

**Admin Husic, Ph.D.**

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**EDUCATION**

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Doctor of Philosophy (Ph.D.), Civil Engineering, University of Kentucky	July 2018
Master of Science (MS), Civil Engineering, University of Kentucky	Dec 2015
Bachelor of Science (BS), Civil Engineering, University of Kentucky	May 2014

**ACADEMIC APPOINTMENTS**

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<i>Assistant Professor</i>	Aug. 2018 - Present
Department of Civil, Environmental, and Architectural Engineering University of Kansas (KU), Lawrence, KS	

**TEACHING EXPERIENCE**

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**Courses Taught** (mean evaluation: 4.61/5.00)

CE 857 Sediment Transport (F22)	Enrolled: 3
CE 330 Fluid Mechanics (F22)	Enrolled: 48
CE 331 Fluid Mechanics Lab (F22)	Enrolled: 35
CE 755 Open Channel Flow (S22)	Enrolled: 11
CE 330 Fluid Mechanics (F21)	Enrolled: 30
CE 331 Fluid Mechanics Lab (F21)	Enrolled: 22
CE 859 Erosion and Sedimentation (F21)	Enrolled: 9
CE 755 Open Channel Flow (S21)	Enrolled: 11
CE 330 Fluid Mechanics (F20)	Enrolled: 48
CE 331 Fluid Mechanics Lab (F20)	Enrolled: 34
CE 857 Sediment Transport (F20)	Enrolled: 3
CE 755 Open Channel Flow (S20)	Enrolled: 4
CE 859 Erosion and Sedimentation (F19)	Enrolled: 5
CE 755 Open Channel Flow (S19)	Enrolled: 6
CE 857 Sediment Transport (F18)	Enrolled: 7

**Students Advised (Current)**

Undergraduate Academic	Total: 20 (6)
Undergraduate Research	Total: 12 (3)
Master's Research	Total: 3 (2)
Doctoral Research	Total: 3 (3)

**Committees Served (Current)**

Masters Research	Total: 3 (2)
Doctoral Research	Total: 10 (9)

## DIVERSITY, EQUITY, INCLUSION, AND BELONGING (DEIB)

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1. Chair, Founder, DEIB committee, KU Department of Civil, Environmental, and Architectural Engineering (2021 – Present)
2. Member, DEIB committee, KU School of Engineering (2021 – Present)
3. Mentor, Six under-represented students in undergraduate research at KU (2019 – Present)
4. Chair, Founder, Diversity and Equity Task Force, KU Department of Civil, Environmental, and Architectural Engineering (2020 – 2021)
5. Member, Diversity Task Force, KU School of Engineering (2019 – 2021)

## PEER-REVIEWED JOURNAL ARTICLES *(student advisees indicated by underscores)*

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### *In Review*

1. Zarnaghsh, A. and **Husic, A.** (2022). Inferring dominant transport pathways of salinity and sediment under varying land use with high-frequency conductivity and turbidity sensor data. *Water Resources Research*, *In Review*.
2. **Husic, A.**, Fox, J., Clare, E., Mahoney, T., and Zarnaghsh, A. (2022). Nitrate hysteresis as a tool for revealing storm-event dynamics and improving water quality model performance. *Water Resources Research*, *In Revision*.
3. Gerlitz, M., Fox, J., Ford, W., **Husic, A.**, Mahoney, T., Armstead, M., Hendricks, S., Crain, A., Backus, J., Pollock, E., Wei, R., Bo, T., Riddle, B., and White, D. (2022). Nitrate sensors suggest soil-plant processes produce three distinct seasonal patterns of nitrate in the Ohio River Basin. *Journal of the American Water Resources Association*, *In Revision*.
4. Clune, J., Cravotta, C., **Husic, A.**, Abraham, H., and Schmidt, K. (2022). Chemical and isotopic analyses of nitrate in an agricultural carbonate setting of the Chesapeake Bay Watershed. *Environmental Earth Sciences*, *In Review*.

