

**MICHELLE L. SOUPIR**  
Associate Professor  
Agricultural & Biosystems Engineering Department  
Iowa State University

**EDUCATION**

Ph.D.	2008	Biological Systems Engineering	Virginia Tech
M.S.	2003	Biological Systems Engineering	Virginia Tech
B.S.	1999	Biological and Agricultural Engineering	Kansas State University

**PROFESSIONAL EXPERIENCE/APPOINTMENTS**

2014- present	Associate Professor, Teaching and Research in the Agricultural and Biosystems Engineering Department, Iowa State University, Ames, IA.
2008 – 2014	Assistant Professor, Teaching and Research in the Agricultural and Biosystems Engineering Department, Iowa State University, Ames, IA.
2001-2008	Graduate Research Assistant, Biological Systems Engineering Department, Virginia Tech, Blacksburg, VA.
2000-2001	Environmental Engineer, Camp Dresser and McKee Inc., Kansas City, MO.

**AREAS OF SPECIALIZATION**

- Research program in the areas of fate and transport of microorganisms and emerging contaminants, NPS pollution control, and water quality monitoring and modeling
- Teaching program in the areas of water quality and watershed-scale modeling
- Member of the graduate faculty and courtesy appointment in Civil, Construction and Environmental Engineering Department
- Member of graduate faculty in Environmental Science and Sustainable Agriculture programs

**HONORS AND AWARDS**

- COE Dean's Award for Excellence in Diversity and Inclusion, 2018, Iowa State University
- CALS Team Award, Prairie STRIPS Team Member, 2018, Iowa State University
- College of Engineering Professional Progress Award, 2016, Kansas State University
- Exemplary Faculty Mentor, 2015, Office of the Senior Vice President and Provost at ISU
- New Holland Young Researcher Award, 2014, ASABE
- ASABE Young Engineer of the Year, 2014, Iowa Section
- Early Career Engineering Faculty Research Award, 2014, Iowa State University
- CALS Early Achievement in Research Award, 2013, Iowa State University
- Outstanding Recent Alumna, Biological Systems Engineering Dept., 2012-2013, Virginia Tech

**PUBLICATIONS**

**Refereed Journal Articles**

1. Rieke, E.L., T.B. Moorman, M.L. Soupier, F. Yang, A. Howe. (in press) Novel approach to assessing pathogen presence in an intensively tile drained agricultural watershed. *Journal of Environmental Quality*.

2. Pandey, P.K., Soupir, M.L., Yi Wang, Wenlong Cao, Venkata Vaddella, Sagor Biswas, Robert Atwill, Gregory Pasternack. (in press) Assessment of Water Column and Sediment Microbial Quality of Mountain and Agricultural Streams. *Journal of Environmental Quality*.
3. Law, J.Y., M.L. Soupir, T.B. Moorman, D. R. Raman. 2018. Exploring multiple operating scenarios to identify low-cost, high nitrate removal strategies for electrically-stimulated woodchip bioreactors. *Journal of Ecological Engineering*.
4. Chai, L., H. Xin, Y. Zhao, T. Wang, M.L. Soupir. 2018 Mitigating airborne bacteria emissions from litter of cage-free hen houses by spray of acidic electrolyzed water. *Biosystems Engineering*.
5. Upadhyay, P., L.O.S. Prunski, A.L. Kaleita, M.L. Soupir. 2018. Evaluation of AnnAGNPS for simulating the inundation of drained and farmed potholes in the Prairie Pothole Region of Iowa. *Agricultural Water Management*.
6. Chai, L., H. Xin, Y. Zhao, T. Wang, M.L. Soupir, K. Liu. 2018. Mitigating ammonia emissions from liquid-sprayed litter of cage-free hen house with a solid litter additive. *Transactions of ASABE*. doi: 10.13031/trans.12481
7. Choi, J., E.L. Rieke, T.B. Moorman, M.L. Soupir, H. Allen, S.D. Smith, A.C. Howe. 2018. Practical implications of erythromycin resistance gene diversity on surveillance and monitoring of resistance. *FEMS Microbiology Ecology*.
8. Hruby, C.E.\*, M.L. Soupir, T.B. Moorman, C. Pederson, R.S. Kanwar. 2018. Salmonella and fecal indicator bacteria in soils amended with poultry manure. *Water Air and Soil Pollution* 229 (2):32. doi: 10.1007/s11270-017-3667-z
9. Soupir, M.L., Hoover, N.L. \*\*, T.B. Moorman, J. Y. Law\*, B.L. Bearson. 2018. Impact of temperature and hydraulic retention time on pathogen and nutrient removal in woodchip bioreactors. *Journal of Ecological Engineering*. 112:153-117. <https://doi.org/10.1016/j.ecoleng.2017.12.005>
10. Law, J.Y.\*, M.L. Soupir, D.R. Raman, T.B. Moorman. 2018. Challenges and opportunities to use electrical stimulation in denitrification woodchip bioreactors. *Journal of Ecological Engineering*. 110: 38-47. DOI: 10.1016/j.ecoleng.2017.10.002
11. Rieke, E.M.\*, T.B. Moorman, E.L. Douglass, M.L. Soupir. 2018. Seasonal variation of macrolide resistance gene abundances in the South Fork Iowa River Watershed. *Science of the Total Environment*. 610: 1173-1179. DOI: 10.1016/j.scitotenv.2017.08.116
12. Washington, M.T. \*, T.B. Moorman, M.L. Soupir, M. Shelley, A.J. Morrow. 2018. Monitoring Tylosin and Sulfamethazine in a tile-drained agricultural watershed using polar organic chemical integrative sampler (POCIS). *Science of the Total Environment*. 612: 358-367. DOI: 10.1016/j.scitotenv.2017.08.090
13. Hice, S.A., Santoscoy, M.C.\*, M.L. Soupir, R. Cademartiri. 2018. Distinguishing between metabolically active and dormant bacteria on paper. *Applied Microbiology and Biotechnology*. DOI: 10.1007/s00253-017-8604-y
14. Liang, X.\*, C. Liao\*, M.L. Soupir, L.R. Jarboe, M.L. Thompson, P.M. Dixon. 2017. *E. coli* attachment to model particulates: the effects of bacterial cell characteristics and particulate properties. *PLOS ONE*. 12(9):e0184664
15. Liao, C.\*, X. Liang\*, F. Yang, M.L. Soupir, A. Howe, M.L. Thompson, L.R. Jarboe. 2017. Allelic variation in outer membrane protein A impacts attachment of *Escherichia coli* to environmental particles. *Frontiers in Microbiology*. 8: 708
16. Ikenberry, C.D.\*, W.G. Crumpton, J. Arnold, M.L. Soupir, P.W. Gassman. 2017. Evaluation of existing and modified wetland equations in the SWAT model. *Journal of the American Water Resources Association*. 53(6): 1267-1280.
17. Ikenberry, C.D.\*, M.L. Soupir, M.J. Helmers, W.G. Crumpton, J. Arnold, P.W. Gassman. 2017. Simulation of daily flow pathways, tile-drained nitrate concentrations, and soil-nitrogen dynamics using SWAT. *Journal of the American Water Resources Association*. 53(6): 1251-1266.
18. Brendel, C.E.\*, M.L. Soupir. 2017. Relating watershed characteristics to elevated stream *E. coli* levels in agriculturally dominated landscapes. *Water*. 9: 154. DOI:10.3390/w9030154

