

William I Ford III, PhD

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Biosystems and Agricultural Engineering
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CURRENT POSITION

Assistant Professor, Biosystems and Agricultural Engineering, University of Kentucky, Lexington, KY. January 2017-Present. Current DOE: 80% research, 15% teaching, and 5% service.

EDUCATION

PhD. Civil Engineering, University of Kentucky, Lexington, KY, August, 2014. Advisor: James F Fox, Dissertation: "Control of the Surficial Fine-Grained Laminae upon Stream Carbon and Nitrogen Cycles"

M.S. Civil Engineering, University of Kentucky, Lexington, KY, Dec, 2011. Advisor: James F. Fox, Thesis: "Particulate Organic Carbon Fate and Transport in a Lowland, Temperate Watershed"

B.S. Civil Engineering, University of Kentucky, Lexington, KY, May, 2010.

LICENSURE & CERTIFICATION

1. **Stream and Watershed Science Certificate**, University of Kentucky (May, 2013)
2. **Engineer-In-Training**, State of Kentucky (December 2010)

PROFESSIONAL EXPERIENCE

Assistant Professor, Division of Engineering, Marshall University, Huntington, WV. August 2015-December 2016. Supervisor: Dr. Asad Salem, Ph.D.

Post-doctoral Research Engineer, USDA-ARS, Columbus, OH. June 2014-July 2015. Supervisor: Dr. Kevin King, Ph.D.

Graduate Research Assistant, Civil Engineering, University of Kentucky, Lexington, KY. May 2010-June 2014. Supervisor: Dr. James Fox.

Undergraduate Research Assistant, Civil Engineering, University of Kentucky, Lexington, KY. October 2008-May 2010. Supervisor: Dr. James Fox.

PEER-REVIEWED PUBLICATIONS***Published***

1. **Ford, W.I.**, King, K., Williams, M., Confesor, R. 2017. Modified APEX model for simulating macropore phosphorus contributions to tile drains. *Journal of Environmental Quality*, *In Press*, DOI: 10.2134/jeq2016.06.0218.
2. **Ford, W.I.**, Fox, J. 2017. Stabilization of benthic algal biomass in streams draining agroecosystems. *Water Research*, 108: 432-443, DOI: 10.1016/j.watres.2016.11.026.
3. Fox, J.F., **Ford, W.I.** 2016. Impact of landscape disturbance on the quality of terrestrial sediment carbon in temperate streams. *Journal of Hydrology*, 540: 1030-1042, DOI: 10.1016/j.jhydrol.2016.07.016.
4. Williams, M.R., King, K., **Ford, W.I.**, Buda, A., Kennedy, C. 2016. Effect of tillage on macropore flow and phosphorus transport to tile drains. *Water Resources Research*, 52, DOI:10.1002/2015WR017650.
5. Williams, M.R., King, K.W., **Ford, W.I.**, Fausey, N.R. 2016. Edge-of-field research to quantify the impacts of agricultural practices on water quality in Ohio. *Journal of Soil and Water Conservation*, 71(1): 9A-12A.
6. **Ford, W.I.**, King, K., Williams, M., Williams, J., Fausey, N. 2015. Sensitivity analysis of the Agricultural Policy Environmental eXtender (APEX) for Phosphorus loads in tile-drained landscapes. *Journal of Environmental Quality*, 44:1099-1110.
7. **Ford, W.I.**, Fox, J.F. 2015. Isotope-based Fluvial Organic Carbon (ISOFLC) Model: Model Formulation, Sensitivity and Evaluation. *Water Resources Research*, 51(6): 4046-4064.
8. **Ford, W.I.**, Fox, J.F., Pollock, E., Rowe, H.D., Chakraborty, S. 2015. Testing assumptions for nitrogen transformation in a low-gradient agricultural stream. *Journal of Hydrology*, 527: 908-922.
9. Williams, M.R., King, K.W., Macrae, M.L., **Ford, W.I.**, Van Esbroeck, C., Brunke, R.I., English, M., and Schiff, S.L. 2015. Uncertainty in nutrient loads from tile drained landscapes: Effect of sample frequency, calculation algorithm, and compositing strategy. *Journal of Hydrology*, 530: 306-316.
10. **Ford, W.I.**, Fox, J.F., Rowe, H. 2014. Impact of extreme hydrologic disturbances upon fine sediment carbon quality using stable isotopes. *Ecohydrology*, DOI: 10.1002/eco.1514.
11. **Ford, W.I.**, Fox, J.F. 2014. Benthic control on the statistical distribution of transported sediment carbon in a low-gradient stream. *Journal of Hydrology*, 515: 316-329.
12. Fox, J. F., **Ford, W. I.**, Strom, K.B., Villarini, G., and Meehan, M. 2014. Benthic control upon the morphology of transported fine sediments in a low-gradient stream. *Hydrological Processes*.