### *Published*

1. **Husic, A.** Al Aamery, N., and Fox, J. (2022). Simulating hydrologic pathway contributions in fluvial and karst settings: an evaluation of conceptual, physically-based, and deep learning modeling approaches. *Journal of Hydrology X*, *In Press*.
2. Bettel, L., Fox, J., **Husic, A.**, Zhu, J., Al-Aamery, N., Mahoney, T., and Gold-McCoy, A. (2022). Sediment transport investigation in a karst aquifer hypothesizes controls on internal versus external sediment origin and saturation impact on hysteresis. *Journal of Hydrology*, *In Press*.
3. **Husic, A.** and Michalek, A. (2022). Structural hillslope connectivity is driven by tectonics more than climate and modulates hydrologic extremes and benefits. *Geophysical Research Letters*, *49(15)*, e2022GL099898.
4. Percich, A., **Husic, A.**, and Ketterer, M. (2022). Plutonium isotopes: an effective tool for fluvial sediment sourcing in urbanized catchments. *Geophysical Research Letters*, *49(2)*, e2021GL094497.

5. Michalek, A., **Husic, A.**, Roundy, J., and Hansen, A. (2021). Assessment of climatic and anthropogenic controls on bridge deck drainage and sediment removal. *Water*, 13(24), 3556.
6. Zarnaghsh, A. and **Husic, A.** (2021). Degree of anthropogenic land disturbance controls fluvial sediment hysteresis. *Environmental Science and Technology*, 55(20), 13737–13748.
7. Kelly, M., Zeglin, L., **Husic, A.**, and Burgin, A. (2021). High Supply, High Demand: A Unique Nutrient Addition Decouples Nitrate Uptake and Metabolism in a Large River. *Journal of Geophysical Research: Biogeosciences*, 126(12), e2021JG006469.
8. **Husic, A.**, Fox, J., Al-Aamery, N., Pollock, E., Ford, W., Agouridis, C., and Backus, J. (2021). Seasonality of recharge drives spatiotemporal nitrate removal in a karst conduit as evidenced by sediment nitrogen isotopes. *Journal of Geophysical Research: Biogeosciences*, 126(10), e2021JG006454.
9. Michalek, A., Zarnaghsh, A., and **Husic, A.** (2021). Modeling linkages between erosion and connectivity in an urbanizing landscape. *Science of the Total Environment*, 764, 144255.
10. Al Aamery, N., Adams, E., Fox, J., **Husic, A.**, Gerlitz, M., Agouridis, C., and Zhu, J. (2021). Pathway connectivity in an epigenetic fluviokarst system: insight from a numerical modelling study in Kentucky USA. *Journal of Hydrology*, 593, 125844.
11. **Husic, A.**, Fox, J., Mahoney, T., Gerlitz, M., Pollock, E., and Backus, J. (2020). Optimal Transport for Assessing Nitrate Source-Pathway Connectivity. *Water Resources Research*, 56(10), e2020WR027446.
12. **Husic, A.**, Fox, J., Adams, E., Pollock, E., Ford, W., Agouridis, C., and Backus, J. (2020). Quantification of nitrate removal in karst conduits using stable isotopes and numerical modeling. *Water Research* (170), 115348.
13. Ford, W., **Husic, A.**, Fogle, A., and Taraba, J. (2019) Long-term assessment of nutrient flow pathway dynamics and in-stream fate in a temperate karst agroecosystem watershed. *Hydrological Processes*, 33 (11), 1610-1628.
14. **Husic, A.**, Fox, J., Ford, W., Agouridis, C., Currens, J., and Backus, J. (2019). Nitrate pathways, processes, and timing in an agricultural karst system: development and application of a numerical model. *Water Resources Research*, 55(3), 2079-2103.
15. Ghesemi, A., Fox, J., and **Husic, A.** (2019). Predicting macroturbulence energy and timescales for open channel flow over a gravel bed: experimental results and scaling laws. *Geomorphology*, 322, 122-137.
16. **Husic, A.**, Fox, J., Adams, E., Backus, J., Pollock, E., Ford, W., and Agouridis, C. (2019) Inland impacts of atmospheric river and tropical cyclone extremes on nitrate transport and stable isotope measurements. *Environmental Earth Science*, 78(36).
17. Jensen, A., Ford, W., Fox, J., and **Husic, A.** (2018). Improving water quality models using stable isotope tracers: a review and synthesis. *Transactions of the American Society of Agricultural and Biological Engineers*, 61, 139-157.
18. **Husic, A.**, Fox, J., Agouridis, C., Currens, J., Ford, W., and Taylor, C. (2017). Sediment carbon source, fate, and transport in a fluviokarst watershed (Part 1): conceptual model development. *Journal of Hydrology*, 549, 179-193.

