# Curriculum Vitae

# JEFFREY LAYTON ULLMAN

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## EXPERTISE

WATER AND SOIL QUALITY

My research, teaching and outreach activities follow a comprehensive, interdisciplinary approach to solve water management issues and increase agricultural production, drawing on facets of chemistry, hydrology and land-use management. Results are directly applied to develop engineered mitigation, remediation and treatment technologies. Outcomes are aimed at the implementation of improved best management practices (BMPs) to protect and restore water quality, meet regulatory requirements, and enhance agronomic outputs. Within this framework, core project areas include:

- Irrigation management
- Water reuse (reclaimed wastewater) and manure management for agricultural use
- Wastewater treatment, including agricultural, domestic and municipal systems
- Tillage practices to improve water and soil quality while providing agronomic benefits

## EDUCATION

- **Ph. D. Biological & Agricultural Engineering,** Texas A&M University, College Station, TX
  Dissertation: *The Chemical Behavior of Estrone and 17β-estradiol in the Environment*
- **M. S. Environmental Science,** Duke University, Durham, NC
  Thesis: *Characterization of Iron in a Constructed Wetland following Metal Dosing to Enhance Phosphorus Removal from Agricultural Runoff*
- **B. S. Agricultural Engineering,** Texas A&M University, College Station, TX
- **B. S. Natural Resources,** Cornell University, Ithaca, NY
  Honors thesis: *Examination of Water Quality Assessment Methods in Cascadilla Creek, NY*

## PROFESSIONAL EXPERIENCE

- **Director, Irrigation Center**, 2023 – present
  **Associate Professor**, 2021 – present
  **Mechanization & Irrigation Program Lead**, 2021 – present
  **Internship Coordinator**, 2021 – 2023
  *Rwanda Institute for Conservation Agriculture, Bugesera, Rwanda, 2021– present*
  Conduct research, extension, training and teaching programs on irrigation and water management in the context of food security. Envision, launch and manage Mechanization & Irrigation Enterprise program that includes supervision of design, structural development and implementation of facilities and operations. Created, supervised and operated Internship Program as 6-month capstone project.
- **Watershed Analysis & Implementation Support Workgroup Leader (Physical Science Researcher/Scientist III)**
  *Colorado Department of Public Health & Environment, Water Quality Control Division Denver, CO, 2019 – 2020*
  Manage team to assess watershed contributions to water quality impairment, develop total maximum daily loads (TMDLs; an EPA regulatory watershed plan to restore water quality), and support the implementation of best management practices (BMPs) to meet water quality

goals. BMPs primarily associated with agriculture, including irrigation and tillage. Entails significant outreach with agricultural producers and watershed stakeholders.

- **Associate Research Professor, Civil and Environmental Engineering**
  *University of Utah, Salt Lake City, UT, 2017 – 2019*
- **Technical Advisor, U.S.-Pakistan Centers for Advanced Studies in Water (USPCASW)**
  *Mehran University of Engineering and Technology, Jamshoro, Pakistan, 2017 – 2019*
  Institution building to increase the research and teaching capacity of USPCASW faculty members in four programs: Hydraulics, Irrigation & Drainage, Environmental Engineering, Integrated Waster Resource Management, and Water, Sanitation and Health (WaSH)
- **Assistant Professor/Extension Specialist, Agricultural and Biological Engineering**
  *University of Florida, Gainesville, FL, 2011 – 2016*
  Appointment: 60% Extension, 40% Research
  Affiliate faculty: UF Sustainable Development Practice Program and UF School of Natural Resources and Environment
- **Assistant Professor, Biological Systems Engineering**
  *Washington State University, Pullman, WA, 2006 – 2011*
  Appointment: 85% Research, 15% Teaching
  Housed in and affiliate faculty of Department of Civil & Environmental Engineering
- **Associate Director, Center for Environmental, Sediment & Aquatic Research (CESAR)**
  *Washington State University, Pullman, WA, 2007 – 2009*
  Daily administration of analytical laboratory that acted as a service center for wide range of environmental pollutants

## RESEARCH GRANTS

Total: $2,732,889 (PI $1,691,753; Co-PI $1,041,136)

1) Sensor-based, "smart" irrigation and fertigation to optimize water and fertilizer use efficiency in Rwanda. **PI Ullman**. GIZ ( Deutsche Gesellschaft für Internationale Zusammenarbeit; administered via Kumva Insights), Awarded 11/23. €100,000 (~$106,000 on Nov. 1, 2023)
2) *Conjunctive Use of Treated Wastewater and Conventional Water Resources to Sustain Agricultural Production and Mitigate Environmental Risks of Reuse: Diagnosis and Optimization* – Phase 2. **PI Ullman**. U.S. Agency for International Development (USAID; distributed via DAI), Awarded 3/14. $116,351.
3) Mitigating the Spread of Antibiotic and Resistance Determinants Through Ecosystems. PI M. Marvasi, Co-PIs G. O'Connor, M. Teplitski and **Ullman**. UF Collaborative Research Initiative in Soil and Water Science (CRISWS), 12/13-6/15. $10,000.
4) *Irrigation and Fertilizer Risk Management Strategies*. **PI Ullman**, Co-PIs L. Zotarelli, T. Borisova and K. Morgan. USDA – Southern Risk Management Education Center, 8/13-7/14. $45,751.
5) *Development of an Integrated Vegetable Cropping System (Cabbage/Cucurbit) to Improve Irrigation and Fertilizer Use Efficiency*. PI L. Zotarelli, Co-PIs **Ullman**, M. Dukes, T. Borisova and J. VanSickle. Florida Department of Agriculture & Consumer Services, 1/13-12/14. $179,038.
6) *Conjunctive Use of Treated Wastewater and Conventional Water Resources to Sustain Agricultural Production and Mitigate Environmental Risks of Reuse: Diagnosis and Optimization* – Phase 1. **PI Ullman**. U.S. Agency for International Development (USAID; distributed via DAI), 2/13-12/13. $11,891.

7) *Reclaimed Wastewater Use for Agricultural Irrigation in North Africa and the Middle East: Mitigating Human and Environmental Risk in Tunisia*. **PI Ullman**, Co-PI S. Russo. USDA-FAS, 9/12-3/15. $39,985.

8) *TCAA Water Quality Data Review and Information Sharing Program*. PI M. Clark, Co-PIs W. Graham, K. McKee and **Ullman**. Florida Department of Agriculture & Consumer Services, 9/11-5/12. $58,643.

9) *Riparian Grazing and Water Quality Risk Management Strategies*. PI T.Hudson, Co-PIs L. Hardesty, J. Buckhouse, **Ullman**, D. Nelson and S. VanVleet. USDA – Western Center for Risk Management Education, 7/11-6/12. $49,982.

10) *Evaluation of Pharmaceuticals and Personal Care Products and Endocrine Disrupting Compounds in the Spokane WWTP*. PI D.R. Yonge, **Co-PI Ullman**. Esvelt Environmental Engineering, 11/10-4/11. $34,971.

11) *Support for Nader Abo-Tbeekh*. **PI Ullman**. Institute of International Education Scholar Rescue Fund, 10/10-7/11. $29,160.

12) *Clarks Creek Water Quality Science, Restoration and Education Implementation Program*. PI R. Hummel, **Co-PIs Ullman**, M. Beutel and T. Erwin. Washington Department of Ecology, 4/10-3/13. $249,966.

13) *Evaluation of Sediment Yield Reduction Potential for Agricultural Lands Contributing to Lower Granite Reservoir*. PI M. Barber, Co-PIs **Ullman** and J. Boll. US Army Corps of Engineers, 2/10-10/10. $264,100.

14) *Water Quality Parameters Controlling the Photodegradation of Herbicides in Surface Waters in the Columbia Basin, Washington*. PI O. Furman, Co-PIs J. Rentz, **Ullman** and R. Watts. State of Washington Water Resources Center Sector 104B Funds (from USGS), 3/10-2/11. $28,000.

15) *Protecting Water Resources by Engaging Stakeholders in Targeted Implementation of Filter Strips*. **PI Ullman**, Co-PIs G. Kiker, V. McCracken, R. Muñoz-Carpena and W. Pan. USDA-CSREES National Integrated Water Quality Program, 9/09-9/12. $566,610.

16) *Antibiotics and Antibiotic-Resistant Bacteria in Manure and Biosolids – Implications for Agricultural Systems and Water Quality: Phase 2*. **PI Ullman**, Co-PIs A. Bary, D. Call, L. Carpenter-Boggs, C. Cogger, J. Harrison and J. Rentz. WSU Emerging Research Issues for Washington Agriculture, 7/09-6/10. $45,000.

17) *Sediment Analysis Laboratory – Acquisition of Equipment Focused on Sediment Analysis for Environmentally Significant Contaminants*. **PI Ullman**, Co-PIs Center for Environmental, Sediment & Aquatic Research. Murdock Charitable Trust, Awarded 9/08. $348,000.

18) *Impacts of Endocrine Disrupting Chemicals (EDCs) on Spawning Male Salmonids Exposed to Treated Wastewater Effluent*. **PI Ullman**. Tulalip Tribe, 9/08-12/08 (moved to 1/09-4/09). $6,562.

19) *Antibiotics and Antibiotic-Resistant Bacteria in Manure and Biosolids – Implications for Agricultural Systems and Water Quality: Phase 1*. **PI Ullman**, Co-PIs A. Bary, L. Carpenter-Boggs, C.Cogger, J. Harrison, K. Killinger and J. Rentz. WSU Emerging Research Issues for Washington Agriculture, 7/08-6/09. $62,945.