13. **Ford, W.I.**, Fox, J.F. 2014. Model of particulate organic carbon transport in an agriculturally impacted stream. *Hydrological Processes*, 28(3): 662-675.

Submitted

1. **Ford, W.I.**, Fox, J.F., Pollock, E. 2017. Role of algal nitrogen dynamics in agroecosystems: Modeling equifinality reduction and fluxes using TRANSFER. *Water Resources Research (Submitted Feb 17, 2017)*
2. Husic, A., Fox, J.F., Agouridis, C., Currens, J., **Ford, W.I.**, Taylor, C. 2017. Sediment carbon source, fate, and transport in a fluviokarst watershed (Part 1): Conceptual model development. *Journal of Hydrology*, Revised resubmittal.
3. Husic, A., Fox, J.F., **Ford, W.I.**, Agouridis, C., Currens, J., Taylor, C. 2017. Sediment carbon source, fate, and transport in a fluviokarst watershed (Part 2): Numerical model development and application. *Journal of Hydrology*, Revised resubmittal.

In Preparation

1. **Ford, W.I.**, King, K. Effects of Watershed Characteristics on Temporal Trends of Dissolved Nutrients In Low-Gradient Agricultural Streams (working title), *Planned Submission: June 2017*

RESEARCH FUNDING

Active Grants (\$3,839,645)

1. ¹White, D., **Ford, W.I.**, Fox, J.F., Kovatch, J., Hendricks, S. Sensing and educating the nexus to sustain ecosystems (SENSE). A Kentucky and West Virginia Partnership. \$3,837,645, NSF RII Track-2 FEC. Role: Co-Investigator (Lead PI for WV while at Marshall) managing scope account of \$376,361 at UK. August 1, 2016 to July 31, 2020.
2. ³Shaffer, W., **Ford, W.I.** Fourpole creek watershed nutrient characterization. Marshall University NASA Space Grant. \$500 with \$500 match (\$1000 total). Role: Student research advisor. January 2017-May 2017.
3. ³Hampton, T., **Ford, W.I.** Sediment source in the Fourpole Creek Watershed. Marshall University NASA Space Grant. \$500 with \$500 match (\$1000 total). Role: Student research advisor. January 2017-May 2017.

Pending Grants (\$311,578)

1. ¹**Ford, W.I.** RII-Track 4: Building infrastructure for phosphorus research in karst landscapes: Collaboration with the U.S. Geological Survey-Menlo Park Laboratory. \$226,578, NSF EPSCoR RII Track 4. Role: Principal Investigator. Submitted February, 2017.
2. ³Shi, J; Adediji, A., **Ford, W.I.** Acquisition of a digital PCR to enable food-energy-water related research, teaching and extension. Office of the Vice President for Research

(VPR) Equipment Competition. \$35,000 with \$15,000 match from PI's. Role: Co-PI. Submitted February, 2017

3. ²**Ford, W.I.** Advancing technology for fluvial N budget assessment: Measurement and simulation of nitrate adsorption to sediments. \$50,000, KSEF. Role: Principal Investigator. Submitted January, 2017.

Completed Grants (\$2000)

1. ³**Ford, W.I.** Improvement of the TRANSFER Model to Simulate Fluvial Nitrogen Budgets. \$2000, Marshall Summer Research Award. Role: Principal Investigator. May-August 2016.