19. **Husic, A.**, Fox, J., Ford, W., Agouridis, C., Currens, J., and Taylor, C. (2017). Sediment carbon source, fate, and transport in a fluviokarst watershed (Part 2): numerical model development and application. *Journal of Hydrology*, 549, 208-219.

**AWARDED GRANTS** (*by date*) (total as PI: \$590,148 since 2019)

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1. **Husic, A.** 2022–2024. Monitoring and modeling Hillsdale Lake under changing land use and climate drivers to assess tipping point of hypereutrophic lake conditions. Kansas Department of Health and the Environment. **\$92,142**. PI: Admin Husic.
2. **Husic, A.**, and Zipper, S. 2022–2024. Forecasting streamflow and groundwater depletion with deep learning models to sustain Kansan water resources. Kansas Water Resources Research 104(b) Program. **\$50,000** (+\$50,000 in-kind cost share). PI: Admin Husic.
3. **Husic, A.** 2022–2023. How does urbanization change nitrate source-zone activation? Real-time insights from rapidly-expanding Johnson County, Kansas. University of Kansas Office of Research General Research Fund. **\$13,000**. PI: Admin Husic.
4. **Husic, A.**, and Sutley, E. 2022–2023. Evaluating the Racial Equity of Flooding Hazards in the Kansas City Metropolitan Area. KU Racial Equity Research, Scholarship & Creative Activity Fund. **\$19,607**. PI: Admin Husic.
5. **Husic, A.** 2021–2024. Identifying the Source of Sediment for Targeted Best Management Practices in Urban and Rural Areas of Johnson County. Johnson County Stormwater Management Program. **\$159,250**. PI: Admin Husic.
6. **Husic, A.** 2021–2022. Influences of urbanization on the tipping points of benthic algae mat growth, decay, and toxin production. NSF Kansas EPSCoR MAPS Program. **\$141,777**. PI: Admin Husic.
7. **Husic, A.**, Collins, W., Lequesne, R., and Roundy, J. 2021–2022. Development of Condition Factors and Bridge Load Ratings through Statistical Analyses of the NBI Database. Kansas Department of Transportation. **\$46,500**. PI: Admin Husic.
8. **Husic, A.**, Harris, T., Sturm, B., 2020–2022. Benthic cyanobacterial mats: a potential source of harmful and nuisance compounds to Kansas streams. Kansas Water Resources Research 104(b) Program. **\$40,000** (+\$80,000 in-kind cost share). PI: Admin Husic.
9. **Husic, A.** 2020–2021. Sediment tracing with plutonium isotopes to assess urbanization impact on sources of erosion. University of Kansas Office of Research General Research Fund. **\$7,872**. PI: Admin Husic.
10. **Husic, A.** 2019–2021. Optimal Transport for Assessing Nitrate Source and Pathway Connectivity in Human-Disturbed Watersheds. University of Kansas Office of Research New Faculty General Research Fund. **\$20,000**. PI: Admin Husic.
11. Roundy, J., Hansen, A., and **Husic, A.** 2018–2020. Bridge Deck Drainage: Evaluation of KDOT's Current Design Guidance. Kansas Department of Transportation. **\$65,956**. Co-PI: Admin Husic.

**GRANTS IN REVIEW** *(by date)*

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1. **Husic, A.**, 2023–2024. CAREER: Dynamic connectivity: a research and educational frontier for sustainable environmental management under climate and land use uncertainty. National Science Foundation. **\$544,474**. PI: Admin Husic.
2. **Husic, A.**, 2023–2028. RII Track-4: Assessing Dynamic Connectivity of Streams and Wetlands across Spatial and Human Gradients with Deep Learning. National Science Foundation. **\$261,045**. PI: Admin Husic.