20) *Antibiotics in Animal Manure – A Challenge to Organic Cropping Systems*. **PI Ullman**. WSU Center for Sustaining Agriculture & Natural Resources BIOAg Program, 7/08-6/09. $30,000.

21) *Water Resource Inventory Area 35 Stream Habitat Assessment*. **PI Ullman**, Co-PI M. Barber. Asotin County, 7/08-6/09. $35,063.

22) *Improving Fish Habitat Using Innovative Strategies to Remediate Contaminated Sediments in the Columbia River Basin*. **PI Ullman**, Co-PI J. Rentz. U.S. Department of Energy - Bonneville Power Administration, 7/08 – 12/09. $185,112. (Rankings released by agency, #1 out of 59 submissions)

23) *Sustainable Phosphorus Removal Using Biogenic Iron Oxides*. PI J. Rentz, **Co-PI Ullman**. Water Environment Research Foundation – Unsolicited Research Program, 7/08-6/10. $114,214.

24) *Assessing Pathogen Fate and Transport through Riparian Buffers in an Agricultural Watershed*. **PI Ullman**, Co-PIs K. Killinger and J. Wu. State of Washington Water Resources Center Sector 104B Funds (from USGS), 3/08-2/09. $24,964.

25) *A Sustainable Agriculture Approach to Improve Water Quality and Reduce Foodborne Pathogens in Fresh Water Resources using Vegetative Filter Strips*. PI K. Killinger, **Co-PI Ullman** and J. Harrison. WSU Emerging Research Issues for Washington Agriculture, 6/07-6/08. $52,222.

26) *Use of Vegetative Filter Strips to Reduce Off-site Pathogen Migration: An Initial Look at Control Strategies to Maintain a Safe Water and Food Supply*. **PI Ullman**, Co-PI K. Killinger. WSU New Faculty Seed Grant. 5/07 – 8/08. $14,359.

27) *Assessment of Contaminated Sediments Using Rainbow Trout (Oncorhynchus mykiss) as an Embryonic Exposure Assay*. **PI Ullman**. State of Washington Water Resources Center Sector 104B Funds (from USGS). 3/07 – 2/08. $24,000.

## PUBLICATIONS

### Peer-Reviewed Publications

Bakhsh, N., R.B. Mahar, Z. Ahmed, **J.L. Ullman**, Z. Khatri, F. Ahmed and Q. Khan. Planned 2024. Preparation of antifouling polyvinylidene fluoride/cellulose acetate nanocomposite membranes by electrospinning technique. Submitted.

Khan, Q, U. Imran, **J.L. Ullman** and A. A. Khokhar. 2023. Turbidity removal through the application of powdered *Azadirachta indica* (neem) seeds. Mehran University Research Journal of Engineering and Technology 42(1): 1-8. Doi.org/10.22581/muet1982.2301.01.

Ayaz, I., M. Rizwan, **J.L. Ullman**, H. Haroon, A. Qayyum, N. Ahmed, B.H. Elesawy, A.F. Gharib and K.A. Ismail. 2022. Lignocellulosic based biochar adsorbents for the removal of fluoride and arsenic from aqueous solution: isotherm and kinetic modeling. Polymers 14(4): 715. doi.org/10.3390/polym14040715.

Awan, S., J.A. Ippolito, **J.L. Ullman**, K. Ansari, L. Cui and A.A. Siyal. 2021. Biochars reduce irrigation water sodium adsorption ratio. Biochar 3(1): 77-87. doi.org/10.1007/s42773-020-00073-z

Lawrence, J., R.B. Mahar, **J.L. Ullman**, Z. Ahmed. 2020. Digestion of linoleic acid using an anaerobic fluidized bed reactor. Desalination and Water Treatment 206: 144-152 doi: 10.5004/dwt.2020.26311

Mehmood, R., U. Imran, A. Ullah, **J.L. Ullman** and J. Weidhaas. 2020. Human risks associated with accumulation of heavy metals in fish of Keenjhar Lake, Pakistan. Environmental Science and Pollution Research 27: 24162-24172. doi.org/10.1007/s11356-020-08705-4

Mitchell, S.M. and **J.L. Ullman**. 2016. Removal of phosphorus, BOD, and pharmaceuticals by rapid rate sand filtration and ultrafiltration systems. Journal of Environmental Engineering doi:10.1061/(ASCE)EE.1943-7870.0001137

Ding, Y., W. Wang, X. Liu, X. Song, Y. Wang and **J.L. Ullman**. 2016. Intensified nitrogen removal of constructed wetland by novel integration of high rate algal pond biotechnology. Bioresource Technology 219: 757-761. doi: 10.1016/j.biortech.2016.08.044

Wang, Wei, Y. Ding, Y. Wang, X. Song, R.F. Ambrose and **J.L. Ullman**. 2016. Intensified nitrogen removal in immobilized nitrifier enhanced constructed wetlands with external carbon addition. Bioresource Technology 218: 1261-1265. https://doi.org/10.1016/j.biortech.2016.06.135

Wang, W., Y. Ding, Y. Wang, X. Song, R.F. Ambrose, **J.L. Ullman**, B.K. Winfrey and J. Gong. 2016. Treatment of rich ammonia nitrogen wastewater with polyvinyl alcohol immobilized nitrifier

biofortified constructed wetlands. Ecological Engineering 94: 7-11. doi:10.1016/j.ecoleng.2016.05.078

Wang, W., Y. Ding, **J.L. Ullman**, R.F. Ambrose, Y. Wang, X. Song and Z. Zhao. 2016. Nitrogen removal performance in planted and unplanted horizontal subsurface flow constructed wetlands treating different influent COD/N ratios. Environmental Science and Pollution Research 23: 9012-9018. doi: 10.1007/s11356-016-6115-5

Mitchell, S.M., **J.L. Ullman**, A.L. Teel and R.J. Watts. 2015. Hydrolysis of amphenicol and macrolide antibiotics: chloramphenicol, florfenicol, spiramycin, and tylosin. Chemosphere 134: 504-511. doi:10.1016/j.chemosphere.2014.08.050

Campo-Bescós, M.A., R. Muñoz-Carpena, G.A. Kiker, B.W. Bodah, **J.L. Ullman**. 2015. Watering or buffering? Runoff and sediment pollution control from furrow irrigated fields in arid environments. Agriculture, Ecosystems and Environment 205: 90-101. doi: 10.1016/j.agee.2015.03.010

Mitchell, S.M., **J.L. Ullman**, A. Bary, C.G. Cogger, A.L. Teel and R.J. Watts. 2015. Antibiotic degradation during thermophilic composting. Water, Air, & Soil Pollution 226(2) Article 13. doi:10.1007/s11270-014-2288-z

Mitchell, S.M., M. Subbiah, **J.L. Ullman**, C. Frear and D.R. Call. 2015. Evaluation of 27 different biochars for potential sequestration of antibiotic residues in food animal production environments. Journal of Environmental Chemical Engineering 3: 162-169. doi: 10.1016/j.jece.2014.11.012

Zhang, M., B. Gao, J. Fang, A.E. Creamer, **J.L. Ullman**. 2014. Self-assembly of needle-like layered double hydroxide (LDH) nanocrystals on hydrochar: characterization and phosphate removal ability. RSC Advances 4: 28171-28175. doi:10.1039/c4ra02332c

Mejías, J.H., Lu, X., Osorio, C., **J.L. Ullman**, D. von Wettstein, D., Rustgi, S. 2014. Analysis of wheat prolamins, the causative agents of celiac sprue, using reversed phase high performance liquid chromatography (RP-HPLC) and matrix-assisted laser desorption ionization time of flight mass spectrometry (MALDI-TOF-MS). Nutrients 6: 1578-1597. doi:10.3390/nu6041578

Mitchell, S.M., **J.L. Ullman**, A.L. Teel and R.J. Watts. 2014. pH and temperature effects on the hydrolysis of three β-lactam antibiotics: ampicillin, cefalotin and cefoxitin. Science of the Total Environment 466-467: 547-555.

McLamore, E.S., J.L. Garland, C. Mackowiak, A. Desaunay, N. Garland, P. Chaturvedi, M. Taguchi, K. Dreaden, J. Catechis, and **J.L. Ullman**. 2014. Development and validation of an open source $O_2$-sensitive gel for physiological profiling of soil microbial communities. Journal of Microbiological Methods 96: 62-67.

Dhawan, S., S. Sablani, J. Tang, G. Barbosa-Canovas, **J.L. Ullman** and K. Bhunia. 2014. Silicon migration from high-barrier coated multilayer polymeric films to selected food simulants after microwave processing treatments. Packaging Technology and Science 27(8): 625-638.

Mitchell, S.M., **J.L. Ullman**, A.L. Teel, R.J. Watts, and C. Frear. 2013. The effects of the antibiotics ampicillin, florfenicol, sulfamethazine, and tylosin on biogas production and their degradation efficiency during anaerobic digestion. Bioresource Technology 149: 244-252.

Van Wie, J.B., J.C. Adam and **J.L. Ullman**. 2013. Conservation tillage in dryland agriculture impacts watershed hydrology. Journal of Hydrology 483:26-38.

Abi-Ghanem, R., L. Carpenter-Boggs, R.T. Koenig, **J.L. Ullman**, K.M. Murphy and C.D. Pannkuk. 2013. Access to agricultural inputs, technology and information, communicating with farmers, and the role of women in agriculture: perceptions of Iraq extension agents. Journal of International Agricultural Extension and Education 20(1):6-18. doi: 10.5191/jiaee.2013.20101

Vaddella, V.K., P.M. Ndegwa, **J.L. Ullman** and A. Jiang. 2013. Mass transfer coefficients of ammonia for liquid dairy manure. Atmospheric Environment 66:107-113.

