# Cara J. Poor, Ph.D., P.E.

Assistant Professor
University of Portland

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## EDUCATION

**Oregon State University,** Corvallis, OR
PhD in Civil Engineering with an emphasis in Water Resources, 2006
*The Effects of Land Use on Stream Nitrate Concentrations*

**University of California at Davis,** Davis, CA
Master of Science in Environmental Engineering, 1999
*Methods for Measuring Desorption Rates of Phenanthrene in Soil*

**Oregon State University,** Corvallis, OR
Bachelor of Science in Civil Engineering, Magna Cum Laude, 1997

## EXPERIENCE

**Assistant Professor,** University of Portland, 8/15 – present

- Environmental Engineering, CE 367
- Environmental Engineering Laboratory, CE 376
- Hydraulics, CE 362
- Fluid Mechanics, EGR 311
- Civil Engineering Seminar, CE 200
- Open Channel Flow, CE 465/565
- Water and Wastewater Design, CE 466/566
- Sustainable Design, CE 462
- Introduction to Engineering, EGR 110
- Statics, EGR 211

**Senior Instructor II,** Portland State University, 9/14 – 7/15

- Fluid Mechanics, CE 361
- Environmental Engineering Laboratory, CE 399II and III
- Project Management and Design, CE 484 and 494
- Hydraulics, CE 362
- Environmental Engineering, CE 371

**Project Engineer,** Geosyntec Consultants, 6/13 – 3/16

**Clinical Associate Professor,** Washington State University, 8/12 – 6/13

**Clinical Assistant Professor,** Washington State University, 8/06 – 8/12

- Interdisciplinary Design Experience, ENGR 420/421
- Introduction to Environmental Engineering, CE 341

- Water Resources Engineering, CE 351
- Hydraulic Engineering Laboratory, CE 416
- Open Channel Flow, CE 451/551
- Integrated Civil Engineering Design, CE 465
- Ethics and Professionalism in Engineering, CE 480
- Mechanics of Materials, CE 215

**Research Assistant,** Oregon State University, 3/04 - 6/06

**Instructor and Teaching Assistant,** Oregon State University, 9/01 - 3/04
- Instructor, Engineering Statics, winter term 2004
- Co-Instructor, Field Hydrology, winter term 2004
- Lecturer (part-time) Hydrology, winter term 2002 and 2003

**Engineer,** DJH Engineering, 6/02 - 9/02
- Project Manager, timber-lined tunnel rehabilitation
- Evaluated El Dorado Irrigation District's flumes, some of which were built by miners in the 1800s
- Conducted landslide risk assessment

**Associate Engineer,** Montgomery Watson Harza, 10/98 - 9/01
- Full pipeline design
- Intake and pump station design
- Hydraulic modeling and master planning
- Project setup: scheduling and budgeting
- Resident engineer for WTP Construction

**Research Assistant,** University of California at Davis, 7/97 - 10/98

**Engineering Aide**, Willamette Industries, Inc., 6/95 - 9/95 and 6/96 - 9/96
- Insured compliance with state and federal environmental regulations
- Processed environmental discharge permits for Willamette Valley mills

## LICENSES

Professional Engineer, Oregon, No. 56443
Professional Engineer, California, No. C62400
Professional Engineer, Washington, No. 51443

## PROFESSIONAL MEMBERSHIPS

American Geophysical Union
American Society of Civil Engineers
American Society of Engineering Education
Society of Women Engineers
- Advisor for Student Group 2006-2012

## PEER REVIEWER

Sage Open – Editor
Environmental Pollution
Journal of Hydrology
Sustainability
Journal of Environmental Quality
Journal of Environmental Engineering
Journal of the American Water Resources Association
Water Research
Environmental Management
Environmental Engineering Science
Water
PLOS ONE
Forest Ecology and Management
Estuaries and Coasts
Second Edition of Mays' Water Resources Engineering text

## FELLOWSHIPS AND AWARDS

Second place in American Water Works Association Pacific Northwest Section Conference student poster competition (UP student Jocelle Tade), 2017
Best Paper in Division of Experimentation and Laboratory-Oriented Studies, ASEE Annual Conference, 2016
Leon Luck Faculty Award, WSU Department of Civil and Environmental Engineering, 2013
Outstanding Advisor, WSU Department of Civil and Environmental Engineering, 2012
Outstanding Faculty Teacher, WSU Department of Civil and Environmental Engineering, 2010
Best Zone Paper, ASEE Pacific Northwest Regional Conference, 2009
Director of the WSU women's mentoring program, 2009-2012
EPA Cooperative Program, 2004-2006
Professional Performance Award, Montgomery Watson Harza, 1999
National Science Scholar, 1993-1996

## PUBLICATIONS

Kohlsmith, E., Morse, J., and Poor, C. Stormwater Treatment Effectiveness of Established Lined Bioretention Facilities in Portland Oregon. *Journal of Sustainable Water in the Built Environment*, *in review.*

Poor, C., Burrill, K., and Jarvis, M. Development of a Low-Cost Constructed Wetlands Experiment. *Proceedings of the 2020 PNW American Society of Engineering Education*, Spokane, WA, *in review*.

