West Texas A&M University ™

Nathan Howell, Ph.D.
Assistant Professor of
Environmental Engineering

Research Areas and Expertise
Persistent Organic Pollutant
Chemical Analysis
Environmental Chemistry,
Modeling, Statistics, and
Geographic Information
Systems (GIS)
Civil Engineering

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Environmental Engineering

Wind Turbine Research Interest
Dr. Howell is interested in the determination of virtual savings for wind turbines such as carbon footprint, water footprint, emissions avoided, carbon equivalent, environmental impact, and transportation savings. He has capabilities in areas of chemical analysis of solvents, lubricants, or water, which may be involved in wind energy applications. He also has expertise in spatial sciences for use of data like topography, wind, climate, and soil which may be important to the choice of optimal location for wind turbines. Finally, he has experience in environmental systems and systems thinking in general, and he would be able to model system level behaviors in a turbine farm or in systems to which a turbine farm is connected.

Professional Profile
Dr. Howell joined the School of Engineering, Computer Science, and Mathematics in 2013. He received a B.S. in Chemical Engineering with High Honors in 2004 from the University of Texas at Austin. He practiced for two years in environmental consulting related to groundwater pollution and environmental litigation before returning to graduate school. He earned a Ph.D. in Environmental Engineering in 2012 from the University of Houston where his research was primarily focused on measuring and modeling the environmental, sediment-mediated fate-and-transport of persistent organic pollutants in urban storm water and estuaries.

Academic Research
Dr. Howell currently performs research in persistent organic pollutant fate-and-transport in surface water and sediment through environmental modeling in collaboration with other experts in sediment transport and environmental sampling. He is also interested in applying water quality and modeling expertise to understand the possible value and use of deep groundwater to alleviate water stress in arid and semi-arid environments. Dr. Howell teaches environmental and civil engineering courses, especially those that relate to environmental chemistry, modeling, statistics, and geographic information systems (GIS). He looks forward to the continued evolution of the undergraduate program in environmental engineering including the exposure of all WTAMU engineers to environmental topics.

Education
- B.S., University of Texas at Austin, Chemical Engineering, 2004
- Ph.D., University of Houston, Environmental Engineering, 2012

Publications
Howell, N.L., Rifai, H.S., 2016. PCDD/F and PCB water column partitioning examination using natural organic matter and black carbon partition coefficient models. *Environmental Science and Pollution Research* 23, 6322-33.

Howell, N.L., Rifai, H.S., 2015. Longitudinal estimates of sediment-water diffusive flux of PCB congeners in the Houston Ship Channel. *Estuarine, Coastal and Shelf Science* 164, 19-27.

Balasubramani, A., Howell, N.L., Rifai, H.S., 2014. Polychlorinated biphenyls (PCBs) in industrial and municipal effluents: concentrations, congener profiles, and partitioning onto particulates and organic carbon. *Science of the Total Environment* 473-4, 702-713.