Non-awarded Grants (\$510,000)

1. ²**Ford, W.I.** 2016. Pilot Assessment of Carbon and Nitrogen Dynamics in Steep-gradient Disturbed Watersheds. \$10,000 with \$10,000 institutional cost-share, NASA WV space grant consortium (Not Funded). Role: Principal Investigator. Submitted February 29th, 2016
2. ¹Fox, J.F, Agouridis, C., Wang, Y. 2015. TRANSFER Model to Optimize Nitrogen Removal in Agricultural Streams. \$500,000, USDA-NIFA-AFRI-004412 (Not Funded). Role: Senior Personnel.

*Student advisees,¹Federal, ² State, ³ Local/University, ⁴ Industry

CONFERENCE PROCEEDINGS AND PRESENTATIONS

1. **Ford, W.I.**, Fox, J.F., Pollock, E. Fate and transport of nitrate in agroecosystem streams: Model assessment of the South Elkhorn Watershed. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 21-25, 2017, Sacramento, CA (Submitted abstract).
2. **Ford, W.I.**, Fox, J.F. Husic, A. Role of non-conservative sediment stable isotope tracers in watershed modeling. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 21-25, 2017, Sacramento, CA (Submitted abstract).
3. Husic, A., Fox, J.F., **Ford, W.I.**, Agouridis, C., Currens, J., Taylor, C., Workman, S. Investigating Sediment and Nitrate Dynamics using Stable Isotope Sediment Tracing and Numerical Modeling in a Fluviokarst Watershed. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 21-25, 2017, Sacramento, CA (Submitted abstract).
4. Husic, A., Fox, J., **Ford, W.**, Agouridis, C., Currens, J., Taylor, C. Sediment nitrogen and nitrate dynamics of a fluviokarst system in the bluegrass region: isotopic and numerical modeling investigation. Poster presentation at the Kentucky Water Resources Research Institute Annual Symposium, March 20, 2017, Lexington, KY.
5. Hendricks, S., Armstead, M., **Ford, W.**, Fox, J., White, D. Sensing and educating the nexus to sustain ecosystems (**SENSE**): a Kentucky-West Virginia partnership. Poster presentation at the

Kentucky Water Resources Research Institute Annual Symposium, March 20, 2017, Lexington, KY.

6. Kovatch, J., **Ford, W.I.** Sensing and educating the nexus to sustain ecosystems: An overview of the Kentucky-West Virginia partnership project in the Ohio River. Ohio River Basin Consortium for Research and Education (ORBCRE). September 28th, 2016. Youngstown, OH.
7. **Ford, W.I.**, Fox, J.F. Assessment of TRANSFER for simulating the fluvial nitrogen budget in a low-gradient autotrophic stream. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 22-26, 2016, West Palm Beach, FL.
8. **Ford, W.I.**, Fox, J.F. Quantifying the fate of benthic algal biomass in a low-gradient agricultural watershed. Ohio River Basin Consortium for Research and Education, October 11-13, 2015, Northern Kentucky University.
9. **Ford, W.I.**, King, K., Williams, M., Confesor, R. Development and application of a macropore model for APEX 0806. ASABE Annual International Meeting, July 26-29, 2015, New Orleans, LA.
10. King, K., Williams, M., **Ford, W.I.**, Quantifying the impacts of agricultural management on water quality: Edge-of-field monitoring and modeling. Mississippi River/Gulf of Mexico Hypoxia Task Force. 28th Meeting, May 20-21, 2015, Columbus Ohio.
11. Husic, A., Fox, J., Agouridis, C., Currens, J., Workman, S., **Ford, W.I.**, Taylor, C. Sediment organic carbon fate and transport mechanisms in a fluvial karst system in the bluegrass region. Oral presentation at the Kentucky Water Resources Annual Symposium, March, 2015, Lexington, KY.
12. Husic, A., Fox, J.F., Agouridis, C., Currens, J., Workman, S., **Ford, W.I.**, Taylor, C. Sediment organic carbon fate and transport mechanisms in a fluvial karst system. Posters at the capitol, March, 2015, Frankfort, KY.
13. Fox, J.F., **Ford, W.I.** (Presenter). Long-term Trends in Particulate Organic Carbon from a Low-Gradient, Autotrophic Watershed, Presentation at the AGU Fall Meeting, December 15-19, 2014, San Francisco, CA.
14. **Ford, W.I.**, King, K., Williams, W. Simulating Sustainable P Management Practices in Tile-Drained Landscapes of Central Ohio using the Agricultural Policy Environmental eXtender (APEX). Presentation at the AGU Fall Meeting, December 15-19, 2014, San Francisco, CA.
15. **Ford, W.I.**, Fox, J.F. SFGL control on watershed sediment transport processes in lowland, temperate watersheds. Oral presentation at the World Environmental & Water Resources Congress, ASCE, June 1-5, 2014, Portland, Oregon.