Subbiah, M., D.H. Shah, T.E. Besser, **J.L. Ullman** and D.R. Call. 2012. Urine from treated cattle drives selection for cephalosporin resistant Escherichia coli in soil. PLOS ONE 7(11):e48919. doi:10.1371/journal.pone.0048919.

Salman, N.A., **J.L. Ullman** and X.Q. Lu. 2012. Fish size as a key factor in copper toxicity to fish: impact of water-born copper on some physiological indices in rainbow trout (*Oncorhynchus mykiss*) of various size groups. Basrah Journal of Agricultural Science 25(special issue 2): 14-25.

Salman, N.A., **J.L. Ullman**, K. Snekvik and X.Q. Lu. 2012. Histopathological markers for copper toxicity in rainbow trout fry (*Oncorhynchus mykiss*). Basrah Journal of Agricultural Science 25(special issue 2): 26-39.

Subbiah, M., S.M. Mitchell, **J.L. Ullman** and D.R. Call. 2011. Beta-lactams and florfenicol antibiotics remain bioactive in soils while ciprofloxacin, neomycin, and tetracycline are neutralized. Applied and Environmental Microbiology 77(20):7255-7260.

Ahmad, M., M.A. Simon, A. Sherrin, M.E. Tuccillo, **J.L. Ullman**, A.L. Teel and R.J. Watts. 2011. Treatment of polychlorinated biphenyls in two surface soils using catalyzed $H_2O_2$ propagations. Chemosphere 84: 855-862.

Poor, C.J. and **J.L. Ullman**. 2010. Using regression tree analysis to improve predictions of low-flow nitrate and chloride in Willamette River Basin watersheds. Environmental Management 46:771-780.

Vaddella, V.K., P.M. Ndegwa, H.S. Joo and **J.L. Ullman**. 2010. Impact of separating dairy cattle excretions on ammonia emissions. Journal of Environmental Quality 39:1807-1812.

Rentz, J.A., I.P. Turner and **J.L. Ullman**. 2009. Removal of phosphorus from solution using biogenic iron oxides. Water Research 43:2029-2035.

Al-Houri, Z.M., M.E. Barber, D.R. Yonge, M.W. Beutel and **J.L. Ullman**. 2009. Impacts of frozen soil on the performance of infiltration treatment facilities. Cold Regions Science and Technology 59(1):51-57.

**Ullman, J.L.** and S. Mukhtar. 2007. Impact of dairy housing practices on lagoon effluent characteristics: Implications for nitrogen dynamics and salt accumulation. Bioresource Technology 98(4):745-752.

**Ullman, J.L**. 2005. Remedial activities to reduce atmospheric pollutants from animal feeding operations. Agricultural Engineering International: The CIGR (Commission Internationale du Genie Rural; International Commission of Agricultural & Biosystems Engineering) Journal of Scientific Research and Development Vol. VII, Invited Paper No. 9.

**Ullman, J.L.**, S. Mukhtar, R.E. Lacy and J.B. Carey. 2004. A review of literature concerning odors, ammonia and dust from broiler production facilities: 4. Remedial management practices. Journal of Applied Poultry Research 13:521-531.

Mukhtar, S., **J.L. Ullman**, J.B. Carey and R.E. Lacey. 2004. A review of literature concerning odors, ammonia and dust from broiler production facilities: 3. Land application, processing and storage of broiler litter. Journal of Applied Poultry Research 13:514-520.

Lacey, R.E., S. Mukhtar, J.B. Carey, **J.L. Ullman**. 2004. A review of literature concerning odors, ammonia and dust from broiler production facilities: 1. Odor concentrations and emissions. Journal of Applied Poultry Research 13:500-508.

Mukhtar, S., **J.L. Ullman**, B.W. Auvermann, S.E. Feagley and T.A. Carpenter. 2004. Impact of anaerobic lagoon management on sludge accumulation and nutrient content for dairies. Transactions of the ASAE 47(1):251-257.

## Book Chapters and Invited Papers

Ayaz, I., M. Rizwan, **J.L. Ullman**, H. Haroon, A. Qayyum, N. Ahmed, B.H. Elesawy, A. El Askary, A.F. Gharib and K.A. Ismail. 2023 *in* Fahim, I.S., A.K. Badawi and H.E. Emam (eds.) Novel

Wastewater Treatment Applications Using Polymeric Materials. MDPI, Basel, Switzerland. *online at*: https://www.mdpi.com/books/pdfdownload/book/6624

**Ullman, J.L.** and G.F. Wilhere. 2020. Ch. 5. Pollutant removal. Pages 111-161 *in* T. Quinn, G.F. Wilhere and K.L. Krueger, technical editors. Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications. Habitat Program, Washington Department of Fish & Wildlife, Olympia, WA. *online at*: https://wdfw.wa.gov/sites/default/files/publications/01987/wdfw01987.pdf

Rustgi, S., D. von Wettstein, N. Ankrah, R.A.T. Brew-Appiah, S. Wen, C. Osorio, R. Gemini, P. Reisenauer, L. Xiaoqiao, J.H. Mejias, C.P. Moehs, R. Zemetra and **J.L. Ullman**. 2012. Engineering wheat for celiac patients. Annual Wheat Newsletter 58: 248-253.

**Ullman, J.L.** 2011. Ch. 13. Remediation of dense non-aqueous phase liquids (DNAPLs) from groundwater using nanoparticles. *in* Ram, M., S. Andreescu and H. Ding (eds.) Nanotechnology for Environmental Decontamination. McGraw Hill, NY.

## Extension Publications

**Ullman, J.L.**, B.W. Bodah, M.A. Campo-Bescós, Gregory A. Kiker, Rafael Muñoz-Carpena and R.T. Peters. Controlling sediment pollution from furrow-irrigated (rill-irrigated) fields: Impacts of water management and vegetative filter strips. Washington State University Extension (in review).

Bodah, B.W., **J.L. Ullman**, M. Stannard, R.T. Peters and W. Pan. 2016. Managing and maintaining vegetative filter strips on rill-irrigated row fields. Extension Bulletin FS214E. Washington State University Extension, Pullman, WA.

Bodah, B.W., **J.L. Ullman**, M. Stannard, R.T. Peters and W. Pan. 2016. Vegetative filter strip use as a rill-irrigated best management practice. Extension Bulletin FS215E. Washington State University Extension, Pullman, WA.

Bodah, B.W., **J.L. Ullman**, M. Stannard, R.T. Peters and W. Pan. 2016. Establishing vegetative filter strips on rill-irrigated row fields. Extension Bulletin FS216E. Washington State University Extension, Pullman, WA.

Bodah, B.W., J.R. Connolly, **J.L. Ullman**, M. Stannard, R.T. Peters, V.A. McCracken and W. Pan. 2016. Forage productivity of vegetative filter strips established on rill irrigated row crop fields. Extension technical bulletin TB03. Washington State University Extension, Pullman, WA.

Bodah, B.W., **J.L. Ullman**, M. Stannard, R.T. Peters and W. Pan. 2016. Vegetative filter strips as a best management practice on rill-irrigated row fields. Extension technical bulletin TB17. Washington State University Extension, Pullman, WA.

Mitchell, S., N. Kennedy, J. Ma, G. Yorgey, C. Kruger, **J.L. Ullman** and C. Frear. 2015. Anaerobic digestion effluents and processes: the basics. Extension Bulletin FS171E. Washington State University Extension, Pullman, WA.

Rogers, J., T. Borisova, L. Zotarelli, K. Grogan, **J.L. Ullman**, J. Bertine and K. Morgan. 2014. Costs and benefits of more efficient irrigation systems for Florida chipping potato production. EDIS# FE953. University of Florida, Institute of Food and Agricultural Sciences Extension, Gainesville, FL.

Rogers, J., T. Borisova, **J.L. Ullman**, K. Morgan, L. Zotarelli and K. Grogan. 2014. Factors affecting the choice of irrigation systems for Florida tomato production. EDIS# FE960. University of Florida, Institute of Food and Agricultural Sciences Extension, Gainesville, FL.

## Conference Presentations with Proceedings Papers

Chachar, A.B., M.A. Bhutto, **J.L. Ullman** and G.M. Khuhro. 2019. Fabrication and characterization of biodegradable polymeric electrospun nanofibers loaded with antibiotic (meropenem). MedTex 19 and the 12$^{th}$ International Forum on Biomedical Textile Materials, Shanghai, China, May 16-18. Pg. 90.

Burian, S.J., M. Ward, D. Stevenson, S. Ahmad, T. Gates, R.B. Mahar, B. Lashari, T. Banuri, A. Chaudhry and **J.L. Ullman** (*name mislabeled*). 2018. Assessment of a peer mentoring program to build capacity for course development and delivery. American Society for Engineering Education (ASEE) Annual Conference Proceedings, Salt Lake City, UT, June 24-27. Paper #22769.

Mitchell, S.M., **J.L. Ullman**, A.L. Teel, R.J. Watts and C. Frear. 2013. Ampicillin, florfenicol, sulfamethazine, and tylosin effect on biogas production and their degradation efficiency during anaerobic digestion. 2013 ASABE (American Society of Agricultural and Biological Engineers) Annual International Meeting, Kansas City, MO, July 21-24. Paper #13-1618717.

Bodah, B.W., **J.L. Ullman**, R. Muñoz-Carpena, G.A. Kiker, O. Perez-Ovilla, W.L. Pan, R.T. Peters and M. Stannard. 2012. Sediment and nutrient reduction in irrigation return flows by vegetated filter strips on surface irrigated fields. 2012 ASABE (American Society of Agricultural and Biological Engineers) Annual International Meeting, Dallas, TX, July 29 – Aug. 1. Paper #12-1336855.