Morgan, C., Poor, C., Guidice, B., and Bibb, J. (2020). Evaluation of agricultural byproducts as amendments in bioretention systems for metal and nutrient removal. *Journal of Environmental Engineering*, 146: 04020029.

Poor, C.J., Dillon, H.E., Chabert, A., Bastida de Jesus, J. (2020). Design of a small scale hydrology experiment. *ASCE Journal of Civil Engineering Education*, 146: 04020002.

Poor, C. and Mohamed, M. (2020). Effect of Biochar on Metals and Nutrient Removal in Bioretention Systems. *Proceedings of the 2020 Environmental and Water Resources Institute World Environmental and Water Resources Congress: Water, Wastewater, and Stormwater and Water Desalination and Reuse*, p.73-83, Henderson, NV.

Poor, C., Burrill, K., and Jarvis, M. (2020). Efficiency of Constructed Wetlands for Nutrient Removal. P*roceedings of the 2020 Environmental and Water Resources Institute World Environmental and Water Resources Congress: Groundwater, Sustainability, Hydro-Climate/Climate Change, and Environmental Engineering*, p. 1-9, Henderson, NV.

Poor, C., Dillon, H., Welch, J., and Ralston, N. (2020). Implementation of Real-World Class Activities in an Introduction to Environmental Engineering Class. *Proceedings of the 2020 Annual Conference of the American Society of Engineering Education*, Paper ID #28779, Montreal, Quebec.

Beattie, A., Dillon, H., Poor, C., and Kenton, R. (2019). Solar water disinfection with parabolic and flat reflectors. *Journal of Water and Health*, 17: 921-929.

Poor, C.J., Chase, A., and Inan, M. (2019). Integrating Ethics Across the Civil Engineering Curriculum. *Proceedings of the 2019 PNW American Society of Engineering Education Conference,* Corvallis, OR, 2019.

Poor, C.J. and Kube, J. (2019). Variation in Nutrient and Metal Retention in Bioretention Systems with Mycorrhizae-Inoculated Soil. *Proceedings of the EWRI World Environmental and Water Resources Congress: Water, Wastewater, and Stormwater; Urban Water Resources; and Municipal Water Infrastructure*, p. 71-79, Pittsburgh, PA, 2019.

Poor, C.J., Conkle, K., MacDonald, A., and Duncan, K. (2019). Water treatment residuals in bioretention planters to reduce phosphorus levels in stormwater. *Environmental Engineering Science* 36: 265-272.

Poor, C., Balmes, C., Freudenthaler, M., Martinez, A. (2018). The role of mycelium in bioretention systems: evaluation of nutrient retention in mycorrhizae-inoculated mescocosms. *Journal of Environmental Engineering* 144: 04018034.

Okita, J., Poor, C., Kleiss, J., and Eckmann, T. (2018). Effect of green roof age on runoff water quality in Portland, Oregon. *Journal of Green Building* 13: 42-54.

Poor, C. and Wagner, D. (2017). Evaluation of soil mixes in shallow bioretention systems. *Proceedings of the EWRI World Environmental and Water Resources Congress*, Paper ID # 237461, Sacramento, CA, 2017.

Stahnke, C. and Poor, C. (2017). Implications of using different water sources when hydrologically compacting bioretention columns. *Water Environment Research* 89: 451-455.

Poor, C. and Miller, E. (2016). Hydrology experiment design: an open-ended lab to foster student engagement and critical thinking. *Proceedings of the 2016 Annual Conference of the American Society of Engineering Education*, Paper ID #14671, New Orleans, LA, 2016.

Freimund, M.R.J., Haselbach, L., Poor, C., and Thomas, A. (2015). Modified Media Filter Drain Mix with Alternate Aggregate Grading. *ASCE Construction Institute: Innovative Materials and Design for Sustainable Transportation Infrastructure*, 143-153.

Thomas, A.R.P., Haselbach, L., Poor, C., and Freimund, M.R.J. (2015). Long-term Performance of Media Filter Drains for Stormwater Management. *Sustainability* 7: 3721-3733.

Alam, A., Haselbach, L., Derooy, G., Poor, C., and Wolcott, M. (2014). Green Rating Integration Platform – A Decision Making Tool for Multi-Modal Facilities: Credit Harmonization and a Sustainable Water & Material Practices Case Study. *Journal of Green Building* 9: 161-173.

Brown, S., Easley, A., Montfort, D., Adam, J., Van Wie, B., Olusola, A., Poor, C., Tobin, C., and Flatt, A. (2014). The Effectiveness of a Physical Model Demonstrating Open Channel Concepts. *ASCE Journal of Professional Issues in Engineering Education and Practice* 140: 04014001.

Leisenring, M., Sahu, S., Poor, C., Zell, C., Mansell, S., and Venner, M. (2014). *NCHRP 25-25 Task 85 Nutrient (Nitrogen/Phosphorus) Management and Source Control*, prepared for the National Cooperative Highway Research Program.