19. Chai, L., Y. Zhao, H. Xin, T. Wang, A. Atilgan, M. Soupir, K. Liu. 2017. Reduction of particulate matter and ammonia by spraying acidic electrolyzed water onto litter of aviary hen houses – a lab-scale study. *Transactions of the ASABE*. 60(2):497-506. doi: 10.13031/trans.12081
20. Hoover, N.L.\* , M.L. Soupir, R.D. VanDePol, T.R. Goode, and J.Y. Law\*. 2017. Technical note: Pilot scale denitrification bioreactors for replicated field research. *Applied Engineering in Agriculture*. 33(1): 83-90. DOI 10.13031/aea.11736
21. Liang, X.\* , C. Liao\*, M.L. Thompson, M.L. Soupir, L.R. Jarboe, P.M. Dixon. 2016. Diversity in properties of *E. coli* derived from stream water and sediment. *Frontiers in Microbiology*. 7:1732. DOI: <http://dx.doi.org/10.3389/fmicb.2016.01732>
22. Hruby, C.E.\* , M.L. Soupir, M. Shelley, T.B. Moorman, R.S. Kanwar. 2016. Effects of Tillage and Poultry Manure Application Rates on Salmonella and Fecal Indicator Bacteria Concentrations in Tiles Draining Des Moines Lobe Soils. *Journal of Environmental Management*. 171:60-69.
23. Zwonitzer, M.R.\* , M.L. Soupir, L.R. Jarboe, D.R. Smith. 2016. Quantifying attachment and antibiotic resistance of *Escherichia coli* from conventional and organic swine manure. *Journal of Environmental Quality*. 45(2): 609-617). DOI: 10.2134/jeq2015.05.0245
24. Luby, E.M.\* , T.B. Moorman, M.L. Soupir. 2016. Fate and transport of tylosin-resistant bacteria and macrolide resistance genes in artificially drained agricultural fields receiving swine manure application. *Science of the Total Environment*. 550:1126-1133. DOI: 10.1016/j.scitotenv.2016.01.132
25. Pandey, P.K.\* , M.L. Soupir, Rehmann C.R., Ikenberry, C. 2016. Modified SWAT model for developing TMDLs for bacteria. *Journal of the American Water Resources Association*. 52(1):184-197. DOI: 10.1111/1752-1688.12373
26. Hoover, N.L.\* , A. Bhandari, M.L. Soupir, and T.B. Moorman. 2016. Woodchip Denitrification Bioreactors: Impact of Temperature and Hydraulic Retention Time on Nitrate Removal. *Journal of Environmental Quality*. 45:803-812.
27. Gali, R.K.\* , M.L. Soupir, A.L. Kaleita, P. Daggupati. 2015. Identifying potential locations for grassed waterways using terrain attributes and precision conservation technologies. *Transactions of the ASABE*. 58(5) DOI: 10.13031/trans.58.10995
28. Liao, C.\* , X. Liang\*, M.L. Soupir, L.R. Jarboe. 2015. Cellular, particle and environmental properties influencing attachment in waters: A review. *Journal of Applied Microbiology*. 119 (2): 315-330. DOI: 10.1111/jam.12860
29. Hoover, N.L.\* , R.S. Kanwar, M.L. Soupir, C. Pederson. 2015. Phosphorus Transport in Soil under Long-Term Applied Poultry Manure. *Water Air and Soil Pollution*. 226:138. DOI: 10.1007/s11270-015-2403-9
30. Pandey, P.K.\* , G.B. Pasternack, M. Majumder, M.L. Soupir, M.S. Kaiser. 2015. A neighborhood statistics model for predicting stream pathogen indicator levels. *Journal of Environmental Monitoring and Assessment*. 187(3): 124. DOI: 10.1007/s10661-014-4228-1
31. Gali, R.K.\* and Soupir, M.L. 2015. Near shore beach volume modeling approach for setting beach bacteria TMDLs: A case study, Hickory Grove Lake, Iowa. *Applied Engineering in Agriculture*. 31(1): 73-82.
32. Pandey, P.K., S. Biswas, V.K. Vaddella, M.L. Soupir. 2015 *Escherichia coli* persistence kinetics in dairy manure at moderate, mesophilic, and thermophilic temperatures under aerobic and anaerobic environments. *Bioprocess and Biosystems Engineering*. 38(3): 457-467. DOI: 10.1007/s00449-014-1285-3
33. Liang, X.\* , M.L. Soupir, S. Rigby, L.R. Jarboe, W. Zhang. 2014. Flow cytometry as a method to partition between freely suspended *E. coli* and *E. coli* attached to clay particles. *Journal of Applied Microbiology*. 117:1730-1739. DOI: 10.1111/jam.12660
34. Pandey, P.K.\* , Soupir, M.L. 2014. Assessing relationships between in -stream *Escherichia coli*, total suspended sediment, and water nutrients during storm flow in an Agricultural Watershed in Iowa. *Transactions of the ASABE*. 57(6): 1571-1581. DOI: 10.13031/trans.57.10371