Salman, N.A., **J.L. Ullman** and X.Q. Lu. 2012. Fish size as a key factor in copper toxicity to fish. The 2nd Scientific Conference of Agricultural Sciences, Basra, Iraq, March 14-15. Paper #8.4.

Salman, N.A., **J.L. Ullman**, K. Snekvik and X.Q. Lu. 2012. Histopathological markers for copper toxicity to fish. The 2nd Scientific Conference of Agricultural Sciences, Basra, Iraq, March 14-15. Paper #8.12.

**Ullman, J.L.** and B.W. Bodah. 2011. The development and evaluation of a portable rainfall simulator capable of mimicking variable rainfall patterns. ASABE & AEG (American Society of Agricultural & Biological Engineers and Association of Environmental & Engineering Geologists) International Symposium on Erosion and Landscape Evolution, Anchorage, AK, Sept. 18-21. Paper #11043.

Bodah, B.W., **J.L. Ullman** and D.K. McCool. 2011. Impacts of chemical fallow practices in conservation tillage management systems on runoff and erosion in the Pacific Northwest. ASABE & AEG (American Society of Agricultural & Biological Engineers and Association of Environmental & Engineering Geologists) International Symposium on Erosion and Landscape Evolution, Anchorage, AK, Sept. 18-21. Paper #11053.

Ullman, J.L., S. Mukhtar and S. Senseman. 2006. Sorption and degradation of estrogenic compounds in agricultural soils: Implications on hormone mobility following land application of animal manures. XVI CIGR (Commission Internationale du Genie Rural; International Commission of Agricultural & Biosystems Engineering) International Congress, Bonn, Germany, Sept. 3-7. Paper # LW100A.

**Ullman, J.L.** and S. Mukhtar. 2004. Management practices and remedial activities to reduce atmospheric pollutants from animal feeding operations: A state-of-the-art review. 2004 CIGR (Commission Internationale du Genie Rural; International Commission of Agricultural & Biosystems Engineering) International Conference, Beijing, P.R. China, Oct. 11-14. Paper #50-098A.

**Ullman, J.L.** and S. Mukhtar. 2004. Implications on ammonia emissions from dairy facilities using dry-lot versus hybrid (free-stall) housing practices. 2004 ASAE (American Society of Agricultural Engineers) Annual International Meeting. Ottawa, ON, Aug 1 - 4. Paper #044064.

Mukhtar, S., **J.L. Ullman**, B.W. Auvermann and S.E. Feagley. 2001. Nutrient and sludge assessment of dairy lagoons in central Texas. 2001 ASAE (American Society of Agricultural Engineers) Annual International Meeting. Sacramento, CA, July 29-Aug 1. Paper #012278.

## Published Abstracts

Burian, S.J., M.A. Chaudhry, B. Lashari, R.B. Mahar, M.M. Ward, T. Banuri, S. Ahmad, T.K. Gates, **J.L. Ullman** and M.E. Barber. 2022. The art of building international higher education partnerships in Pakistan to advance water security and resilience. UCOWR/NIWR (Universities Council on Water Resources/The National Institutes of Water Resources) 2022 Annual Conference, Greenville, SC, June 14-16.

Zantout, R.S., **J.L. Ullman**, S.L. Russo and O. Mahjoub. 2014. Analysis of human health risks linked to irrigation with treated wastewater in Oued Souhil, Tunisia. AIAEE (Association for International Agricultural and Extension Education) Annual Meeting, Miami, FL, April 27 – May 1. Abstract printed in Journal of International Agricultural and Extension Education 21(2): 8-11. doi:10.5191/jiaee.2014.21207

**Ullman, J.L.**, S.M. Mitchell, C. Frear and E.L. Baar. 2014. Manure and biosolid management practices to remove antibiotics and limit the promotion of antibiotic-resistance. Institute of Biological Engineering Annual Conference, Lexington, KY, March 6-8.

Campo, M.A., R. Muñoz-Carpena, G.A. Kiker and **J.L. Ullman**. 2013. Influencia del suelo en la eficiencia de la implantación de filtros verdes en un distrito de riego por superficie en medio árido. ZNS 13 Conference (Zona no Saturada; Vadose Zone), Lugo, Spain, Nov. 6-8.

**Ullman, J.L.**, R. Muñoz-Carpena, G.A. Kiker, V. McCracken ,W.L. Pan, B.W. Bodah, O. Perez-Ovilla and M. Campo-Bescos. 2013. Use of vegetative filter strips on surface irrigated fields and development of a decision-support tool to optimize water quality benefits. USDA National Integrated Water Quality Program (NIWQP) Project Directors Meeting at 68th Annual Soil and Water Conversation Society International Conference, Reno, NV, July 21-24. Pg. 2.

**Ullman, J.L**., M. Subbiah and D.R. Call. 2013. Antibiotic behavior in the environment and the corresponding potential to promote antibiotic resistance. Institute of Biological Engineering Annual Conference, Raleigh, NC, March 7-9. IBE Abstract #549.

Desaunay, A., P. Chaturvedi, M. Taguchi, **J.L. Ullman**, J.L. Garland and E.S. McLamore. 2013. Microbial crowd sourcing: Measuring bioavailable nutrient content in soils. Institute of Biological Engineering Annual Conference, Raleigh, NC, March 7-9. IBE Abstract #549.

Campo, M.A., R. Muñoz-Carpena, O. Pérez-Ovilla, G.A. Kiker and **J.L. Ullman**. 2012. An object-oriented watershed management tool (QnD-VFS) to engage stakeholders in targeted implementation of filter strips in an arid surface irrigation area. AGU (American Geophysical Union) 2012 Fall Meeting, San Francisco, CA, Dec. 3-7. Abstract ID# H21A-1156.

Rentz, J.A. and **J.L. Ullman**. 2012. Copper and zinc removal using biogenic iron oxides. 2012 World Environmental & Water Resources Congress, Albuquerque, NM, May 20-24. Abstract #135.

**Ullman, J.L.**, S.J. DeBano, D. Wooster, D. Horneck, X. Lu and J. Snyder. 2011. Assessing water quality impairment by quantifying metal concentrations in aquatic invertebrates in the absence of water data. SETAC (Society of Environmental Toxicology and Chemistry) North America 32nd Annual Meeting, Boston, MA, Nov. 13-17. Abstract #RP142.

Mitchell, S.M., **J.L. Ullman** and R.J. Watts. 2011. Chemical hydrolysis is a significant degradation pathway for beta-lactam antibiotics compared to sulfonamide, amphenicol and macrolide antibiotics. SETAC (Society of Environmental Toxicology and Chemistry) North America 32nd Annual Meeting, Boston, MA, Nov. 13-17. Abstract #RP046.

Barber, M.E., **J.L. Ullman**, J. Boll and R. Mahler. 2011. Evaluation of sediment yield reduction potential in agricultural and mixed-use watersheds of the Lower Snake River Basin, USA. 12th International Symposium on the Interactions between Sediments and Water, Dartington, England, June 19-23. Abstract in proceedings, pg. 15.

Ottenbreit, E., J. Adam, M. Barber, J. Boll and **J.L. Ullman**. 2010. Modeling the impacts of climate change and agricultural management practices on surface erosion in a dryland agricultural basin. AGU (American Geophysical Union) 2010 Fall Meeting, San Francisco, CA, Dec. 13-17. Abstract ID# H41F-1135.

**Ullman, J.L.** and S.M. Mitchell. 2010. The influence of dissipation mechanisms on the persistence of eight antibiotics in soil and water systems. SETAC (Society of Environmental Toxicology and Chemistry) North America 31st Annual Meeting, Portland, OR, Nov. 7-11. Abstract #334.

Mitchell, S.M. and **J.L. Ullman**. 2010. Evaluation of extraction and clean-up methods for veterinary antibiotics: implications on risk assessment effectiveness. SETAC (Society of Environmental Toxicology &Z Chemistry) North America 31st Annual Meeting, Portland, OR, Nov. 7-11. Abstract #650.

Islam, M.R., T. Tarvainen, J.R. Busboom, B. Backman, M.E. Barber, M.L. Nelson and **J.L. Ullman**. 2010. Arsenic in groundwater and surface waters of Bangladesh: A search for arsenic free drinking water. ACS (American Chemical Society) Northwest Regional Meeting, Pullman, WA, June 20-23. Abstract #85.

Foltz, J. and **J.L. Ullman**. 2009. Rainbow trout sensitivity to contaminated sediments during early development. Lessons from Continuity and Change in the Fourth International Polar Year presented by INRA (Inland Northwest Research Alliance), Fairbanks, AK, March 4-7. (3rd place student competition). Abstract in proceedings, pg. 54.

Miropolskiy, R. and **J.L. Ullman**. 2009. Polybrominated diphenyl ether (PBDE) sorption behavior: Relation to sediment flux and sediment remediation. Lessons from Continuity and Change in the Fourth International Polar Year presented by INRA (Inland Northwest Research Alliance), Fairbanks, AK, March 4-7. Abstract in proceedings, pg. 60.

Paternostre, G. and **J.L. Ullman**. 2009. Assessing the role of soil characteristics on *E. coli* attachment. Lessons from Continuity and Change in the Fourth International Polar Year presented by INRA (Inland Northwest Research Alliance), Fairbanks, AK, March 4-7. Abstract in proceedings, pg. 65.

## Technical Reports

Clark, M., W. Graham, K. McKee and **J. Ullman**. 2012. TCAA water quality data review and information-sharing program. Submitted to Florida Department of Agriculture and Consumer Services. 57pp.