16. **Ford, W.I.**, Fox, J.F. Watershed-scale stable isotope simulation of the fluvial organic carbon budget using ISOFLOC. Oral presentation at the Kentucky Water Resources Research Institute Annual Symposium, March 10, 2014, Lexington, KY.
17. **Ford, W.**, Fox, J. (presenting author), Adams, R., Agouridis, C., Brion, G. Environmental sustainability of stream using TRANSFER. Kentucky Innovation and Entrepreneurship Conference, August 29, 2013, Lexington, KY.
18. **Ford, W.I.**, Fox, J.F. Model of nitrogen source allocations and transformations using stable nitrogen isotopes. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 19-23, 2013, Cincinnati, Ohio.
19. **Ford, W.I.**, Fox, J.F. Use of water quality model uncertainty analysis to develop sampling design criteria for in-stream carbon. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 19-23, 2013, Cincinnati, Ohio.
20. **Ford, W.I.**, Fox, J.F. New metric for quality of carbon associated with fine sediments: a $\delta^{13}\text{C}$ modeling approach. Poster presentation at the World Environmental & Water Resources Congress, ASCE, May 19-23, 2013, Cincinnati, Ohio.
21. Fox, J.F., Martin, D.M., **Ford, W.I.**, Stewart, R., Papanicolaou, T., Rowe, H.D., Huston, D. Sediment fingerprinting using carbon and nitrogen isotope tracers: Review of recent studies. Poster presentation at the World Environmental & Water Resources Congress, ASCE, May 19-23, 2013, Cincinnati, Ohio.
22. **Ford, W.I.**, Fox, J.F. Watershed-scale model of carbon and nitrogen cycles in streams. Oral presentation at the Kentucky Water Resources Research Institute Annual Symposium, March, 18, 2013, Lexington, KY.
23. **Ford, W.I.**, Fox, J.F. Sediment bed dynamics resulting from hydraulic forcing and its impacts on physical and biogeochemical processes in a lowland fluvial system. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 20-24, 2012, Albuquerque, New Mexico.
24. **Ford, W.I.**, Fox, J. F., Rowe, H.D. Ambient N-15 signature for estimating seasonal nutrient transformations. Poster presentation at the American Geophysical Union Meeting, December 5-9, 2011, San Francisco, CA.
25. **Ford, W.I.**, Fox, J. F. Organic carbon fate and transport in a lowland temperate watershed. Poster presentation at the American Geophysical Union Meeting, December 5-9, 2011, San Francisco, CA.
26. **Ford, W.I.**, Fox, J.F. Geospatial modeling method to provide estimates of POC flux for regional-scale watersheds. Oral presentation at the World Environmental & Water Resources Congress, ASCE, May 22-26, 2011, Palm Springs, California.

27. Stewart, R.L., **Ford, W.I.**, Fox, J.F., and Harnett, C. Development of new sensors for monitoring velocity and sediment discharge in a watershed. Poster presentation at the Kentucky Water Resources Research Institute Annual Symposium, March, 21, 2011, Lexington, KY.
28. **Ford, W.I.**, Fox, J.F. Integrated modeling approach to particulate organic carbon estimates on a regional scale basin. Poster presentation at the Kentucky Water Resources Research Institute Annual Symposium, March, 21, 2011, Lexington, KY.
29. **Ford, W.I.**, Fox, J.F. Estimates of particulate organic carbon flux in various levels of the watershed system. Poster presentation at the Kentucky Water Resources Research Institute Annual Symposium, March, 22, 2010, Lexington, KY.