35. Ikenberry, C.D, M.L. Soupir, K.E. Schilling, C.S. Jones, A. Seeman. 2014. Nitrate-nitrogen export: Magnitude and patterns from drainage districts to downstream river basins. *Journal of Environmental Quality*. 43(6): 2024-2033. DOI: 10.2134/jeq2014.05.0242.
36. Pandey, P.K., P. Kass, M.L. Soupir, S. Biswas, V. Singh. 2014. Contamination of water resources by pathogenic bacteria. *AMB Express*. 4:51 DOI 10.1186/s13568-014-0051-x
37. Garder, J.L.\*, T.B. Moorman, and M.L. Soupir. 2014. Occurrence and movement of total and tylosin resistant enterococci, *erm* genes, and tylosin in tile-drained agricultural fields receiving swine manure application. *Journal of Environmental Quality*. 43:1484-1493. DOI: 10.2134/jeq2013.09.0379
38. Pandey, P.K.\*, Sethi, L.N., Pholane, L.P., Soupir, M.L., Panda, S. N. 2014. Growth performance and economic analysis of Indian major Carps and Tilapia in Rainwater Ponds. *Fisheries Technology*. 51(2).
39. Brown, S.B.\*, C.D. Ikenberry\*, M.L. Soupir, J. Bisinger, J.R. Russell. 2014. Predicting time cattle spend in streams to quantify direct deposition of manure for TMDL development. *Applied Engineering in Agriculture*. 30(2): 187-195. DOI 10.13031/aea.30.10393
40. Zheng, W., Y. Zhao, H. Xin, B. Li, R.S. Gates, Y. Zhang, and M. Soupir. 2014. Airborne particulate matter and bacteria reduction from spraying slightly acidic electrolyzed water in an experimental aviary laying-hen system. *Transactions of the ASABE*. 57(1):229-236.
41. Yang, Z., H. Xin, D. Zhao, W. Zheng, W. Tian, H. Ma, K. Liu, H. Hu, T. Wang, M. Soupir. 2014. Free chlorine loss during spray of membrane-less acidic electrolyzed water and its antimicrobial effect on airborne bacteria from poultry houses. *Annals of Agricultural and Environmental Medicine*. 12(2): 249-255.
42. Zheng, W., Y. Zhao, H. Xin, B. Li, R. Gates, Y. Zhang, M. Soupir. 2013. Concentrations and size distributions of airborne particulate matter and bacteria in an experimental aviary laying-hen housing system. *Transactions of the ASABE*. 56(6): 1493-1501.
43. Hoang, T.T.T.\*, M.L. Soupir, A. Bhandari, and P. Liu. 2013. Occurrence of tylosin-resistant enterococci in swine manure and tile drainage systems under no-till management. *Water Air and Soil Pollution*. 224:1754. DOI 10.1007/s11270-013-1754-3
44. Pandey, P.K \*, P. van der Zaag, M.L. Soupir, and V.P. Singh. 2013. A model for predicting supplemental irrigation and potential rainwater harvesting for rainfed agriculture. *Water Resources Management*. 27(8) 3145-3164. DOI 10.1007/s11269-013-0340-1.
45. Pandey, P.K. \* and M.L. Soupir. 2013. Assessing the impacts of streambed sediment on total *E. coli* load over a range of flows. *Journal of the American Water Resources Association*. 49(6) 1261-1269 DOI: 10.1111/jawr.12079.
46. McDaniel, R.L.\*, M.L. Soupir, Tuttle, R.\*, and A. Cervantes\*. 2013. Release, dispersion, and resuspension of *E. coli* from direct fecal deposits under controlled flows. *Journal of the American Water Resources Association*. 49(2): 319-327. DOI:10.1111/jawr.12022.
47. McDaniel, R.L.\* and M.L. Soupir. 2013. Relationships between manure particle and *E. coli* transport from direct fecal deposits under steady-state flows. *Water Air and Soil Pollution*. 224(2). DOI:10.1007/s11270-013-1444-1.
48. Nguyen, H.Q., R.S. Kanwar, N. Hoover\*, P. Dixon, J. Hobbs, C. Pederson, M.L. Soupir. 2013. Long-term effects of poultry manure application on nitrate leaching in tile drainage water. *Transactions of the ASABE*. 56(1): 91-101.
49. Nguyen, H.Q., N. Hoover\*, R.S. Kanwar, P. Dixon, J. Hobbs, C. Pederson, M.L. Soupir. 2012. Effects of repeated surface application of poultry manure crop yield, N uptake and soil nitrate residual from a corn-soybean rotation. *Journal of Research*, published by Punjab Agricultural University, Ludhiana, India.
50. Pandey, P.K.\*, Soupir, M.L. 2012. Impacts of temperatures on biogas production in dairy manure anaerobic digestions. *International Journal of Engineering and Technology*. 4(5): 1793-8244.

