty Advisor for CU student chapter, 2006 – 2011
Presented FE Fluids/Hydraulics Review, 2020, 2021, 2023

Presented FE Exam Math Review, Spring/Fall 2005, 2006, 2007, 2008, 2009; Fall 2010, 2011

PEER REVIEWER FOR PUBLICATIONS IN THE FOLLOWING ENTITIES:

Book Reviews

Subsurface Hydrology: Data Integration for Properties and Processes, AGU Monograph Series, D.W. Hyndman, F.D. Day-Lewis, and K. Singha, eds.

Effective Model Sensitivity Analysis, Sampling Strategy, Calibration, and Uncertainty Evaluation, by M.C. Hill and C.R. Tiedeman, John Wiley and Sons, Hoboken, New Jersey, 2007.

"Simulation of Advective Transport", in *Applied Contaminant Transport Modeling: Theory and Practice*, 2nd edition, by C. Zheng and G.D. Bennett, 2001.

"Simulation of Advective-Dispersive Transport", in *Applied Contaminant Transport Modeling: Theory and Practice*, 2nd edition, by C. Zheng and G.D. Bennett, 2001.

Water Engineering with the Spreadsheet: Water Resources Calculations Using Excel, ASCE, 2014

Journals

Advances in Water Resources
Arabian Journal of Geosciences
Atmospheric Environment
Computers & Geosciences
Critical Reviews in Environmental Science & Technology
Environmental & Engineering Geosciences
Environmental Engineering Science
Environmental Modelling & Software
Environmental Pollution
Environmental Science & Technology
Frontiers in Environmental Science
Frontiers in Earth Science
Geology
Geophysical Research Letters
Ground Water
Hydrogeology Journal
Hydrologic Sciences Journal
Hydrological Processes
IEEE Transactions on Geoscience and Remote Sensing
International Journal for Numerical and Analytical Methods in Geomechanics
Inverse Problems in Science and Engineering
ISH Journal of Hydraulic Engineering
Journal of the American Water Resources Association
Journal of Contaminant Hydrology
Journal of Environmental Engineering

Journal of Environmental Management
Journal of Environmental Quality
Journal of Geoscience Education
Journal of Hydroinformatics
Journal of Hydrologic Engineering
Journal of Hydrology
Journal of Irrigation and Drainage Engineering
Journal of Professional Issues in Engineering Education and Practice
Journal of Water Resources Planning and Management
Mathematical Geosciences
Numerical Heat Transfer
SIAM Journal on Scientific Computing
Soil Science
SpringerPlus
Water Research
Water Resources Research
Water Science and Engineering

Conference Proceedings
American Society of Engineering Education
World Environmental and Water Resources Congress

PEER REVIEWER FOR PROPOSALS SUBMITTED TO THE FOLLOWING AGENCIES:

Delta Science Program
Connecticut Water Resources Research Institute
Deutsche Forschungsgemeinschaft (DFG)
Israeli Science Foundation
Department of Defense, SERDP
National Science Foundation Hydrologic Sciences Division
National Science Foundation Geophysics Division
National Science Foundation Geotechnical Engineering Division
National Science Foundation Collaborations in Mathematics and Geosciences
National Science Foundation Research Experience for Undergraduates
National Science Foundation International Research Experience for Students
National Science Foundation International Research and Education: Planning Visits and Workshops
Petroleum Research Fund, American Chemical Society
National Institutes for Water Resources
Blackwell Publishing (Book proposal)
American Geophysical Union (Book proposal)
New Mexico Water Resources Research Institute

PROPOSAL REVIEW PANELIST FOR THE FOLLOWING AGENCIES:

National Science Foundation, Food-Energy-Water Panel, 2018
Research Competitiveness Program at the American Association for the Advancement of Science, King Abdulaziz City for Science and Technology, Saudi Arabia, 2014, 2015
National Science Foundation, Hydrologic Sciences, 2011
National Science Foundation, Collaborations in Mathematics and Geosciences, 2004, 2005, 2006
National Science Foundation, Course, Curriculum, and Laboratory Improvement Program, 2008
National Science Foundation, Innovations in Engineering Education, Curriculum and Infrastructure, 2010
National Science Foundation, Cyber-enabled Discovery and Innovation, 2010

PROMOTION AND TENURE EVALUATIONS FOR THE FOLLOWING DEPARTMENTS:

Civil and Mechanical Engineering, United States Military Academy, 2012
Department of Environmental and Civil Engineering, Florida Gulf Coast University, 2014
Department of Civil Engineering, University of Nebraska-Lincoln, 2019, 2021
Department of Environmental and Civil Engineering, Florida Gulf Coast University, 2020
Department of Civil and Environmental Engineering, University of Delaware, 2022

MEMBERSHIPS:
Chi Epsilon
Phi Beta Kappa
Tau Beta Pi
American Geophysical Union
American Society for Engineering Education
American Society of Civil Engineers (Fellow since 2023, EWRI Fellow since 2022)
Geological Society of America (Fellow since 2010)
International Association of Hydrological Sciences
National Ground Water Association
Society for Industrial and Applied Mathematics