INVITED PRESENTATIONS AND PANELS

1. **Ford, W.I.**, Water Quality Monitoring and Modeling. BAE Student Branch Meeting. February 9th 2017; Lexington, KY.
2. **Ford, W.I.**, Bioenvironmental Engineering. Presented at the BAE Graduate Recruitment Seminar, January 20th 2017; Lexington, KY.
3. **Ford, W.I.**, Quantifying nutrient and sediment dynamics in disturbed watersheds. Richard F McCormick Technical Conference, January, 28th 2016, Huntington, WV.
4. **Ford, W.I.**, Quantifying nutrient and sediment dynamics in disturbed watersheds. Engineers club of Huntington, October 16th, 2015, Huntington, WV.
5. **Ford, W.I.**, Introduction to Water Resources, Freshman Engineering Seminar Course at Marshall University, October, 8th, 2015, Huntington, WV.

AWARDS AND RECOGNITION

1. Research Highlight in Marshall university press release: "Researchers partnering on \$3.8 million NSF grant to study water quality" (2016)
2. Research Highlight in The Washington Times: "Kentucky, West Virginia partners to study toxic algae blooms" (2016)
3. INCO Foundational Award for initiating College of Information Technology and Engineering seminar series, Marshall University (2016)
4. Quinlan Endowment Award for faculty travel, Marshall University (2016)
5. Research highlight in CSA news magazine (2015)
6. Burt L Sims Graduate Fellowship (2013)
7. Tapp Family Environmental Graduate Fellowship (2012)
8. University of Kentucky Research Travel Grant (2011)
9. NSF EPSCOR Research Experience for Undergraduates Fellowship (2010)
10. Outstanding University Scholar Award recipient (2010)
11. NSF Appalachian studies Research Experience for Undergraduates Fellowship (2009).

TEACHING AND ADVISING*Credit Instruction (Marshall University, CITE, Division of Engineering Aug. 2015-Dec. 2016)*

<u>Course (Abbreviation: Course title)</u>	<u>Credit Hours</u>	<u>Semester</u>	<u>Number of students</u>	<u>Mean student evaluation¹</u>
CE 432: Water/Wastewater Treatment	4	Fall 2016	23	3.58
CE 432: Water/Wastewater Treatment	4	Fall 2015	22	3.28
CE 331: Hydraulic Engineering	3	Spring 2016	16	3.68
ENGR 319: Fluid Mechanics Lab	1	Fall 2016	25	3.68
ENGR 319: Fluid Mechanics Lab	1	Fall 2015	24	3.53
ENGR 318 Fluid Mechanics Lecture	3	Fall 2015	24	3.44
ENGR 111: Engineering Computations	3	Spring 2016	31	3.72
ENGR 104: Engineering Profession	1	Fall 2016	36	3.64
ENVE 617: Water Treatment Facility Design	3	Spring 2016	12	3.42

¹Scores are based on a 1-4 scale with 1 being the lowest and 4 being the highest score***Non-credit instruction***

1. ENGR 453 Capstone design hydrology and hydraulics advisor (Spring 2016)
2. FE Review course for environmental, water resources, and fluid mechanics (Fall 2016)
3. FE Review course for environmental, water resources, and fluid mechanics (Fall 2015)

Graduate Advising:

1. Alex Jensen, Sediment source fate and transport in a disturbed wetland (working title), Master's Thesis, University of Kentucky (Primary Advisor, Spring 2017-Present).
2. Jianwen Gao, Water Treatment Design in JinJia Coal Mine, Case Study: "Water Treatment Design for Coal Mines", Comprehensive graduate project, Marshall University (Primary Advisor, Spring 2016 - Summer 2016)
3. Channappiya Choomjai, "Watershed characterization and nutrient loading for the fourpole creek watershed", Comprehensive graduate project, Marshall University (Primary Advisor, Spring-Summer 2016)
4. Ryan Huddleston, "Selenium Bioremediation: Selenium Bioreactor Installation", Comprehensive graduate project, Marshall University (Committee Member, Fall 2015)