51. ±Gali, R., M.L. Soupir and S. Mostaghimi. 2012. Transport of nutrients from various pastureland management scenarios. *Journal of Environmental Monitoring*. 14(9): 2421-2429. DOI:10.1039/C2EM30390F.
52. Pandey, P.K. \*, M.L. Soupir, M. Haddad, J. J. Rothwell. 2012. Assessing the impacts of watershed indexes and precipitation on spatial in-stream *E. coli* concentrations. *Ecological Indicators*. 23:641-652. DOI: 10.1016/j.ecolind.2012.05.023.
53. Pandey, P.K.\* and M.L. Soupir. 2012. A new method to estimate the variation of hourly and long term average daily global solar radiation on horizontal surface. *Atmospheric Research*. 114-115:83-90. DOI:10.1016/j.atmosres.2012.05.012.
54. Pandey, P.K. \*, M.L. Soupir, and C.R. Rehmann. 2012. A model to predict resuspension of *E. coli* from streambed sediments. *Water Research*. 46: 115-126. DOI:10.1016/j.watres.2011.10.019
55. Liu, P., M.L. Soupir, M.R. Zwonitzer\*, B. Huss\*, L.R. Jarboe. 2011. Association of antibiotic resistance in agricultural *Escherichia coli* isolates with attachment to quartz. *Applied and Environmental Microbiology*. 77(19): 6945-6953. DOI: 10.1128/AEM.00717-11.
56. Pandey, P.K. \*, M.L. Soupir, V.P. Singh, and S.N. Panda. 2011. Modeling rainwater storage in distributed reservoir systems in humid subtropical and tropical savannah regions. *Water Resources Management*. 25(13): 3091-3111. DOI:10.1007/s11269-011-9847-5.
57. Pandey, P.K.\* and M.L. Soupir. 2011. *E. coli* inactivation kinetics in anaerobic digestion of solid dairy manure under low, mesophilic and thermophilic temperatures. *AMB Express*. DOI:10.1186/2191-0855-1-18.
58. Pandey, P.K. \*, P.M. Ndegwa, M.L. Soupir, J.R. Alldredge, and M. Pitts. 2011. Efficacies of inocula on the startup of anaerobic reactors treating dairy manure under stirred and unstirred conditions. *Biomass and Bioenergy*. 35(7): 2705-2720. DOI: 10.1016/j.biombioe.2011.03.017.
59. ±Soupir, M.L. and S. Mostaghimi. 2011. *E. coli* and enterococci attachment to particles in runoff from high and low vegetative cover grassland. *Water, Air and Soil Pollution*. 216: 167-178. DOI:10.1007/s11270-010-0524-8.
60. Pandey, P.K. \*, P.M. Ndegwa, J.R. Alldredge, M. Pitts, and M.L. Soupir. 2010. Modeling effects of granules on the start-up of anaerobic digestion of dairy wastewater with Langmuir and extended Freundlich equations. *Bioprocess and Biosystems Engineering*. 33(7): 833-845. DOI: 10.1007/s00449-010-0406-x.
61. ±Soupir, M.L., S. Mostaghimi, and T. Dillaha. 2010. Attachment of *Escherichia coli* and enterococci to particles in runoff from bare soils. *Journal of Environmental Quality*. 39(3): 1019-1027. DOI:10.2134/jeq2009.0296.  
*Selected for inclusion in the Research Highlight program from ASA-CSSA-SSSA.*
62. Rehmann, C.R. and M.L. Soupir. 2009. Importance of interactions between the water column and the sediment for microbial concentrations in streams. *Water Research*. 43: 4579-4589. DOI: 10.1016/j.watres.2009.06.049.
63. Soupir, M.L., S. Mostaghimi, and C.E. Mitchem, Jr. 2009. A comparative study of stream-gaging techniques employed during low flows. *Journal of the American Water Resources Association*. 45(1): 110-122. DOI: 10.1111 / j.1752-1688.2008.00264.x.
64. ±Soupir, M.L., S. Mostaghimi, and J. Lou. 2008. Die-off of *E. coli* and enterococci in dairy cowpats. *Transactions of the ASABE*. 51(6): 1987-1996.
65. ±Soupir, M.L., S. Mostaghimi, and N.G. Love. 2008. A method to partition between attached and unattached *E. coli* in runoff from agricultural lands. *Journal of the American Water Resources Association*. 44(6): 1591-1599. DOI: 10.1111 / j.1752-1688.2008.00262.x.
66. ±Benham, B.L., C. Baffaut, R.W. Zeckoski, Y.A. Pachepsky, K.R. Mankin A.M. Sadeghi, K.M. Brannan, M.L. Soupir, and M.J. Habersack. 2006. Modeling pathogen fate and transport in watersheds to support TMDLs. *Transactions of the ASABE*. 49(4):987-1002.

67. ±Soupir, M.L., S. Mostaghimi, and E.R. Yagow. 2006. Nutrient transport from livestock manure applied to pastureland using phosphorus-based management strategies. *Journal of Environmental Quality*. 35:1269-1278.
68. ±Soupir, M.L., S. Mostaghimi, E.R. Yagow, C. Hagedorn, and D.H. Vaughan. 2006. Transport of fecal bacteria from poultry litter and cattle manures applied to pastureland. *Water, Air and Soil Pollution*. 169(1-4):125-136.
69. Soupir, M.L., S. Mostaghimi, A. Masters, K.A. Flahive, D.H. Vaughan, A. Mendez, and P.W. McClellan. 2004. The effectiveness of polyacrylamide (PAM) in reducing runoff, TSS and nutrient losses from construction sites. *Journal of the American Water Resources Association*. 40(1): 53-66.