**RESEARCH PRESENTATIONS** *(by student advisee as presenting author)*

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1. Rider, Z., **Husic, A.**, Sturm B., and Harris, T. (2022, April). Algae mats as sources of cyanotoxins and taste-and-odor compounds. University of Kansas Environmental and Water Resources Engineering Seminar Series. Lawrence, KS. Poster Presentation.
2. Zarnaghsh, A. and **Husic, A.** (2021, December). High-Frequency Sensing of Specific Conductance to Understand Transport Mechanisms Across an Urbanization Gradient. American Geophysical Union. New Orleans, LA. Poster Presentation.
3. Rider, Z., **Husic, A.**, Sturm B., and Harris, T. (2021, December). Land Use Impacts on the Development of Cyanotoxins and Taste-and-Odor Compounds in Benthic Algae Mats. American Geophysical Union. New Orleans, LA. Poster Presentation.
4. McVey, Z. and **Husic, A.** (2021, December). Land Use Impacts on Dynamic Sediment Connectivity Across an Urbanizing Region. American Geophysical Union. New Orleans, LA. Poster Presentation.
5. Zarnaghsh, A.\*. and **Husic, A.** (2021, November). High-Frequency Sensing of Specific Conductance to Understand Solute Transport Mechanisms During Storm Events in Johnson County, KS. Governor's Conference on the Future of Water in Kansas. Virtual. Poster Presentation.  
*\*Awarded First Place Outstanding Graduate Poster Presentation.*
6. Rider, Z., **Husic, A.**, Sturm B., and Harris, T. (2021, November). Investigating the drivers of cyanotoxins and taste-and-odor compounds in streambed algal mats. Governor's Conference on the Future of Water in Kansas. Virtual. Poster Presentation.
7. McVey, Z. and **Husic, A.** (2021, November). Modeling streamflow in rural and urban basins: applications to Johnson County, KS. Governor's Conference on the Future of Water in Kansas. Virtual. Poster Presentation.
8. Zarnaghsh, A., Kelly, M., Burgin, A., and **Husic, A.** (2021, May). Coupling high-frequency sensing and 2-D numerical modeling to analyze nitrate dynamics in a large river. Society of Freshwater Sciences. Virtual. Oral Presentation.
9. Zarnaghsh, A. and **Husic, A.** (2020, December). High-frequency sensing of sediment hysteresis to understand storm event dynamics across an urbanization gradient. American Geophysical Union Fall Meeting. Oral Presentation.
10. Michalek, A., Zarnaghsh, A., and **Husic, A.** (2020, December). Modeling linkages between erosion and connectivity in an urbanizing landscape: a coupled sensing, geomorphometric,

and field assessment approach. American Geophysical Union Fall Meeting. Virtual. Poster Presentation.

11. Percich, A. and **Husic, A.** (2020, December). Sediment source assessment along an urban to rural transition using plutonium isotopes and sediment fingerprint modeling. American Geophysical Union Fall Meeting. Virtual. Poster Presentation.
12. Zarnaghsh, A.\*. and **Husic, A.** (2020, November). High-Frequency Sensing of Sediment Hysteresis to Understand Storm Event Dynamics in Johnson County, KS. Governor's Conference on the Future of Water in Kansas. Wichita, KS. Poster Presentation.  
*\*Awarded First Place Outstanding Graduate Poster Presentation.*
13. Michalek, A., Zarnaghsh, A., and **Husic, A.** (2020, November). Identifying erosion and connectivity hotspots in urbanizing Johnson County, KS. Governor's Conference on the Future of Water in Kansas. Poster Presentation. Wichita, KS. Poster Presentation.
14. Percich, A.\*. and **Husic, A.** (2020, November). Plutonium Isotopes as Tracers of Sediment in an Urbanizing Landscape. Governor's Conference on the Future of Water in Kansas. Wichita, KS. Poster Presentation.  
*\*Awarded First Place Outstanding Undergraduate Poster Presentation.*
15. Zarnaghsh, A. and **Husic, A.** (2019, November). High-resolution sensors for assessing the impact of rapid land use change on the processes governing stream biogeochemistry. Governor's Conference on the Future of Water in Kansas. Wichita, KS. Poster Presentation.
16. Wilson, L. and **Husic, A.** (2019, November). Hydrologic modeling along an urbanization gradient: application of the SWAT model to five Johnson County watersheds. Governor's Conference on the Future of Water in Kansas. Wichita, KS. Poster Presentation.
17. Percich, A.\*. and **Husic, A.** (2019, November). Sediment source assessment along an urban to rural transition using stable isotopes and geochemical tracers. Governor's Conference on the Future of Water in Kansas. Wichita, KS. Poster Presentation.  
*\*Awarded First Place Outstanding Undergraduate Poster Presentation.*
18. Depew, A.\* and **Husic, A.** (2019, November). Designing and implementing a platform for remotely sensing high-frequency water quality data across an urbanization gradient. Governor's Conference on the Future of Water in Kansas. Wichita, KS. Poster Presentation.  
*\*Awarded Runner-up Outstanding Undergraduate Poster Presentation.*