**Ullman, J.L**., C. Elmore and D. Winkler. 2011. Iraq Agricultural Revitalization (IAER) program report for Dohuk training. Submitted to U.S. Department of Agriculture. 16pp.

Yonge, D., **J.L. Ullman** and S.M. Mitchell. 2011. Evaluation of pharmaceuticals and personal care products and endocrine disrupting compounds in the Spokane WWTP. Submitted to Esvelt Environmental Engineering.

Barber, M.E., **J.L. Ullman**, D. McCool, X. Lu, A. Lawler, J. Ryan and B. Green. 2010. Fingerprinting sediment sources using neutron activation analysis, ICP-MS, and isotope analysis in the Lower Snake River Basin. Submitted to U.S. Army Corps of Engineers. 554pp.

Boll, J., E. Brooks, J. McAtty, M.E. Barber, **J.L. Ullman**, D. McCool, X. Lu, A. Lawler and J. Ryan. 2010. Evaluation of sediment yield reduction potential in agricultural and mixed-use watersheds of the Lower Snake River Basin. Submitted to U.S. Army Corps of Engineers. 84pp.

Ibrahim, H.M. and **J.L. Ullman**. 2010. Summary of experiences during Iraq Agricultural Extension Revitalization program training in Erbil, Iraq, May 15-23, 2010. Submitted to U.S. Department of Agriculture.

DeBano, S.J., D. Wooster, D. Horneck, **J.L. Ullman** and J. Snyder. 2010. Detecting heavy metal contamination in the Umatilla River of eastern Oregon. Submitted to Institute for Water and Watersheds, Oregon State University.

**Ullman, J.L.** and M.E. Barber. 2009. Middle Snake Watershed instream habitat assessment. Submitted to Middle Snake Watershed Planning Unit. Grant No.: G0800220 Washington State Department of Ecology. 139 pp.

**Ullman, J.L.** 2009. Assessing pathogen fate and transport through riparian buffers in an agricultural watershed. Grant No.: 2008WA248B USGS.

**Ullman, J.L.** 2008. Assessment of contaminated sediments using rainbow trout (*Oncorhynchus mykiss*) as an embryonic exposure assay. Grant No.: 2007WA210B USGS.

Carey, J.B., R.E. Lacey and S. Mukhtar (**J.L. Ullman** primary contributing author). 2000. Study of odors and arsenic emissions from poultry growing operations. Contract No.: 582-0-81252 Texas Natural Resource Conservation Commission (TNRCC). 124 pp.

Tetra Tech, Inc. (**J.L. Ullman** lead/primary author). 1999. Costing erosion and sediment control for animal feeding operations. Contract No.: 68-C7-0014 U.S. Environmental Protection Agency (USEPA). 202pp.

Tetra Tech, Inc. (**J.L. Ullman** primary author). 1999. Microbial contamination of beach waters. Submitted to U.S. Environmental Protection Agency (USEPA).

Tetra Tech, Inc. (**J.L. Ullman** primary author). 1998. Feedlot industry sector profile: Revised draft report. Contract No.: 68-C7-0014 U.S. Environmental Protection Agency (USEPA). 215 pp.

Tetra Tech, Inc. (**J.L.Ullman** lead/primary author). 1998. Management of nutrients from swine and poultry manure: Draft report. Contract No.: 68-C7-0014 U.S. Environmental Protection Agency (USEPA). 55pp.

## ACADEMIC PRESENTATIONS

### Invited International Conference Presentations

**Ullman, J.L.** 2021. "Use of Reclaimed Wastewater as an Irrigation Source", International Conference on Sustainable Agriculture and its Role in Economic and Human Development, Basrah, Iraq. Feb. 17-18. *Keynote speaker*.

**Ullman, J.L.** 2018. "Pharmaceuticals & Personal Care Products as Pollutants: Small Concentrations Creating Large Impacts", 5th International Conference on Energy, Environment & Sustainable Development, Jamshoro, Pakistan. Nov. 14-16. *Plenary speaker*.

**Ullman, J.L.** 2018. "Pharmaceuticals & Personal Care Products as Pollutants: Small Concentrations Creating Large Impacts", Sustainable Water Management International Seminar, Sindh University, Jamshoro, Pakistan. Nov. 10. *Keynote speaker*.

**Ullman, J.L.** 2017. "Opening Remarks to Kickoff Conference", 1st Young Researchers National Conference on Water and Environment (organized by U.S.-Pakistan Center for Advanced Studies in Water), Jamshoro, Pakistan. May 22-23. *Guest of Honor*.

**Ullman, J.L.** 2017. "Impacts of Organic Impurities on Water Quality", 1st Young Researchers National Conference on Water and Environment (organized by U.S.-Pakistan Center for Advanced Studies in Water), Jamshoro, Pakistan. May 22-23. *Keynote speaker*.

**Ullman, J.L.** 2017. **"**Antibiotic Behavior in Waste Treatment Systems", 2nd Annual Environmental International Conference (organized by the Iraqi Environment Upgrading & Development Organization), Karbala, Iraq. April 15-16. *Keynote speaker*.

**Ullman, J.L.** 2015. **"**Sustainable Development and Water Quality", World Water Day 2105: Water & Sustainable Development (organized by the Sultan Qaboos University Water Research Center and the Oman Ministry of Regional Municipalities & Water Resources), Muscat, Oman. March 18. *Keynote speaker*.

**Ullman, J.L.** 2014. "Alternate Water Development Strategies for Arid Conditions", Workshop on Water Resources of Egypt. National Water Research Center of Egypt and Utah State University, Cairo, Egypt. Aug. 10-14. *Keynote speaker*.

**Ullman, J.L.** 2014. "Water Research and Involvement of Engineers Without Borders in Nepal. Workshop on Engineering with Traditional Technology, Kathmandu University, Dhulikhel, Nepal, May 4.

**Ullman, J.L.** 2012. "Antibiotics in the Environment: Implications on the Promotion of Antibiotic-Resistance", Emerging Pollutants in the Mediterranean Basin (granted by German Academic Exchange Service), Hammamet, Tunisia, Sept. 10-16, 2012. Proceedings paper, pgs 24-27.

## Conference Presentations & Posters

**Ullman, J.L.**, R.B. Ferguson and R. Rosati. 2023. Rwanda Institute for Conservation Agriculture: Innovative education for a sustainable future. Imagining Agrifood Systems: Looking forward hosted by ASABE-AMAA (American Society of Agricultural and Biological Engineers – Alliance for Modernizing African Agrifood Systems), Nov. 14-17.

Ippolito, J.S., S. Awan, **J.L. Ullman**, K. Ansari, L. Cui and A.A. Siyal. 2021. Can biochar's electrochemistry be harnessed to improve irrigation water quality. ASA-CSSA-SSSA International Annual Meeting, Salt Lake City, UT, Nov. 7-10.

Gaulee, U., **J.L. Ullman** and K. Bista. 2015. Re-examining the "revisionist" approach to brain drain in the context of a post conflict country in South Asia. Comparative and International Education Society 59th Annual Conference, Washington, D.C., March 8-13.

**Ullman, J.L.**, A. Desaunay, K. M. Dreaden and B. Gao. 2014. Retention of *Escherichia coli* in biochar columns. Florida Section ASABE (American Society of Agricultural and Biological Engineers) 2014 Annual Conference, Naples, FL, June 18-21.

Baar, E.L., **J.L. Ullman**, S. M. Mitchell, H. Chen and B. Gao. (*Ullman presented*) 2014. Neutralization of antibiotics using biochar as a potential bedding amendment in livestock operations. Florida Section ASABE (American Society of Agricultural and Biological Engineers) 2014 Annual Conference, Naples, FL, June 18-21.

Dreaden, K., M. Teplitski and **J.L. Ullman**. 2014. Efficacy of vegetative filter strips in bacterial mitigation. Florida Section ASABE (American Society of Agricultural and Biological Engineers) 2014 Annual Conference, Naples, FL, June 18-21.

Liu, J., M. Subbiah, L. Orfe, **J.L. Ullman**, L. Matthews and D.R. Call. 2014. Excreted ceftiofur and florfenicol from cattle amplify resistant E. coli populations in soils. ASM (American Society for Microbiology) 114th General Meeting, Boston, MA, May 17-20.

Zantout, R.S., **J.L. Ullman**, S.L. Russo and O. Mahjoub. 2014. Analysis of human health risks linked to irrigation with treated wastewater in Oued Souhil, Tunisia. AIAEE (Association for International Agricultural and Extension Education) Annual Meeting, Miami, FL, April 27 – May 1.

**Ullman, J.L.**, S.M. Mitchell, C. Frear and E.L. Baar. 2014. Manure and biosolid management practices to remove antibiotics and limit the promotion of antibiotic-resistance. Institute of Biological Engineering Annual Conference, Lexington, KY, March 6-8.

Campo, M.A., R. Muñoz-Carpena, G.A. Kiker and **J.L. Ullman**. 2013. Influencia del suelo en la eficiencia de la implantación de filtros verdes en un distrito de riego por superficie en medio árido. ZNS 13 Conference (Zona no Saturada; Vadose Zone), Lugo, Spain, Nov. 6-8.

**Ullman, J.L.**, R. Muñoz-Carpena, G.A. Kiker, V. McCracken ,W.L. Pan, B.W. Bodah, O. Perez-Ovilla and M. Campo-Bescos. 2013. Use of vegetative filter strips on surface irrigated fields and development of a decision-support tool to optimize water quality benefits. USDA National Integrated Water Quality Program (NIWQP) Project Directors Meeting at 68th Annual Soil and Water Conversation Society International Conference, Reno, NV, July 21-24. Pg. 2.