## GRANTS

- Corn cobs as an alternative carbon source to enhance bioreactor performance for improved water quality. M.L. Soupir, J. Y. Law, T. Isenhardt, M.P. Davis. Collaborators: T. Moorman, G. Feyereisen. \$92,554. Iowa Nutrient Research Center. 7/01/18 – 6/30/20.
- Field testing and demonstration of a modified woodchip bioreactor designed for phosphorus and bacteria removal. M. Soupir. \$75,000 (+\$75,000 cost share). USDA NRCS CIG – Iowa. 9/1/18 – 8/31/21.
- Bacteria Source Tracking. M.L. Soupir. Iowa DNR. \$22,117. 5/1/18 – 5/31/19.
- SmartPath: Grower-directed convergence of nanotechnology and smart decision analytics for irrigation water quality management related to pathogens. McLamore, E.S., Migliaccio, K., Gao, B., Broaddus, B., Ahn, S., Eisenstadt, W., Arnold, D., Gomes, C., Karthikayen, R., Vaddiraju, Hashem, F., May, E., Parveen, S., Soupir, M., Winer, E. NIFA AFRI Water for Food Production Systems. \$4,867,727. 8/18 – 7/23.
- Perennializing Farmed Potholes To Improve Ecosystem Services. VanLoocke, A., S. Hall, E. Heaton, A. Kaleita, L. Schulte, M. Soupir. USDA NIFA AFRI. \$475,000. 4/1/18 to 12/31/21.
- Persistence of resistance: defining resistance gene and mobile element sentinels to evaluate their transmission in manure-applied soils. Howe, A., M. Soupir, H. Allen, T. Moorman. USDA NIFA AFRI. \$455,000. 1/1/18 to 12/31/21.
- Stripping antibiotic resistance with STRIPS: evaluating prairie buffer strips to mitigate resistance gene dissemination from manure-amended fields. M. Soupir (PI), A. Howe, L. Schulte Moore, M. Helmers, T. Moorman, H. Allen, D. Aga. USDA NIFA AFRI. \$1,200,000. 1/1/18 to 12/31/21.
- Impact of fall poultry manure application on water quality. Soupir, M.L. (PI), R.S. Kanwar, D.S. Anderson. Iowa Egg Council. \$135,126. 10/1/17 to 9/30/19.
- Woodchip bioreactors for improved water quality. M. Soupir (PI), N. Hoover, T. Moorman, T. Isenhardt. Iowa Nutrient Research Center. \$64,311. 7/1/17 to 6/30/18.
- Prairie strips for retaining antimicrobial resistant organisms. A. C. Howe, M.L. Soupir, L.A. Schulte, M. Helmers, T.B. Moorman. CHEEC \$40,000. 8/1/17 to 9/30/18.
- Prairie strips for retaining antimicrobial resistant organisms. A. C. Howe, **M.L. Soupir**, L.A. Schulte, M. Helmers, T.B. Moorman. CGER \$35,000. 8/1/17 to 9/30/18.
- Drainage water quality from manure-treated soybean crops: Bio-Electrical Modification of woodchip bioreactors for enhanced performance. **M. Soupir**, N.L. Hoover, T.B. Moorman. Iowa Soybean Association. \$69,493. 10/1/16 to 9/30/17.
- Woodchip bioreactors for improved water quality. M. Soupir, N.L. Hoover, T. Moorman, T. Isenhardt Iowa Nutrient Reduction Center. \$49,925. 10/1/15 to 9/30/16.

Impacts of prairie pothole hydrology on field-scale nitrogen and phosphorus loss. S.J. Hall, A.L. Kaleita, M.L. Soupir, A. VanLoocke. Iowa Nutrient Reduction Center. \$61,192. 10/1/16 to 9/30/18.

Edge-of-Field nitrate reduction strategies: investigating monomethylmercury production in anaerobic environments designed for denitrification. W. Crumpton, M. Soupir, C. Judge. Iowa Nutrient Reduction Center. \$67,730. 10/1/16 to 9/30/17.

Drainage water quality impacts of agricultural management practices: timing of manure application and use of a winter cereal rye cover crop project. M. Helmers. A. Mallarino, D. Andersen, J. Sawyer, M. Soupir, C. Pederson. Iowa Pork Producers. \$173,887. 01/01/16 – 12/31/19.

Effect of Manure Application Timing and Management on the Persistence and Transport of Antibiotics and Antibiotic-Resistant Bacteria in Corn and Soybean Production Systems. M. Soupir, T.B. Moorman, A. Howe, D. Andersen. National Pork Board. \$251,549. 2/1/16-1/31/19.

Evaluation of subsurface drainage on P losses in the Black Hawk Lake Watershed, Iowa. C. Brendel and M. Soupir. Iowa Water Center. \$5,000 (plus \$10,000 ISU cost share). 1/1/16 – 12/31/16.

Diversity of Antibiotic Resistance genes and Transfer Elements Quantitative Monitoring (DARTE-QM) for Environmental Samples. A. Howe, M. Soupir, H. Allen, T. Moorman, and S. Hinsa. USDA-NIFA-AFRI Food Safety Challenge. \$999,346. 01/01/16 – 12/31/19.

Does increasing landscape diversity in farmed closed depressions (potholes) increase profitability and ecosystem services? A.L. Kaleita, A. Vanlooche, M.L. Soupir, E. Heaton. \$121,494. Leopold Center for Sustainable Agriculture. 1/1/16 to 12/31/17.

Woodchip bioreactors for improved water quality. **M.L. Soupir**, N.L. Hoover, T.B. Moorman, T. Isenhardt. Iowa Nutrient Reduction Center. \$73,621. 10/1/15 to 9/30/16.

Monitoring and assessment of closed depressions. A.L. Kaleita and **M.L. Soupir**. \$264,859 (plus \$88,487 ISU cost-share). U.S. EPA Region 7 Wetland Development Grant Program. 1/1/16 to 12/31/18.

Drainage water quality from manure-treated soybean crops: Bio-Electrical Modification of woodchip bioreactors for enhanced performance. **M. Soupir**, N.L. Hoover, T.B. Moorman. Iowa Soybean Association. \$68,577. 10/1/15 to 9/30/16.

Metagenomic analysis and modeling of environmental resistance to agricultural antibiotics. **M. Soupir**, A. Howe and T. Moorman. Center for Health Effects of Environmental Contaminants. \$30,000. 8/15 to 7/16.

Impact of laying hen manure applications on water quality under continuous corn – Phase 2. R. Kanwar (PI) and **M. Soupir**. Iowa Egg Council. \$137,728. 4/15 to 3/18.

An innovative system to improve environment and productivity of aviary hen housing. H. Xin, Y. Zhao, T. Wang, S. Millman, T. Sheperd, **M. Soupir**, R. Parsons. AFRI, USDA NIFA. \$500,000. 10/1/14 to 9/30/17.