## RESEARCH PRESENTATIONS *(by me as presenting author, \* indicates invited talk)*

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1. **Husic, A.** and Michalek, A. (2021, December). Structural hillslope connectivity modulates hydrologic extremes and benefits. Oral Presentation. American Geophysical Union. Fall Meeting. New Orleans, LA.
2. **Husic, A.** and Percich, A. (2021, November). Using plutonium fallout to quantify streambank erosion in urbanizing Johnson County, Kansas. Oral Presentation. Governor's Conference on the Future of Water in Kansas. Virtual.
3. **Husic, A.** and Michalek, A. (2021, May). Quantifying Hydrologic Connectivity at the Continental Scale: Drivers and Implications. Oral Presentation. Society of Freshwater Sciences. Virtual.

4. \***Husic, A.** (2021, March). Untangling the Controls of Water and Nutrient Connectivity in Karst Aquifers. Oral Presentation. Kansas State University Geology Seminar. Manhattan, KS.
5. **Husic, A.** et al., (2020, December). High-frequency sensing of nitrate to improve numerical model performance: insights from an extensively modeled spring. Poster Presentation. American Geophysical Union Fall Meeting. San Francisco, CA.
6. **Husic, A.** et al., (2020, July). Beyond EMMA: Optimal Transport for Assessing Nitrate Source-Pathway Connectivity. Oral Presentation. Aquatic OpenScience DataScience Summit. Held virtually on Zoom & YouTube.
7. **Husic, A.** et al., (2019, December). Optimal Transport for Assessing Nitrate Source and Pathway Connectivity in a Human-Disturbed Watershed. Poster Presentation. American Geophysical Union Fall Meeting. San Francisco, CA.
8. **Husic, A.** et al., (2019, June). Sediment nitrogen stable isotopes and numerical modeling show hot moments, hot spots, and environmental drivers in the surficial fine-grained laminae of karst beds. Oral Presentation. ASCE World Environmental and Water Resources Congress. Pittsburgh, PA.
9. \***Husic, A.** (2019, April). Nitrogen cycling in subsurface rivers: evidence from hydrogeochemical and isotopic modeling. Oral Presentation. Kansas Biological Survey Ecology Seminar. Lawrence, KS.
10. **Husic, A.** et al., (2018, December). Nitrate Removal in a Phreatic Karst Conduit: Estimating Nitrification and Denitrification Rates using Stable Isotopes and Numerical Modeling. Poster Presentation. American Geophysical Union Fall Meeting. Washington, D.C.
11. \***Husic, A.** (2018, September). Contaminant Fate and Transport in a Karst Watershed (What Goes Down Must Come Up). Oral Presentation. University of Kansas Department of Geology Colloquium. Lawrence, KS.
12. **Husic, A.** et al., (2018, June). Application of isotopic and elemental data streams for estimating source and transformation processes in an agricultural karst system. Oral Presentation. ASCE World Environmental and Water Resources Congress. Minneapolis, MN.
13. **Husic, A.** et al., (2018, March). Water, Sediment, and Nutrient Data Streams in a Fluviokarst Watershed in the Kentucky Bluegrass: Insights from Elemental, Isotopic, and High-Resolution Sensor Data. Oral Presentation. Kentucky Water Resources Research Institute Symposium. Lexington, KY.
14. **Husic, A.** et al., (2017, December). Nitrogen fate in a phreatic fluviokarst watershed: a stable isotope, sediment tracing, and numerical modeling approach. Poster Presentation. American Geophysical Union Fall Meeting. New Orleans, LA.
15. **Husic, A.** (2017, December). Contaminant Fate and Transport in a Highly-Coupled Watershed: Integrating Stable Isotopes, Sediment Tracing, and Numerical Modeling to Assess Stream Function and Ecosystem Health. Oral Presentation. University of Kansas Department of Civil, Environmental, and Architectural Engineering Seminar. Lawrence, KS.