Mitchell, S.M., **J.L. Ullman**, A.L. Teel, R.J. Watts and C. Frear. 2013. Ampicillin, florfenicol, sulfamethazine, and tylosin effect on biogas production and their degradation efficiency during anaerobic digestion. 2013 ASABE (American Society of Agricultural and Biological Engineers) Annual International Meeting, Kansas City, MO, July 21-24.

**Ullman, J.L.**, B.W. Bodah, M.A. Campo, R. Muñoz-Carpena and G.A. Kiker. 2013. Vegetative filter strips used on surface irrigated fields as a novel best management practice. Florida Section ASABE (American Society of Agricultural and Biological Engineers) 2013 Annual Conference, St. Augustine, FL, June 12-15.

Desaunay, A., K.M. Johnston, G. Paternostre and **J.L. Ullman**. 2013. Role of physicochemical and biochemical soil characteristics on bacterial transport. Florida Section ASABE (American Society of Agricultural and Biological Engineers) 2013 Annual Conference, St. Augustine, FL, June 12-15.

Campo, M.A., R. Muñoz-Carpena, G.A. Kiker, O. Pérez-Ovilla and **J.L. Ullman**. 2013. Spatial object-oriented watershed management tool (QnD-VFS) to engage stakeholders in targeted implementation of filter strips in the Yakima River Basin, WA. Florida Section ASABE (American Society of Agricultural and Biological Engineers) 2013 Annual Conference, St. Augustine, FL, June 12-15.

Campo, M.A., R. Muñoz-Carpena, G.A. Kiker, O. Pérez-Ovilla and **J.L. Ullman**. 2013. Spatial vegetative filter strips response function with VFSMOD for an integrated watershed management approach in the Yakima River, WA. Florida Section ASABE (American Society of Agricultural and Biological Engineers) 2013 Annual Conference, St. Augustine, FL, June 12-15.

**Ullman, J.L**., M. Subbiah and D.R. Call. 2013. Antibiotic behavior in the environment and the corresponding potential to promote antibiotic resistance. Institute of Biological Engineering Annual Conference, Raleigh, NC, March 7-9.

Desaunay, A., P. Chaturvedi, M. Taguchi, **J.L. Ullman**, J.L. Garland and E.S. McLamore. 2013. Microbial crowd sourcing: Measuring bioavailable nutrient content in soils. Institute of Biological Engineering Annual Conference, Raleigh, NC, March 7-9.

Campo, M.A., R. Muñoz-Carpena, O. Pérez-Ovilla, G.A. Kiker and **J.L. Ullman**. 2012. An object-oriented watershed management tool (QnD-VFS) to engage stakeholders in targeted implementation of filter strips in an arid surface irrigation area. AGU (American Geophysical Union) 2012 Fall Meeting, San Francisco, CA, Dec. 3-7.

Salman, N.A. and **J.L. Ullman** (co-presented). 2012. Socioeconomic status of Huweza marsh inhabitants: Southern Iraq problems and solutions. 4th International EcoSummit – Ecological Sustainability (Symposium: Hima Mesopotamia - Restoring the Ancient System of Story, Place and Culture in the Tigris Euphrates Watershed), Columbus, OH, Sept. 30 - Oct. 5.

Bodah, B.W., **J.L. Ullman**, R. Muñoz-Carpena, G.A. Kiker, O. Perez-Ovilla, W.L. Pan, R.T. Peters and M. Stannard. 2012. Sediment and nutrient reduction in irrigation return flows by vegetated filter strips on surface irrigated fields. 2012 ASABE (American Society of Agricultural and Biological Engineers) Annual International Meeting, Dallas, TX, July 29 – Aug. 1.

Campo, M.A., O. Perez-Ovilla, G.A. Kiker, R. Muñoz-Carpena, **J.L. Ullman** and V.A. McCracken 2012. A spatially-explicit, object-oriented watershed management tool (QnD-VFS) to engage stakeholders in targeted implementation of filter strips in the Yakima River Basin, WA. 2012 ASABE (American Society of Agricultural and Biological Engineers) Annual International Meeting, Dallas, TX, July 29 – Aug. 1. Presentation #12-133691.

Rentz, J.A. and **J.L. Ullman**. 2012. Copper and zinc removal using biogenic iron oxides. 2012 World Environmental & Water Resources Congress, Albuquerque, NM, May 20-24. Abstract #135.

**Ullman, J.L.**, B.W. Bodah, O. Perez-Ovilla, R. Muñoz-Carpena, G.A. Kiker, V. McCracken and W.L. Pan. 2012. Use of vegetative filter strips on surface irrigated fields and development of a decision-support tool to optimize water quality benefits. 2012 Land Grant & Sea Grant National Water Conference, Portland, OR, May 20-24.

Salman, N.A., **J.L. Ullman** and X.Q. Lu. 2012. Fish size as a key factor in copper toxicity to fish. The 2nd Scientific Conference of Agricultural Sciences, Basra, Iraq, March 14-15.

Salman, N.A., **J.L. Ullman**, K. Snekvik and X.Q. Lu. 2012. Histopathological markers for copper toxicity to fish. The 2nd Scientific Conference of Agricultural Sciences, Basra, Iraq, March 14-15.

**Ullman, J.L.** 2011. Water-related research at the University of Florida. Second Meeting of the MENA NWC "Launching the Thematic Partnership", Muscat, Oman, Dec. 5-8.

**Ullman, J.L.**, S.J. DeBano, D. Wooster, D. Horneck, X. Lu and J. Snyder. 2011. Assessing water quality impairment by quantifying metal concentrations in aquatic invertebrates in the absence of water data. SETAC (Society of Environmental Toxicology and Chemistry) North America 32nd Annual Meeting, Boston, MA, Nov. 13-17.

Mitchell, S.M., **J.L. Ullman** and R.J. Watts. 2011. Chemical hydrolysis is a significant degradation pathway for beta-lactam antibiotics compared to sulfonamide, amphenicol and macrolide antibiotics. SETAC (Society of Environmental Toxicology and Chemistry) North America 32nd Annual Meeting, Boston, MA, Nov. 13-17.

Hudson, T.D., J. Buckhouse, L. Hardesty, F. Hendrix, D. Nelson, **J. Ullman** and S. VanVleet. 2011. Strategies to reduce risk of nonpoint source water quality violation on grazing lands and riparian ecosystems. Water in the Columbia Basin: Sharing a Limited Resource, Stevenson, WA, Nov. 2-4.

**Ullman, J.L.** and B.W. Bodah. 2011. The development and evaluation of a portable rainfall simulator capable of mimicking variable rainfall patterns. ASABE & AEG (American Society of Agricultural & Biological Engineers and Association of Environmental & Engineering Geologists) International Symposium on Erosion and Landscape Evolution, Anchorage, AK, Sept. 18-21.

Bodah, B.W., **J.L. Ullman** and D.K. McCool. 2011. Impacts of chemical fallow practices in conservation tillage management systems on runoff and erosion in the Pacific Northwest. ASABE & AEG (American Society of Agricultural & Biological Engineers and Association of Environmental & Engineering Geologists) International Symposium on Erosion and Landscape Evolution, Anchorage, AK, Sept. 18-21.

Barber, M.E., **J.L. Ullman**, J. Boll and R. Mahler. 2011. Evaluation of sediment yield reduction potential in agricultural and mixed-use watersheds of the Lower Snake River Basin, USA. 12th International Symposium on the Interactions between Sediments and Water, Dartington, England, June 19-23.

Mitchell, S.M., **J.L. Ullman** and R.J. Watts. 2011. Acid and base-catalyzed hydrolysis of beta-lactam and sulfonamide antibiotics. SETAC (Society of Environmental Toxicology and Chemistry) Pacific Northwest Regional Annual Meeting, Vancouver, WA, April 14-16.

Ottenbreit, E., J. Adam, M. Barber, J. Boll and **J.L. Ullman**. 2010. Modeling the impacts of climate change and agricultural management practices on surface erosion in a dryland agricultural basin. AGU (American Geophysical Union) 2010 Fall Meeting, San Francisco, CA, Dec. 13-17.

**Ullman, J.L.** and S.M. Mitchell. 2010. The influence of dissipation mechanisms on the persistence of eight antibiotics in soil and water systems. SETAC (Society of Environmental Toxicology and Chemistry) North America 31st Annual Meeting, Portland, OR, Nov. 7-11.

Mitchell, S.M. and **J.L. Ullman**. 2010. Evaluation of extraction and clean-up methods for veterinary antibiotics: implications on risk assessment effectiveness. SETAC (Society of Environmental Toxicology &Z Chemistry) North America 31st Annual Meeting, Portland, OR, Nov. 7-11.

**Ullman, J.L.**, M.E. Barber and B. Johnson. 2010. Evaluation of instream flow assessment methods for low-flow and intermittent streams in the Snake River Watershed. UCOWR/NIWR (Universities Council on Water Resources/The National Institutes of Water Resources) 2010 Annual Conference, Seattle, WA, July 13-15.

Ottenbreit, E., J. Adam, M. Barber, J. Boll and **J.L. Ullman**. 2010. Modeling climate change impacts on suspended sediment in the Potlatch River Basin. UCOWR/NIWR (Universities Council on Water Resources/The National Institutes of Water Resources) 2010 Annual Conference, Seattle, WA, July 13-15.

Islam, M.R., T. Tarvainen, J.R. Busboom, B. Backman, M.E. Barber, M.L. Nelson and **J.L. Ullman**. 2010. Arsenic in groundwater and surface waters of Bangladesh: A search for arsenic free drinking water. ACS (American Chemical Society) Northwest Regional Meeting, Pullman, WA, June 20-23.