Augment 2013 Proposal: Research & Assessment of Woodchip Tile Denitrification Bioreactors: Optimal Design/ Performance and Experimental Bioreactor Installation and Study. Iowa Nutrient Research Center. **M. Soupir** and M. Honeyman. \$20,000. 7/1/14 to 6/30/15.

Drainage water quality impacts of current and future agricultural management practices. Iowa Nutrient Reduction Center. M. Helmers, **M. Soupir**, A. Mallarino, C. Pederson. \$43,242. 6/30/14 to 5/31/16.

National Water Quality Initiative (NWQI) Monitoring in the Black Hawk Lake Watershed. Iowa Department of Natural Resources. **M. Soupir**, A. Kaleita, M. Helmers. \$461,661. 7/1/14 to 12/30/19.

Hydrologic impacts of microwetlands in the Des Moines Lobe. A.L. Kaleita (PI) and **M.L. Soupir**. Iowa DNR. \$38,556. 1/15/14 to 1/31/15.

Simple and fast detection of pathogens in recreational waters. R. Cademartiri (PI) and **M. Soupir**. Center for Health Effects of Environmental Contaminants. 3/14 to 2/15. \$30,000.

Simple and Fast Detection of Bacteria in Recreational Waters. Water Environment Research Federation. R. Cademartiri (PI) and **M. Soupir**. \$195,513 (\$105,384 WERF, \$90,132 ISU cost-share). 3/1/14 to 2/1/16.

Simple and Fast Detection of *E. coli* in Agricultural Water Sources and Runoff. Leopold Center for Sustainable Agriculture. Cademartiri (PI) and **M. Soupir**. \$20,000. 1/1/14 to 12/31/14.

Research & Assessment of Woodchip Tile Denitrification Bioreactors: Optimal Design/ Performance and Experimental Bioreactor Installation and Study. Iowa Nutrient Research Center. **M. Soupir**. \$80,000. 10/1/13 to 9/30/15.

Persistence and Transport of Veterinary Antibiotics and Antibiotic-Resistant Bacteria in Midwestern Farming Systems. USDA-NIFA AFRI Renewable Energy, Natural Resources, and Environment (RENRE): Soil, Air, and Water Processes in Agroecosystems. T. Moorman, **M. Soupir**, D. Busch, R. Malone. \$460,000 (\$226,510 sub-contract to ISU). 10/1/13 to 9/30/16.

Drainage water quality from manure-treated soybean crops: Assessment of woodchip bioreactors for edge-of-field treatment. Iowa Soybean Association. **M. Soupir** (PI), N. Hoover, T. Moorman, M. Helmers. \$136,296. 10/1/13 to 9/30/15.

Genetic and environmental factors driving *E. coli* attachment to particles in streams. **M. Soupir (PI)**, L. Jarboe, M. Thompson. National Science Foundation. \$304,554. 10/1/2012 to 9/30/2015.

Evaluation of pothole wetland impacts on downstream water quantity and quality, and analysis of tile drain management as a potential tool for water resource protection. **M. Soupir (PI)**, C. Ikenberry, P. Gassman. Agriculture's Clean Water Alliance. \$20,000. 3/1/12 to 5/30/13.

Occurrence and Movement of Antibiotics, Antibiotic Resistant Bacteria and Resistance Genes in Tile-Drained Agricultural Fields Receiving Swine Manure Application. **M. Soupir (PI)**, T. Moorman, M. Helmers. National Pork Board. \$172,127. 4/1/12 to 3/31/15.

Sequence analysis of transferable genes encoding bacterial attachment and multi-drug resistance. L. Jarboe (PI), **M. Soupir**, C. Logue, L. Nolan. Center for Health Effect of Environmental Contamination, University of Iowa. \$30,000. 6/1/12 to 5/31/13.

Modeling Supplement: Hickory Grove Lake Watershed Management Plan. **M. Soupir (PI)**. Iowa DNR Watershed Planning Grant Program. \$3,600. 7/1/11 to 12/31/12.

REU Supplement: Resuspension of *E. coli* in Sediment Laden Streams. National Science Foundation CBET-0967845. **M. Soupir (PI)**. \$5,625. 5/01/12 to 8/31/12.

Investigation of bacteria transport and resistance mechanisms and implications for water quality from confinement swine and beef grazing production systems in Iowa. **M. Soupir**, M. Thompson, M. Helmers (Thompson, Soupir and Helmers are equal PIs), L. Jarboe R. Kanwar, A. Mallarino. Leopold Center for Sustainable Agriculture. \$162,100. 3/1/12 to 2/28/15.

Impact of laying hen manure applications on water quality under continuous corn. R. Kanwar (PI) and **M. Soupir**. Iowa Egg Council. \$120,000. 6/11 to 12/14.

Hickory Grove Lake Watershed Management Plan. **M. Soupir (PI)** and M. Helmers. Iowa DNR Watershed Planning Grant Program. \$63,880 (State - \$41,969, ISU cost-share - \$21,911). 7/1/11 to 12/31/12.

Occurrence and Movement of Antibiotic Resistant Bacteria and Resistance Genes in Tile-Drained Agricultural Fields Receiving Swine Manure Application. National Pork Board. **M. Soupir (PI)**, T. Moorman, A. Bhandari. \$29,743. 10/01/10 to 10/01/11.



Improving a watershed scale model to integrate wetlands into watershed planning. U.S. EPA Region 7 Wetland Development Grant Program. **M. Soupir (PI)**, P. Gassman, M. Jha, W. Crumpton, and M. Helmers. \$303,390 (Federal - \$225,998, ISU cost-share - \$77,392). 10/01/10 to 4/30/13.

REU Site: Sustainable Production and Processing for Biomass-Derived Fuels of the Future. National Science Foundation EEC-1004227. PIs: R. Raman (PI), **M. Soupir**, A. Bhandari; Collaborators: M. Darr, D. Grewell, T. Kim, M. Helmers, A. Kaleita, and R. Anex. \$311,790. 9/1/10 to 8/31/13.

