

Jennifer L. Demchak

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PRESENT POSITION

Geosciences Department Chair, Mansfield University of Pennsylvania (2014-present)

- Manage the department in a manner that promotes positive and productive relationships between colleagues, students, and staff
- Demonstrate a willingness to examine and implement change necessary to produce efficient and effective systems to increase student success
- Advise and mentor students in class choice, research, and career decisions
- Manage budget, facilities, curriculum review, assessment in TracDat, evaluations, and reports to promote success of the department

EDUCATION

West Virginia University—Ph.D. Plant and Soil Science, December 2005

Emphasis: “Water Quality Changes of Underground Mines in Northern West Virginia”
Dissertation investigated the long term trends of acid mine drainage from underground mines in the Cheat River Basin. The data set consisted of water analysis conducted in the 1960s and data that was collected in the summers of 1999 and 2000. Changes over time, natural attenuation rates, and relationships of precipitation events and flow rates to chemistry were investigated.

Advisor: Dr. Jeff Skousen

Clarion University--M.S, May 1998

Emphasis: “Analysis of Vertical Flow Wetlands in the Treatment of Acid Mine Drainage”
Thesis investigated the study of passive treatment for acid mine drainage through biological and inorganic processes. The study investigated treatment system construction designs and determined system effectiveness. The study developed new water sampling techniques and a new means of evaluating reduction/oxidation within organic media.

Advisor: Dr. Terry Morrow

University of Pittsburgh at Johnstown—B.S. Biology, May 1996

PROFESSIONAL EXPERIENCE

NMBS Environmental, President/Senior Specialist (2002 – present)

Began environmental consulting company with a focus on watershed management. Perform watershed assessments, develop restoration plans, and design/install passive treatment systems to mitigate mine drainage discharges. Complete state and federal permits (NPDES, Joint Wetland Permits, E&S Plans, etc). Perform wetland delineations. Complete RFP and bid proposals. Worked in partnership with the PADEP and SRBC on the development of TMDLs. Write grants for funding of various projects (securing over \$4.5 million dollars for clients). Responsible for all aspects of the business and compiling teams of experts to successfully complete projects along with managing employees and summer interns.

TEACHING EXPERIENCE

Associate Professor, Mansfield University of Pennsylvania (2007 – present, tenured and promoted in the summer of 2012)

Presently teaching undergraduate courses in:

<i>Environmental Geology</i>	<i>Introduction to Watershed Management</i>
<i>Watershed Restoration</i>	<i>Wetland ID</i>
<i>Watershed Policy and Ethics</i>	<i>Introduction to Soils</i>
<i>GIS/GPS</i>	<i>Hydrology</i>
<i>Introduction to Regional Planning</i>	<i>Environmental Permitting</i>
<i>Watershed Systems</i>	<i>Environmental Issues</i>
<i>First Year Seminar</i>	<i>Geography of PA</i>

Adjunct Professor, Penn State University at Altoona (2002 – 2006)

Taught undergraduate courses in:

<i>Environmental Studies</i>	<i>Environmental Chemistry</i>
<i>Introduction to Soils</i>	

Adjunct, Fairmont State University (2000 – 2001)

Taught undergraduate courses in:

<i>Biology I with Lab</i>	<i>Biology II with Lab</i>
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Teaching Assistant, West Virginia University (1998 –2001)

Introduction to Soils with Lab

Teaching Assistant, Clarion University (1996 –1998)

Introduction to Biology Lab, Genetics Lab, Microbiology Lab

RESEARCH INTERESTS

Watershed impacts from acid mine drainage, along with designing mitigation techniques.

Watershed investigation and protection throughout Pennsylvania.

Working on securing sole source contract with MU and PennDot for wetland mitigation work.

Investigating impact of resource extraction on water quality and benthic organisms.

Investigating removal of sediment and nutrient loads using agricultural BMP's.

Researching watershed and environmental policy and how that is being implemented in the field.

RESEARCH EXPERIENCE

Professor, Mansfield University of Pennsylvania (2007-present)

- Continued involvement in NMBS conducting watershed assessments, developing restoration plans and designing/installing passive treatment systems to mitigate AMD.
- Conducted a study with a faculty member from Biology, DCNR and 10 students on the water quality, the chlorophyll and phytoplankton levels in Lyman Run Lake after a new dam was constructed.
- Conducted a study with Trout Unlimited and 8 students on the temperature impact of receiving streams from passive treatment systems.
- Conducted research on impact of Marcellus gas drilling on EV/HQ streams on State Forest Land, completed a 5-year study with 2 students.
- Conducted research on nutrient management from agriculture and urban environments with numerous students.
- Conducted and presented a research project using iron oxidizing microbes to treat mine drainage discharges with limited space with a student.