Haselbach, L., Poor, C., and Tilson, J. (2014). Longterm Metal Sorption in Pervious Concrete with Ordinary Portland Cement and Fly Ash. *Pavement LCA Conference Proceedings*.

Thompson, M., Haselbach, L., and Poor, C. (2014). A Stormwater Treatment Strategy for Port Pavement Runoff. *Transportation Research Board 2014 Annual Meeting Compendium*.

Palmer, E.T., Poor, C.J., Hinman, C., and Stark, J.D. (2013). Nitrate and Phosphate Removal through an Enhanced Bioretention System: Mesocosms. *Water Environment Research* 85: 823-832.

Haselbach, L., Poor, C., and Tilson, J. (2013). Dissolved Zinc and Copper Retention from Stormwater Runoff in Ordinary Portland Cement Pervious Concrete. *Construction and Building Materials* 53: 652-657.

Brown, S.A., Montfort, D.B., and Poor, C.J. (2013). Collaboratively Developing Research-Based Curricular Materials to Improve Conceptual Understanding in Engineering Education. *Proceedings of the 2013 Annual Conference of the American Society of Engineering Education*, Paper ID #6177, Atlanta, GA.

Poor, C.J., and Brown, S. (2013). Increasing Retention of Women in Engineering at WSU: A Model for a Women's Mentoring Program. *College Student Jou*rnal 47: 421-428.

Thompson, M., Haselbach, L., Poor, C., and Wolcott, M. (2013). Integrating Green Rating Systems: A Case Study for Ferry Terminals. *Journal of Green Building* 8: 136-150.

Brown, S., and Poor, C. (2011). *Ranking Tasks for Mechanics of Materials*, Prentice Hall, Upper Saddle River, New Jersey.

Poor, C.J., and Ullman, J. (2010). Using Regression Tree Analysis to Improve Predictions of Low-Flow Nitrate and Chloride in Willamette River Basin Watersheds. *Environmental Management* 46: 771-780.

Brown, S. and Poor, C. (2010). In-Class Peer Tutoring: A Model for Engineering Instruction. *International Journal of Engineering Education* 26: 1111-1119.

Brown, S. and Poor, C. (2009). In-Class Peer Tutoring: A Cost Effective Model for Engineering Instruction. *Proceedings of the 2009 Annual Conference of the American Society of Engineering Education*, Austin, TX.

Yurt-Beyenal, N., Poor, C., Golter, P., Brown G., Thiessen, D., and Van Wie, B. (2009). Miniature Open Channel-Weir for the Standard Classroom, Implementation and Assessment. *Proceedings of the 2009 Annual Conference of the American Society of Engineering Education*, Austin, TX, 2009.

Poor, C.J., McDonnell, J.J., and Bolte, J. (2008). Testing the Hydrological Landscape Unit Classification System and Other Terrain Analysis Measures for Predicting Lowflow Nitrate and Chloride in Watersheds. *Environmental Management* 42: 877-893.

Poor, C.J. and McDonnell, J.J. (2007). The Effects of Land Use on Nitrate Dynamics. *Journal of Hydrology* 332: 54-68.

## CURRENT PROJECTS

**Oregon Community Foundation ($9,000):** Rehabilitation methods for reducing phosphorus export from existing green roofs and bioretention systems. 2019-2020. *Anonymous Donor*

## STUDENTS ADVISED

- Eric Palmer, thesis M.S. 5/2012, topic: Effects of soil amendments in bioretention cells for removing nutrients
- Marc La Vanway, coursework only M.S. 12/2012
- Evan Miller, project M.S. 3/2013, topic: Developing methods for increasing student exploratory learning during lab experiments
- Jerin Tilson, thesis M.S. 4/2013, topic: Evaluation of metals removal from stormwater in pervious pavement

- Dan Wagner, project M.S. 11/2013, topic: Evaluation of soil mix design and plant presence in bioretention cells for optimum metals removal
- Agathe Thomas, thesis M.S. 11/2013, topic: Evaluation of longevity of metals removal in media filter drains and proposed rehabilitation method
- Maxwell Freimund, thesis M.S. 11/2013, topic: Comparison of metals removal from two media filter mix specifications
- Undergraduate Students:
    - 2016: Ashley Martinez, Casey Balmes, Jarrett Okita, Jocelle Tade, Sean Gestson, Clayton Stahnke, Teresa Condon, Connor Mansberger, Antonia Molina, Michael Freudenthaler (Austrian Exchange Student, Marshall Fellowship)
    - 2017: Jocelle Tade, Connor Mansberger, Antonia Molina, Jenna Kube, Katie Conkle, Sadie Schroeter, Mustaf Mohamed, Abby Chase, Sam Schwisow, Lesley Martinez
    - 2018: Lesley Martinez, Mustaf Mohamed, Natalie Muth, Camille Morgan, Mason Jarvis, Audrey Beattie, Kyla Burrill
    - 2019: Kyla Burrill, Mason Jarvis, Rachel Anderson, Davey Robeck
    - 2020: Taylor Marumoto, Nick Kanno, Jared Miyasato, Troy Membrere