Resuspension of *E. coli* in Sediment Laden Streams. National Science Foundation CBET-0967845. **M. Soupir (PI)**. \$365,000. 6/01/10 to 5/31/13.

Hickory Grove Water Quality Improvement Plan. Iowa Department of Natural Resources. **M. Soupir (PI)**, M. Helmers and A. Bhandari. \$148,718. 12/01/09 to 12/31/12.

National Academy of Engineering Travel Grant to Changsha, China. **M. Soupir**. \$2,000. 10/17/09 to 10/21/09.

REU Site: Summer Undergraduate Research Experiences in Biogeosciences at Iowa State University. National Science Foundation EAR-0851669. PIs: U. Sunday Tim, S. Mickelson and A. Kaleita; Collaborators: R. Kanwar, G. Takle, M. Helmers, B. Crumpton, **M. Soupir**, A. Bhandari. \$351,513. 8/15/09 to 7/31/12.

Improving SWAT for developing TMDLs for bacteria. U.S. EPA Region 7 TMDL Program. **M. Soupir (PI)** and C. Rehmann. \$78,830. 1/1/09 to 12/31/11.

The Potential Role of Poultry Manure Fertilizer in Pathogen and Pharmaceutical Contamination of Soil and Water. Iowa Egg Council. R. Kanwar and **M. Soupir**. \$90,000. 6/30/08 to 6/29/11.

An International Perspective on Agricultural Waste Management. U.S. Department of Agriculture, Food and Agricultural Sciences National Needs Graduate Fellowships Graduate Program – Special International Study or Thesis/Dissertation Research Travel Allowances. 2005-00730. **M. Soupir (PI)**, S. Mostaghimi, A. Dietrich. Amount: \$10,000. Duration: 8/15/05 to 6/1/07.

## RESEARCH LABORATORY AND STAFF MANAGEMENT

### Supervision of Professional Staff

Name	Position	Responsibilities	Dates
Leigh Ann Long	Research Associate II	Manage WQRL and NWQI Monitoring of Black Hawk Lake Watershed	5/12 - present
Natasha Hoover	Research Associate II	Manage woodchip bioreactor research projects	5/12 - present
Ji Yeow Law	Engineer I	Manage NWQI Monitoring of Black Hawk Lake Watershed	3/18 -present

### Professor In Charge of Research and Teaching Laboratories

Name	Location	Purpose	Dates
WQRL – Micro	4205 Sukup	Soupir research lab – BSL2	6/14 - present
WQRL - Nutrients	4207 Sukup	Service Lab – nutrient analysis	6/14 - present
Hydrology Lab	0208 Sukup	Recirculating Flume	6/14 - present

Land and Water Resources Teaching Lab	4208 Sukup	Undergraduate and graduate instruction	6/14 - present
Support Space	4201 and 4204 Sukup	Autoclave, dishwasher, coolers	6/14 - present

## STUDENT ADVISING

Served as postdoctoral research advisor for the following students

Name	Project	Dates
Bailey Sullivan	USDA project on antibiotics and resistant organisms <u>Current position:</u> University of Arkansas - Lecturer	1/14 - 6/15
Pramod Pandey	NSF project on resuspension of <i>E. coli</i> in streams <u>Current position:</u> University of California -Davis Extension Specialist	8/12 - 5/13

Served as Major Professor or Co-major Professor for the following graduate students (25 total, 6 PhD and 10 MS graduated)

Name	Degree/Position	Thesis Title
Laura Alt <sup>7</sup> B.A. Biology, Simpson College	Ph.D. Environmental Science begun 5/18	
Andy Craig B.S./M.S. Civil Eng., U. Iowa	Ph.D. ABE begun 7/17	
Areba Syed <sup>8</sup> Fulbright Scholar	Ph.D. ABE begun 8/17	
Hannah Guyer <sup>7</sup> B.S. BAE Michigan State	M.S. ABE begun 5/17	
Tim Neher B.S. Env Sci, Virginia Tech	M.S. ABE begun 5/17	
Emily Martin B.S. Env Sci, Iowa State University	M.S. Env Science begun 8/16 Completed 4/18 <u>Current position:</u> IA Natural Heritage Foundation – Grant writer	Improving the nutrient removal capabilities of woodchip bioreactors
Elliot Rossow <sup>3</sup> B.S. Env Sci. and Agronomy, Iowa State University	M.S. Environmental Science begun 5/16	
Alex Martin <sup>6</sup> B.S. AE, Iowa State University	M.S. ABE begun 5/16 Completed 7/18	Surface water hydrology and quality in farmed prairie potholes of the Des Moines Lobe in Iowa
Katherine van der Woude B.S. Env Sci, Iowa State University	M.S. Sustainable Agriculture begun 5/16 Completed 7/18	An analysis of BMPs and their combined effectiveness at reducing nitrate- nitrogen export to the Black Hawk Lake Watershed, Iowa
Ji Yeow Law B.S. BSE, Iowa State University	B.S./M.S. ABE begun 8/15 Completed 7/17 <u>Current position:</u> Engineer, ABE WQRL	Opportunities and challenges to use electrical stimulation in nitrate-removal woodchip bioreactors