Research Assistant, West Virginia University (1998-2001)

- Conducted experiments related to soil chemistry from abandoned mine sites.
- Conducted research on the use of anhydrous ammonia in the treatment of acid mine drainage, both field sampling and laboratory experiments.
- Conducted research on limestone columns to determine the most efficient particle size and limestone coating rates.
- Conducted research on dissertation topic as described above.

PROFESSIONAL SERVICE

- Geosciences Department Chair, 2014-present
- 2017 Statewide Envirothon Judge
- 2017 Advance Placement Syllabi Course Audit Consultant
- Chair of Tenure Committee, 2016-present
- Faculty Senate Secretary, past
- Treasurer of President's Commission for Women, past
- President First Year Committee, past and newly appointed 2018
- Member Student Affairs Committee, past
- Member Academic Affairs Committee, past
- Served on Senate, past
- Chair of three department Search Committees
- Hosted a Wind farm and Marcellus Shale Conference at Mansfield University
- Member of the Borough of Mansfield Source Water Protection Steering Committee
- Susquehanna River Heartland Coalition member
- Participates in the Tioga County Leadership program as a presenter of watersheds and wetlands, yearly 2015 to present
- Attended the 2008, 2013, 2015 West Branch of the Susquehanna Symposium and the Abandoned Mine Drainage Conference hosted by EPCAMR and WPCAMR with two students
- Attended the 2007, 2009, and 2011, 2013, 2015 Coldwater Heritage Conference with approximately 10 students each time

HONORS AND AWARDS

- Submitted PASHHE State Wide grant for development of afterschool STEM programming, \$10,000, 2019
- Submitted Shell Grant for \$30,000 to develop a 6-day summer camp for teachers and 9-12th graders for the development of MWEE's, 2019
- Submitted and received a Faculty Development Grant for the development of two workshops for STSD enrichment students, \$800, 2018
- Submitted and received PASmart Grant for development of CS/STEM "suitcases" into BLaST IU-17 schools, \$277,000, 2018
- Submitted and received a Faculty Development Grant for student research on using iron oxidizers to treat mine drainage, 2015-2016, and 2016-2017.
- Submitted and received grants for 4 summer camps in 2013, 2014, 2015 2016, and 2017 for high school students to attend Geosciences camp. Acting as Camp Director—Shell Grant
- Submitted and received a 2012 PA Growing Greener Education grant for Marcellus Shale Education for Teachers
- Received a Mentor Award through First Year Experience Committee in Spring 2010
- Nominated as an Outstanding First Year Instructor in Spring 2009
- Submitted and received \$2,000 of technology monies at Mansfield University to purchase temperature sensors and other equipment for Trout Unlimited study in 2011.
- Submitted and received \$11,500 equipment funding request at Mansfield University for test kits and water sampling equipment in 2011.

- Submitted and received a PA Growing Greener Education Grant Track CEO-O in the amount of \$6,500 for the development of a watershed assessment workshop for teachers in 2009.
- Submitted and received a Faculty Development grant for faculty/student travel to attend two mine drainage related conferences in the summer of 2008.
- Submitted and received a PA Growing Greener Grant Track CEO-O with faculty from the Biology Department in the amount of \$3,500 for the development of middle school curriculum on mine drainage in 2008.
- Submitted and received a PA Growing Greener Education Grant Track CEO-O in the amount of \$14,935.00 for the development of a watershed management workshop for teachers in 2007.
- Numerous Growing Greener grants submitted and received for watershed projects under NMBS. Over \$4.5 million dollars secured for clients since 2002.

PUBLICATIONS

Demchak, J.L. , J, Kagle and A. Putt. In Process. The Use of Iron Oxiding Bacteria to Treat Mine Drainage Discharges in Limited Space.

Demchak, J.L. and S. Rummel. In Process. Temperature Impacts on Brook Trout Streams from Passive Treatment Systems.

Break in publications was during balancing of consulting and teaching, so professional development was doing consulting work which including watershed assessment work, development of restoration plans and designing of passive treatment systems for AMD treatment remediation. Since 2014, shift to academics since becoming Geosciences Chair and only doing subcontract work, rarely. You can see increase in development of student research with temperature study and iron oxidizing bacteria, along with acting as advisor on many student research projects.

Demchak, J.L, D. Dusza, and M. Merrow. Reclamation of SGL-321 using Biosolids. Reclamation Matters, Spring 2011.