16. **Husic, A.** et al., (2017, May). Nitrate leaching and pathways in agricultural fluviokarst systems. Oral Presentation. ASCE World Environmental & Water Resources Congress. Sacramento, CA.
17. **Husic, A.** et al., (2017, March). Nitrate leaching in an agricultural fluviokarst system in the Bluegrass Region. Oral Presentation. Kentucky Water Resources Research Institute Symposium. Lexington, KY.
18. **Husic, A.** et al., (2016, March). Data and model investigation of a fluviokarst system in the Bluegrass Region: water, sediment, and carbon interactions. Oral Presentation. Kentucky Water Resources Research Institute Symposium. Lexington, KY.
19. **Husic, A.** et al., (2015, December). Sediment organic carbon fate and transport in a fluviokarst watershed in the Bluegrass Region. Poster Presentation. American Geophysical Union Fall Meeting. San Francisco, CA.
20. **Husic, A.** et al., (2015, December). Sediment carbon fate in a fluviokarst watershed in the Bluegrass Region. Poster Presentation. 5<sup>th</sup> Annual Sustainability Forum. Lexington, KY.
21. **Husic, A.** et al., (2015, May). Investigation of source, fate, and transport of sediments in a karst dominated watershed. Oral Presentation. ASCE World Environmental & Water Resources Congress. Austin, TX.
22. **Husic, A.** et al., (2015, March). Sediment transport mechanisms in a fluvial karst system in Bluegrass Region. Oral Presentation. Kentucky Water Resources Research Institute Annual Symposium. Lexington, KY.
23. **Husic, A.** et al., (2015, February). Sediment organic carbon fate and transport mechanisms in a fluvial karst system in the Bluegrass Region. Poster Presentation. Posters-at-the-Capitol. Frankfort, KY.

## SERVICE & PROFESSIONAL ACTIVITIES

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### Professional Committees

AGU Water Quality Committee, Chair (2021 – Present), Member (2019 – Present).  
 ASCE Sedimentation Committee, Member (2018 – Present)

### Peer Reviewer

Nature Sustainability, Journal of Geophysical Research: Biogeosciences, Water Research, Water Resources Research, Journal of Hydrology, Agriculture Ecosystems and Environment, Hydrology and Earth System Sciences, Journal of Hydraulic Engineering, Journal of Hydrologic Engineering, Environmental Earth Sciences, Hydrological Processes, and the Transactions of the ASABE

## SOCIETY MEMBERSHIPS

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Member of the American Society of Civil Engineers (ASCE)  
 Member of the American Geophysical Union (AGU)  
 Member of the Association for the Sciences of Limnology and Oceanography (ASLO)  
 Member of the American Water Works Association (AWWA)



Member of the Water Environment Federation (WEF)  
Member of the Tau Beta Pi Engineering Honor Society (TBP)  
Member of the Chi Epsilon Civil Engineering Honor Society (XE)  
Member of the Omicron Delta Kappa Leadership Society (ODK)

## **HONORS & AWARDS**

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KU School of Engineering Miller Scholar Award (2021)  
KU Center for Teaching Excellence Course Transformation Grant (2021)  
KU Nominated for Undergraduate Research Mentor Award (2021)  
KU One University Open Access Fund Award (2021)  
NSF NEON Early Career Scholar (2020)  
ASCE ExCEED Teaching Fellow (2019)  
Outstanding Reviewer Award, *Journal of Hydrology* (2018)  
National Ground Water Association Past President's Award (2017)  
Burton E. Heard Graduate Fellowship (2017)  
KY-TN American Water Works Association Fellowship (2017)  
Burton E. Heard Graduate Fellowship (2016)  
Great Lakes National Scholarship (2016)  
USGS KY Water Resources Research Institute Research Enhancement (2015)  
ASCE J. Waldo Smith Hydraulic Fellowship (2015)  
Robert Eugene Fish Hydraulic Fellowship (2014)