Conrad Brendel B.S. Civil Engineering, Iowa State University	M.S. ABE begun 5/15 Completed 5/17 <u>Current position:</u> Ph.D. Student, Virginia Tech	Evaluation of subsurface drainage on phosphorus losses and application of the SoilIceDB model in the Black Hawk Lake Watershed, Iowa
Miguel Chavez- Santoscoy <sup>5</sup> (Soupir is Co- major Professor)	M.S. CBE begun 8/14 Completed 7/16 <u>Current position:</u> PhD Student, ISU	Fast and inexpensive bacteria detection method for recreational waters
Elizabeth Luby <sup>3</sup> B.S. Biological Systems Engineering, Virginia Tech M.S. ABE Iowa State University	Ph.D. AE begun 8/14 Completed 4/18 <u>Current position:</u> Post-Doc, ISU	Fate and transport of manure associated microbial constituents in agroecosystems
Chenkai Wu B.S. Biological Engineering, Zhejiang University	M.S. ABE begun 8/13 Completed 8/15 <u>Current position:</u> Standardization Institute, China	Long term effect of poultry manure application on water quality, yield under a corn-corn system in Iowa
Ross Tuttle B.S. Civil Engineering, Iowa State University	M.S. ABE begun 1/13 <u>Current position:</u> Civil Engineer, U.S. Army Corps of Engineers, Norfolk, VA	Transport of antibiotic resistant bacteria from swine amended fields during precipitation events
Chunyu Liao <sup>1</sup> (Soupir is Co- major Professor)	Ph.D. Microbiology begun 8/10 Completed 12/15 Postdoc in Chase Beisel's lab North Carolina State University	Genetic Factors Driving Attachment of <i>Escherichia coli</i> to Stream Particles
Maurice Washington <sup>3</sup> B.S. Biological Engineering, NC A&T; M.S. Agricultural & Biological Engineering, Penn State	Ph.D. AE begun 8/12 Completed 7/17 <u>Current position:</u> Water Resources Control Eng., CA N. Coast Regional Water Quality Control Board (Ag & Cannabis Unit)	Monitoring of antibiotics and atrazine in tile-drained landscapes
Elizabeth Luby <sup>3</sup> B.S. Biological Systems Engineering, Virginia Tech	M.S. AE begun 8/12 Completed 7/14 <u>Current position:</u> PhD student	Fate and transport of antibiotic resistant bacteria and resistance genes in artificially drained agricultural fields receiving swine manure application
Jason Garder <sup>3</sup> B.S. Civil Engineering, South Dakota State University	M.S. CE begun 5/11 completed 9/12 <u>Current position:</u> Environmental Engineer, Burns & McDonnell, KC, MO	Occurrence and movement of total and tylosin resistant enterococci, erm genes and tylosin in tile-drained agricultural fields receiving swine manure application
Charles Ikenberry B.S. Civil Engineering, University of	Ph.D. AE begun 1/11_completed 4/16 <u>Current position:</u> Fyra Engineering	Prediction of hydrology and nitrate- nitrogen transport in tile-drained watersheds

Nebraska; M.S. Biological and Agricultural Engineering, Kansas State University		
Xiao Liang <sup>4</sup> M.S. ABE Iowa State University	Ph.D. AE begun 5/12 Completed 12/15 <u>Current position:</u> Data Scientist at Elevate	Bacterial, particulate, and environmental factors driving <i>E. coli</i> attachment to particles
Xiao Liang B.Tech. Nanjing Agricultural University	M.S. AE begun 8/10 completed 4/12 <u>Current position:</u> PhD student	Method to partition between freely suspended <i>Escherichia coli</i> and <i>Escherichia coli</i> attached to clay particles
Natasha Hoover <sup>2</sup> B.S. Environmental Science, Iowa State University	M.S. Env. Sci. begun 6/10, completed 4/12 <u>Current position:</u> Research Associate ABE ISU	Denitrification woodchip bioreactor two-phase column study: evaluation of nitrate removal at various hydraulic retention times and effect of temperature on denitrification rates
Rohith Gali B.Tech. Acharya N.G. Ranga Agricultural University in Hyderabad, India M.S. Biological and Agricultural Engineering, Kansas State University	Ph.D. AE begun 6/10, completed 4/14 <u>Current position:</u> Agricultural Engineer, Waterborne Environmental, Inc.	Assessing monitoring and modeling approaches to improve water quality in the Hickory Grove Lake
Amy Cervantes B.S. Environmental Engineering, Missouri University of Science & Technology	M.S. CCEE begun 6/10, completed 4/12 <u>Current position:</u> Environmental Engineer, Seneca Companies, Des Moines, IA	Resuspension of <i>E. coli</i> under controlled flows and stream bottom substrates
Claire Hruby B.S. Earth and Environmental Sciences, Wesleyan University; M.S. Geology, Iowa State University	Ph.D. Env. Sci. begun 1/10 Completed 5/15 <u>Current position:</u> Geologist, Iowa DNR	The Effects of Poultry Litter Application on Tile Water Quality, Associated Transport Processes, and Laboratory Methods
Rachel McDaniel B.S. Agricultural Engineering, Iowa State University	M.S. AE begun 1/10, completed 8/11 <u>Current position:</u> Assistant Professor, SDSU	Understanding bacterial transport from direct fecal deposits under controlled flows
Pramod Kumar Pandey B.Tech. and M. Tech, IIT M.S. Environmental Engineering,	Ph.D. AE begun 1/09, completed 12/12 <u>Current position:</u> University of California -Davis Extension Specialist	Modeling In- Stream <i>Escherichia coli</i> Concentrations

Washington State University		
Trang Thi Thu Hoang B.S. Water Resources University, Vietnam	M.S. Env. Sci. and AE begun 8/08, completed 12/10	Occurrence of tylosin-resistant enterococci in swine manure and tile drainage systems under no-till management.
Martha Zwonitzer <sup>1</sup> B.S. Crop, Soil and Environmental Science, University of Arkansas	M.S. Env. Sci. begun 8/08, completed 8/15 <u>Current position:</u> Research Assistant, Texas A&M AgriLife Research, Lubbock/Halfway & Pecos	Exploring the relationship between transport and resistance of <i>Escherichia coli</i> collected from swine manure

<sup>1</sup>Co-advised with Dr. Laura Jarboe, <sup>2</sup>Co- advised with Dr. Alok Bhandari, <sup>3</sup>Co- advised with Dr. Thomas Moorman, <sup>4</sup>Co- advised with Dr. Michael Thompson, <sup>5</sup>Co-advised with Dr. Rebecca Cademartiri, <sup>6</sup>Co-advised with Dr. Amy Kaleita, <sup>7</sup>Co-advised with Dr. Adina Howe, <sup>8</sup>Co-advised with Dr. Ramesh Kanwar