

Biographical Sketch Robert W. Nairn

a. Professional Preparation

Juniata College, Huntingdon, PA	Environmental Science	B.S., 1989
The Ohio State University, Columbus, OH	Environmental Science	Ph.D., 1996

b. Appointments

2013-2014	Visiting Research Scientist (sabbatical), Grand River Dam Authority, Langley, OK
2012-present	Professor of Civil Engineering and Environmental Science, Viersen Family Foundation Presidential Professor (2014), David L. Boren Professor (2017), University of Oklahoma, Norman, OK
2011-present	Adjunct Associate and Full (2012) Professor, Department of Biology
2007-present	Associate Director, Water Technologies for Emerging Regions (WaTER) Center
2004-present	Director, Center for Restoration of Ecosystems and Watersheds (CREW)
2004-present	Associate, Aquatic Research Facility, and Ecology and Evolutionary Biology
2002-2012	Associate Professor (2002), Engineering and Environmental Science, University of Oklahoma, Norman, OK
1999-present	Summer Teaching Faculty, University of Oklahoma Biological Station
1997-2002	Assistant Professor, Engineering and Environmental Science, University of Oklahoma, Norman, OK
1995-1996	Presidential Fellow, The Ohio State University, Columbus, OH
1992-1995	Graduate Research and Teaching Associate, The Ohio State University, Columbus, OH
1989-1992	Research Biologist, U.S. Department of Interior, Bureau of Mines, Pittsburgh, PA

c. Products

(i) Closely related to the proposed project (*indicates student author)

- Garrido, A.E.*, W.H. Strosnider*, R. Taylor Wilson, J. Condori* and R.W. Nairn. 2017. Metal-Contaminated Potato Crops and Potential Human Health Risk in Bolivian Mining Highlands. *Environmental Geochemistry and Health*. 39(3): 681-700. doi:10.1007/s10653-017-9943-4.
- LaBar, J.A.* and R.W. Nairn. 2016. Evaluating the impacts of Na-SO₄ dominated ionic strength on trace metal removal products in vertical flow bioreactors. *Applied Geochemistry* 73(2016):24-34. doi:10.1007/s10230-017-0446-4.
- Penn, C., J. Bowen*, J. McGrath*, R. Nairn, G. Fox, G. Brown, S. Wilson* and C. Gill*. 2016. Evaluation of a universal flow-through model for predicting and designing phosphorus removal structures. *Chemosphere* 15: 345-355. doi.org/10.1016/j.chemosphere.2016.02.105
- Peer, R.A.*, J.A. LaBar*, B.K. Winfrey*, R.W. Nairn, F.S. Llanos Lopez and W.H. Strosnider*. 2015. Removal of Less Commonly Addressed Metals via Passive Co-Treatment. *Journal of Environmental Quality* 44(2): 704-710. doi: 10.2134/jeq2014.08.0338
- Andrews, W.J.*, C.J. Gavilan Moreno and R.W. Nairn. 2013. Potential Recovery of Aluminum, Titanium, Lead and Zinc from Tailings in the Abandoned Picher Mining District of Oklahoma. *Mineral Economics* 26: 61-69. doi:10.1007/s13563-013-0031-7.

(ii) Other significant products (*indicates student author)

- LaBar, J.A.* and R.W. Nairn. 2017. Evaluation of the impact of Na-SO₄ dominated ionic strength on effluent water quality in bench-scale vertical flow bioreactors using spent mushroom compost. *Mine Water and the Environment*. doi:10.1007/s10230-017-0446-4.
- Skousen, J., C.E. Zipper, A. Rose, P. Ziemkiewicz, R. Nairn and L.M. McDonald. 2017. Review of Passive Systems for Acid Mine Drainage Treatment. *Mine Water and the Environment* 36:133-153. doi:10.1007/s10230-016-0417-1.

- Winfrey, B.K.*, R.W. Nairn, D.R. Tilley and W.H. Strosnider*. 2015. Emergy and Carbon Footprint Analysis of the Construction of Passive and Active Treatment Systems for Net Alkaline Mine Drainage. *Mine Water and the Environment* 34: 31-41. doi:10.1007/s10230-014-0304-6.
- Santamaria, B.*, W.H.J. Strosnider*, M.R. Apaza Quispe* and R.W. Nairn. 2014. Evaluating Locally Available Organic Substrates for Vertical Flow Passive Treatment Cells at Cerro Rico de Potosí, Bolivia. *Environmental Earth Sciences* 72: 731-741. doi.org/10.1007/s12665-013-2997-4
- Amezaga, J.M., T.S. Roetting, P.L. Younger, R.W. Nairn, A-J. Noles, R. Oyarzún, and J. Quintanilla. 2011. A Rich Vein? Mining and the Pursuit of Sustainability. *Environmental Science and Technology* 45(1): 21-26. doi:10.1021/es101430e

d. Synergistic Activities

1. **Research leadership:** Director, Center for Restoration of Ecosystems and Watersheds, emphasizing watershed biogeochemistry and ecological engineering, passive treatment of metals-contaminated mine waters, urban storm water low impact development, municipal wastewater indirect potable reuse, watershed management and restoration, highlighting remediation and restoration of the Tar Creek Superfund Site, Tri-State Lead-Zinc Mining District and Grand Lake o’ the Cherokees watershed; Associate Director, Water Technologies for Emerging Regions Center, research and service learning to bring water and sanitation to developing world; chair of biennial OU International WaTER Conference; assist with other activities, including educational programs, Water Symposium and research and development work, especially in South America and in rural North America (2004-present)
2. **Technology innovation:** Design, construction and holistic evaluation of ecologically engineered, full-scale metals-contaminated mine drainage passive treatment systems, including first two mine water treatment systems of any kind in the historic derelict Tri-State Lead-Zinc Mining District, in which impacts to surface and ground waters were deemed to be due to “irreversible man-made damages”; multidisciplinary research includes geochemical, hydrologic, microbiological and ecological assessments of system performance with emphasis on recovery of receiving water bodies; also similar technology development on six abandoned coal mine sites in the Arkoma Basin and at mixed precious/base mining sites in the southern Bolivian Altiplano (1997-present)
3. **International collaboration:** Established international partnership with La Universidad Autónoma Tomás Frías (UATF) and El Centro de Investigacion Minero Ambiental (CIMA) in Potosi, Bolivia; two formal agreements to bring sustainable treatment technologies to water pollution problems in one of the poorest nations in the Western Hemisphere (2011-present)
4. **Promotion of underrepresented groups in STEM:** Of 124 research mentees (including six post-doctoral researchers, staff research scientists and visiting scholars, 50 graduate students and 68 undergraduate researchers, 60% are/were female and at least 28% are/were members of underrepresented groups in STEM fields; of 10 PhD students, four are/were female and three are/were members of underrepresented groups in STEM fields.
5. **Professional and community service:** President, American Society of Mining and Reclamation, 2012-15: President-Elect, President and Past-President for 400+ member professional society focused on reclamation of disturbed lands and waters; local host of 2014 National Conference; Community service: Norman Storm Water Master Plan Task Force (2011-present); Cr(VI) in Drinking Water Technical Advisory Committee (2011-present); Kessler Atmospheric and Ecological Field Station Steering Committee (2012-present); Engineers-in-Action Executive Board (2008-present) and President (2017); Watershed Restoration Inc., President (2004-present).