Van Wie, J., J. Adam and **J.L. Ullman**. 2010. Hydrologic modeling of conservation farming practices on the Palouse. Hydrology in the 21st Century: Links to the Past, and a Vision to the Future, Seattle, WA, March 24-26.

Foltz, J. and **J.L. Ullman**. 2009. Rainbow trout sensitivity to contaminated sediments during early development. Lessons from Continuity and Change in the Fourth International Polar Year presented by INRA (Inland Northwest Research Alliance), Fairbanks, AK, March 4-7. (3rd place student competition).

Miropolskiy, R. and **J.L. Ullman**. 2009. Polybrominated diphenyl ether (PBDE) sorption behavior: Relation to sediment flux and sediment remediation. Lessons from Continuity and Change in the Fourth International Polar Year presented by INRA (Inland Northwest Research Alliance), Fairbanks, AK, March 4-7.

Paternostre, G. and **J.L. Ullman**. 2009. Assessing the role of soil characteristics on *E. coli* attachment. Lessons from Continuity and Change in the Fourth International Polar Year presented by INRA (Inland Northwest Research Alliance), Fairbanks, AK, March 4-7.

**Ullman, J.L.** 2007. Contaminated sediment remediation: Current practices & future challenges. Middle East Waste & Water Congress 2007, Dubai, United Arab Emirates, May 28-29.

Beyenal, H. and **J.L. Ullman** (*Ullman presented*). 2007. Microbial fuel cell powered sensors. Middle East Waste & Water Congress 2007, Dubai, United Arab Emirates, May 28-29.

**Ullman, J.L.**, S. Mukhtar and S. Senseman. 2006. Sorption and degradation of estrogenic compounds in agricultural soils: Implications on hormone mobility following land application of animal manures. XVI CIGR (Commission Internationale du Genie Rural; International Commission of Agricultural & Biosystems Engineering) International Congress, Bonn, Germany, Sept. 3-7.

**Ullman, J.L.** and S. Mukhtar. 2004. Management practices and remedial activities to reduce atmospheric pollutants from animal feeding operations: A state-of-the-art review. 2004 CIGR (Commission Internationale du Genie Rural; International Commission of Agricultural & Biosystems Engineering) International Conference, Beijing, P.R. China, Oct. 11-14.

**Ullman, J.L.** and S. Mukhtar. 2004. Implications on ammonia emissions from dairy facilities using dry-lot versus hybrid (free-stall) housing practices. 2004 ASAE (American Society of Agricultural Engineers) Annual International Meeting. Ottawa, ON, Aug 1 - 4.

Mukhtar, S., **J.L. Ullman**, B.W. Auvermann and S.E. Feagley. 2001. Nutrient and sludge assessment of dairy lagoons in central Texas. 2001 ASAE (American Society of Agricultural Engineers) Annual International Meeting. Sacramento, CA, July 29-Aug 1.

Weaver, R., **J.L. Ullman**, J. Lane and K.J. McInnes. 2000. Preferential flow of wastewater in clay soils and implications about treatment. 8th Annual On-site Wastewater Treatment Research Council's Conference. Waco, TX, Feb. 28-Mar.1.

## Invited External Presentations (International and Domestic)

- "Technological Innovations and Adaptation in Industrial Wastewater Management: Learning from the Best Practices", Invited speaker for Executive Seminar on Industrial Wastewater Management, Hotel Pearl Continental, Karachi, Pakistan. December 15, 2018.
- "Antibiotics in the Environment: Mitigating Human and Ecological Risk", Invited speaker for the Institute of Environmental Engineering & Management special seminar, Mehran University of Engineering & Technology, Jamshoro, Pakistan. December 6, 2018.

- "Protecting Water Quality in Agricultural Areas to Enhance the Sustainability of Water Resources", Invited speaker for University of Karbala, College of Science seminar, Karbala, Iraq. April 19, 2017.
- "Research on Irrigation and Trace Organic Contaminants", Invited speaker for Kathmandu Engineering College seminar, Kathmandu, Nepal. May 3, 2014.
- "Propagation of Antibiotic-Resistance and Available Mitigation Options", Invited speaker for the Center for Environmental Studies and Research, Sultan Qaboos University, Muscat, Oman. April 1, 2014.
- "Evaluating Best Management Practices: A Lesson on Conducting Research on Working Farms", Invited speaker for Mississippi State University Agricultural & Biological Engineering Seminar Series, Starkville, MS. Oct. 11, 2013.
- "Pharmaceuticals in the Environment: Implications for Ecological and Human Health Risks", Invited speaker for Washington State University Biological Systems Engineering Seminar Series, Pullman, WA. April 5, 2013.
- "Sustaining Agriculture and Fisheries: Are the Goals Mutually Exclusive?", Invited guest lecturer for Washington State University course AFS 501 Current Research in Organic and Sustainable Agriculture, Pullman, WA. Nov. 13, 2012.
- "Status of Agricultural Production in Iraq", Invited speaker/panelist for panel "Equitable Water Allocation, Eco-Cultural Restoration, and Social Justice in the Tigris-Euphrates Watershed" hosted by The Ohio State University Mershon Center for International Security Studies, Columbus, OH. Oct. 3, 2012.
- "Activity of Antibiotics in the Environment and Implications on the Propagation of Antibiotic-resistance", Invited speaker for the Center for Environmental Studies and Research, Sultan Qaboos University, Muscat, Oman. Dec. 5, 2011.
- "Applications of Nanotechnology in Water Treatment", Invited speaker for the University of South Florida Nanotechnology Research and Education Center, Tampa, FL. Dec. 15, 2010.
- "Vegetative Filter Strips for Water Quality Protection", Invited speaker for Sustainable Agriculture Workshop held by Yakama Indian Nation, Toppenish, WA. Feb. 4, 2010.
- "Trace Organic Compounds in the Environment: Implications on Human and Ecosystem Health", Invited speaker for Houston Advanced Research Center (HARC), The Woodlands, TX. July 1, 2009.
- "Contaminant Bioavailability in the Columbia River Basin: A Look Across Different Matrices", Invited speaker for interagency Columbia River Toxics Reduction Working Group, White Salmon, WA. June 2, 2009.
- "Contaminated Sediment Remediation: Current Practices & Future Challenges", Invited speaker for Department of Environmental Engineering, Bahçeşehir University, Istanbul, Turkey. May 31, 2007.

## Institutional Exposition Presentations & Posters

**Ullman, J.L.**, R. Muñoz-Carpena, G.A. Kiker, B.W. Bodah and M. Campo-Bescos. 2014. Use of vegetative filter strips on surface irrigated fields and development of a decision-support tool to optimize water quality benefits. 4th UF Water Institute Symposium, Gainesville, FL, Feb. 11-12.

Zantout, R., **J.L. Ullman**, S. Russo and O. Mahjoub. 2013. Analysis of human health risks linked to irrigation with treated wastewater in Oued Souhil, Tunisia. UF Graduate Student Research Day, Gainesville, FL, Oct. 29.

Desaunay, A., K.M. Johnston, G. Paternostre and **J.L. Ullman**. 2013. Role of physicochemical and biochemical soil characteristics on bacterial transport. UF Soil and Water Science Research Forum, Gainesville, FL, Sept. 6.

Desaunay, A., K.M. Johnston, G. Paternostre and **J.L. Ullman**. 2013. Role of physicochemical and biochemical soil characteristics on bacterial transport. Sustaining Economies and Natural Resources in a Changing World: Key Role of Land Grant Universities, Gainesville, FL, April 2-3.

Bodah, B.W. and **J.L. Ullman**. 2010. A reduction of runoff and erosion through the use of chemical fallow in direct seed management systems. Wiley Research Exposition, Pullman, WA, Nov. 9.

Mitchell, S.M. and **J.L. Ullman**. 2010. Evaluation of antibiotic extraction and cleanup methods from manure, compost, biosolids and soil: Implications for risk assessment. Wiley Research Exposition, Pullman, WA, Nov. 9.

Bodah, B.W. and **J.L. Ullman**. 2010. A reduction of runoff and erosion through the use of chemical fallow in direct seed management systems. Water in the 21st Century: Emerging Science & Policy Issues, Interdisciplinary Forum, Spokane, WA. Nov. 4-5.

Mitchell, S.M. and **J.L. Ullman**. 2010. Optimizing antibiotic extraction methods from environmental samples. Water in the 21st Century: Emerging Science & Policy Issues, Interdisciplinary Forum, Spokane, WA. Nov. 4-5.

Ottenbreit, E., J. Adam, M. Barber, J. Boll and **J.L. Ullman**. 2010. Modeling the impacts of climate change on suspended sediment and erosion in a dryland agricultural basin. Water in the 21st Century: Emerging Science & Policy Issues, Interdisciplinary Forum, Spokane, WA. Nov. 4-5.

Murugan, S., S.M. Mitchell, **J.L. Ullman** and D.R. Call. 2010 Not all antibiotics retain their biological activity in soils. WSU College of Veterinary Medicine Student Research Symposium, Pullman, WA, Oct. 26.

Bodah, B.W. and **J.L. Ullman**. 2010. Runoff and erosion reduction resulting from chemical fallow use in direct seed management systems. WSU Academic Showcase, Pullman, WA, March 26.

Mitchell, S.M., **J.L. Ullman** and D.R. Call. 2010. Antibiotic dissipation in soil and water. WSU Academic Showcase, Pullman, WA, March 26.

Van Wie, J., J. Adam and **J.L. Ullman**. 2010. Hydrologic modeling of conservation farming practices on the Palouse. WSU Academic Showcase, Pullman, WA, March 26.