Undergraduate Advising (Research)

1. Benjamin Poole: Undergraduate research assistant (Spring 2017-Present)
2. Will Shaffer: Undergraduate research assistant (Fall 2016-Present)
3. Tyler Hampton: Undergraduate research assistant (Summer 2016-Present)
4. Zachary Jones: Undergraduate research assistant (Fall 2015 -Spring 2016)
5. Seth Baker: Undergraduate Research assistant (Fall 2015 -Spring 2016)

Undergraduate Advising (Senior Design)

1. Advisor for Hydraulics and Hydrology Design team in Senior Capstone Design (ENGR 453) in Spring 2016 (5 students).

PROFESSIONAL AND SCHOLARLY AFFILIATIONS

1. American Society of Agricultural and Biological Engineers (ASABE), Member, 2017-Present
2. American Society of Civil Engineers (ASCE), Member, 2011-Present
3. Environmental Water Resources Institute (EWRI), Member, 2011-Present
4. American Geophysical Union (AGU), Member, 2011-Present
5. Kentucky Association of Mapping Professionals (KAMP), Member, 2013-Present
6. Chi Epsilon (National Honor Society), Lifetime member

PROFESSIONAL DEVELOPMENT

Professional meetings attended

1. ASCE EWRI Annual International Congress, West Palm Beach, FL. 2016
2. ORBCRE Annual meeting, Northern Kentucky University. 2015
3. ASABE Annual International Meeting. New Orleans, LA. 2015
4. American Geophysical Union Fall Meeting, San Francisco, CA. 2014
5. Hypoxia Taskforce Meeting, Columbus, OH. 2014

6. Kentucky Water Resources Research Institute Annual Meeting, Lexington, KY. 2014
7. ASCE EWRI Annual International Congress, Cincinnati, OH. 2013
8. Kentucky Water Resources Research Institute Annual Meeting, Lexington, KY. 2013
9. ASCE EWRI Annual International Congress, Albuquerque, NM. 2012
10. ASCE EWRI Annual International Congress, Palm Springs, CA. 2011
11. American Geophysical Union Fall Meeting, San Francisco, CA. 2011
12. Kentucky Water Resources Research Institute Annual Meeting, Lexington, KY. 2010

Training and workshops

1. Marshall teaching and advising workshop (August, 2015)

SERVICE

Journal review: (Year: Journal (# of papers reviewed))

- 2014: Journal of Hydraulic Engineering (1)
- 2015: Environmental Modeling and Software (1); Transactions of the ASABE (1);
Agriculture Ecosystems and the Environment (2)
- 2016: Global Biogeochemical Cycles (1); Journal of soil and water conservation (1); Journal
of Environmental Quality (2)
- 2017: Journal of Hydrology (2)

University (Marshall)

1. Helped, initiate, secure funding and organize a research seminar series for the College of Information Technology and Engineering at Marshall University, March 2016- December 2016
2. Committee Member, Search Committee for Assistant Professor in Control-Systems area of Mechanical Engineering. (November, 2015 – December, 2016).
3. Committee Member, Search Committee for Assistant Professor in Thermal-Fluids area of Mechanical Engineering. (November, 2015 – December, 2016).
4. Committee Member, Search Committee for Assistant Professor in Mechanical Design area of Mechanical Engineering. (November, 2015 – December, 2016).
5. Assisted with student recruitment for 'Become one of the Herd' event, March 2016

Regional and National

1. Moderator at the ASCE Environmental Water Resources Institute Congress Annual Meeting (2013)
2. Member of the ASCE Sedimentation Committee (2016-Present)

Other Service

1. Volunteered at a local elementary school to stimulate STEM interest for Appalachian students including participation in 'Mad Scientist Day'.