Skousen, J. L. McDonald, J. Demchak, and B. Mack. 2006. Water quality from above-drainage underground mines over a 40-year period. p. 2044-2054. In: Proceedings, 2006 American Society of Mining and Reclamation, March 26-30, 2006, St. Louis, MO.

Demchak, J., J. Skousen, and L.M. McDonald. 2004. Longevity of acid discharges from underground mines located above the regional water table. J. Environ. Qual. 33: 656-668.

Demchak, J., J. Skousen, and L. McDonald. 2002. Water quality from underground coal mines in northern West Virginia (1968-2000). p. 17-29. In: Proceedings, West Virginia Surface Mine Drainage Task Force, April 16-17, 2002, Morgantown, WV. Also published in the National Association of Abandoned Mine Land Reclamation, September 15-19, 2002, Park City, UT.

Demchak, J., T. Morrow, and J. Skousen. 2001. Treatment of acid mine drainage by vertical flow wetlands in Pennsylvania. Geochemistry: Exploration, Environment, Analysis 2:71-80.

Demchak, J., J. Skousen, and L. McDonald. 2001. Water quality improvements over time and longevity of acid mine discharges from underground mines in northern West Virginia. p. 174-182. In: Proceedings, 18th Annual Meeting, American Society for Surface Mining and Reclamation, 2-7 June, 2001, Albuquerque, NM.

Demchak, J., J. Skousen, G. Bryant, and P. Ziemkiewicz. 2000. Comparison of water quality from fifteen underground coal mines in 1968 and 1999. p. 1045-1052. In: Proceedings, International Conference on Acid Rock Drainage. 21-24 May, 2000. Denver, CO. Similar paper published in the 21st West Virginia Surface Mine Drainage Task Force Symposium, 3-4 April, 2000, Morgantown, WV.

Poster Presentations

2019—Abstract accepted for presentation at PAEE on collaborations of Higher Ed and K-12, March 2019, Philadelphia

2017 MU Student Showcase—Student Research

- Designing Recreational Trail Maps, Andrew Leidich and Jennifer Demchak.
- Ice Nucleation Active Bacteria, Christian Verrastro and Jennifer Demchak.
- Safety Professionals and the Reduction of Carbon Dioxide Levels from Industry, Alicia Gerg and Jennifer Demchak.
- A Determination of Struggling Osprey Populations in Tioga County, PA, David Bisher and Jennifer Demchak.
- Swine Feces Spreading and the Nitrification of Local Waterways, Jamie Brown and Jennifer Demchak.
- High Salinity Levels in Seneca Lake, NY, Taylor Hersh and Jennifer Demchak.
- Agricultural Impacts on the Tioga River, Casey Pearce and Jennifer Demchak.
- How Tourist Numbers Impact Water Quality at Watkins Glenn State Park. Spencer Zuraski and Jennifer Demchak.
- Wastewater Treatment of Pharmaceuticals. Janie Ghods and Jennifer Demchak.

2016 MU Student Showcase—Student Research

- Media-facilitated Bioreactors for Iron Reduction in Acid Mine Drainage. Andrew Putt, Jeanne Kagle and Jennifer Demchak.

2016 Eighth Annual West Branch Susquehanna Restoration Symposium, State College, PA

- Media-facilitated Bioreactors for Iron Reduction in Acid Mine Drainage. Andrew Putt, Jeanne Kagle and Jennifer Demchak.

2010 Fifth Annual West Branch Susquehanna Restoration Symposium, Williamsport, PA

- Analysis of water quality and benthic changes in the West Branch of the Susquehanna from 1984 to 2009. Josh Glace, Shauna Stoll, and Jennifer Demchak.

NMBS PROJECTS/ADDITIONAL FIELD WORK (2007-2014)

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Restoration Plans/Published Documents

- Emigh Run Watershed
- Loop Run Watershed
- Morgan Run Watershed
- Trout Run Watershed
- Moshannon Creek Phase I (headwaters to Bear Run)
- Shimel Run Watershed
- Moshannon Creek Phase II (Bear Run to Trout Run)
- Muddy Run Watershed
- Deer Creek Watershed

Design, Permitting, and Construction Projects

- Morgan Run 7
- Morgan Run 8
- Morgan Run ROSS
- Montgomery Run 52A
- Montgomery Run 40, 41, 42
- Dimeling
- Montgomery Run 30
- Morgan Run TUFF
- Morgan Run FROG
- Morgan Run ROSS

Other Projects:

- Moshannon Creek Data Clearinghouse
- KORB Project on Anderson Creek
- Highwall Reclamation on the Kelley Estate
- Morgan Run TUFF Mitigation Wetlands
- Reading Landfill Wetland Design