Garner, K., M. Subbiah, P. Friel, **J.L. Ullman** and D. Call. 2009. Variable retention of antibiotic activity after exposure to high organic soil. WSU College of Veterinary Medicine Student Research Symposium, Pullman, WA, Oct. 14.

Foltz, J. and **J.L. Ullman**. 2009. Critical developmental windows in embryonic rainbow trout exposed to contaminated sediment. Washington State University – University of Idaho Center for Reproductive Biology 2009 Annual Conference. Orofino, Idaho, May 14.

Erwin, T., **J.L. Ullman**, M. Beutel and R. Hummel. 2009. Clarks Creek water quality: science, restoration & education implementation program. WSU Native American Research Expo, Pullman, WA, Feb. 20.

**Ullman, J.L.**, A. Bary, L. Carpenter-Boggs, C. Cogger, J. Harrison and J.Rentz. 2008. Antibiotics in animal manure: Implications to sustainable agriculture. BIOAg Symposium, Pullman, WA, Oct. 28.

**Ullman, J.L.** 2007. Fish exposure assays: Assessing environmental quality and remediation strategies. Washington State University – University of Idaho Center for Reproductive Biology 2007 Annual Conference. Orofino, Idaho, May 24.

**Ullman, J.L.**, S. Mukhtar, B.W. Auvermann and S.E. Feagley. 2001. Assessment of dairy lagoon treatment effectiveness in central Texas. Texas A&M 2001 Agriculture Program Conference. College Station, TX, Jan. 9-10.

**Ullman, J.L.**, S. Mukhtar and S. Senseman. 2006. Sorption-desorption behavior of estrogens in agricultural soils. Texas A&M 2006 Agriculture Program Conference. College Station, TX, Jan. 9.

## Invited Internal Presentations

- "Irrigation Scheduling" Guest Lecturer, AGR 102 Practical Farming II, Rwanda Institute for Conservation Agriculture, Bugesera, Rwanda. Feb. 14, 2022.
- "Water and Wastewater Treatment" Guest lecturer, SCI 203 One Health & Humans, Rwanda Institute for Conservation Agriculture, Bugesera, Rwanda. Feb. 15, 2021.
- "Water and Human Health" Guest lecturer, SCI 203 One Health & Humans, Rwanda Institute for Conservation Agriculture, Bugesera, Rwanda. Feb. 9, 2021.
- "Irrigation Considerations in the Developing World" Guest lecturer, ABE 4231 Irrigation & Drainage Engineering, Dept. of Agricultural & Biological Engineering, University of Florida, Gainesville, FL. Sept. 28, 2015.
- "Biological Engineering: Improving Water Quality to Promote Sustainable Development" Guest lecturer, ABE 3000 Applications in Biological Engineering, Dept. of Agricultural & Biological Engineering, University of Florida, Gainesville, FL. April 13, 2015.
- "Application of Bioremediation to Treat Organic Contaminants: PAHs, Emerging Contaminants and Antibiotics" Guest lecturer, ABE 3000 Applications in Biological Engineering, Dept. of Agricultural & Biological Engineering, University of Florida, Gainesville, FL. April 9, 2014.
- "Antibiotics in Dairy Production: Propagation of Antibiotic-Resistance and Available Mitigation Options" Invited presentation for Dept. of Animal Science seminar, University of Florida, Gainesville, FL. Feb. 13, 2014.
- "Irrigation Management to Protect Water Quality: A Lesson on Conducting Research on Working Farms" Invited presentation for Dept. of Horticultural Sciences seminar, University of Florida, Gainesville, FL. Sept. 9, 2013.
- "Antibiotics in the Environment: Implications on the Promotion of Antibiotic-Resistance. Invited presentation for Emerging Pathogens Institute, University of Florida, Gainesville, FL. March 1, 2013.
- "Sustaining Agriculture and Fisheries: Are the Goals Mutually Exclusive?" Invited presentation for Fisheries and Aquatic Sciences seminar, University of Florida, Gainesville, FL. Feb. 1, 2013.
- "Agriculture and Fisheries in the Pacific Northwest: Can They Coexist?" Invited presentation for the Howard T. Odum Center for the Wetlands, Water, Wetlands & Watersheds seminar, University of Florida, Gainesville, FL. April 11, 2012.
- "Pharmaceuticals in the Environment" Guest lecturer, PharD 542 Integrated Pharmacology, Dept. Pharmaceutical Sciences, Washington State University, Pullman, WA. Jan. 26, 2011.
- "Pharmaceuticals in the Environment" Guest lecturer, PharS 554 Integrated Pharmacology, Dept. Pharmaceutical Sciences, Washington State University, Pullman, WA. Feb. 1, 2010.
- "Pharmaceuticals in the Environment" Guest lecturer, PharS 544 Toxicology, Dept. Pharmaceutical Sciences, Washington State University, Pullman, WA. Feb. 23, 2009.
- "Organometallic Chemistry" Guest lecturer for CE 543 Applied Environmental Geochemistry of Toxic Metals, Department of Civil and Environmental Engineering, Washington State University, Pullman, WA. Oct. 30, 2008.
- "Overview of Research Related to Global Animal Health & Sustainable Agriculture" Invited presentation for administrative board of WSU Center for Sustaining Agriculture & Natural

Resources (CSANR) conducted in conjunction with WSU College of Veterinary Medicine, Washington State University, Pullman, WA. Oct. 29, 2008.

- "Analytical Resources for Water Research" Invited seminar speaker for WSU Center for Environmental Research, Education and Outreach (CEREO), Washington State University, Pullman, WA. Oct. 2, 2008.
- "Analytical Resources: Positioned to Conduct Research in the Columbia River Basin" Invited speaker at retreat for WSU Vice President of Research and associated administration, Schweitzer Event Center, Pullman, WA. Sept. 25, 2008.
- "Pharmaceuticals in the Environment" Guest lecturer, PharS 544 Toxicology, Dept. Pharmaceutical Sciences, Washington State University, Pullman, WA. Feb. 11, 2008.
- "Trace Organic Contaminants in the Environment" Invited seminar for Department of Chemistry, Analytical Chemistry Research Division, Washington State University, Pullman, WA. Feb. 8, 2008.
- "Emerging Contaminants: The Next Generation of Pollutants" Invited seminar speaker for Department of Crop & Soil Science, Washington State University, Pullman, WA. May 28, 2007.
- "Fish Exposure Assays: Assessing Environmental Quality & Remediation Strategies" Invited seminar speaker for WSU/UI Center for Reproductive Biology, Fish Research Program, Pullman, WA. April 19, 2007.
- "Emerging Contaminants in Our Water Resources" Invited seminar speaker for Department of Biological Systems Engineering, Washington State University, Pullman, WA. Oct. 13, 2006.

## TEACHING & STUDENT ADVISING

### Courses Taught

*Rwanda Institute for Conservation Agriculture*

- Practical Farming III (AGR 104), 17 credit course, Spring 2021 (team taught; instructed irrigation module and oversaw daily field activities)

  An experiential introduction to small scale farm planning and management. Students learn to make profitable decisions considering available resources and anticipated risks. Course goal is for students to acquire practical knowledge and skills in smallholder farm management, making sound decisions for farm profitability and sustainability. Two-hour lecture, 7 ½ hours of farm operation each week.

- Enterprise and Marketing (AGR 235), 19 credit course, Summer 2021 (team taught; instructed risk and conflict management in a water management context, taught Excel modules)

- Enterprise and Production (AGR 215), 19 credit course, Fall 2021 (team taught; instructed irrigation module and oversaw irrigation maintenance, operation, design and construction activities; taught mathematical principles module)

  An introduction to plant and animal production in agricultural enterprises. Topics include sustainable production, growth and development processes, farm system integration, and production planning. Two-hour lecture, 7 ½ hours of farm operation each week.

- Enterprise and Processing (AGR 225), 19 credit course, Spring 2022 (team taught; instructed fluid mechanics module)

- Enterprise and Processing (AGR 203), 19 credit course, Spring 2023, Spring 2024 (team taught; instruct irrigation principles and lead mechanization components)

- Plant-Soil Relations (AGR 303), 11 credit hours, Fall 2022, Fall 2023 (team taught; instruct soil water dynamics and methods for soil moisture measurement)

- Agricultural & Environmental Physics (MTH 301), 11 credit hours, Fall 2022, Fall 2023 (team taught; instruct fluid mechanics/fluid dynamics)
- Reflective Project – Research Grant Writing (AGR 100), 4 credit hours, Fall 2023, Spring 2024 (lone instructor; instruct basics of writing a research grant proposals)
- Internship Preparation Seminar (AGR 301), 6 credit hours, Fall 2022 (lead instructor, Internship Coordinator)
- Capstone Internship I (AGR 304), 55 credit hours, Spring 2023 (lead instructor, Internship Coordinator)
- Capstone Internship II (AGR 305), 55 credit hours, Summer 2023 (lead instructor, Internship Coordinator)
- Irrigation Systems & Management (AGM 202), 11 credit hours, Fall 2022, Summer 2023 (lead instructor)

*University of Florida*

- International Water Resources (ABE 6933), 3 credit course, Fall 2014
- International Water Resources (ABE 6933), 3 credit independent study for PhD students, Summer 2013

  Interdisciplinary course for engineering and non-engineering students to provide working knowledge of water resources principles and theory critical to address international development issues. Included cross-cutting socio-economic issues (e.g., gender, economics, transboundary tension) that inevitably impact success of an implemented water/wastewater projects but typically receive little coverage in an engineering course. Semester-long team design projects were integrated throughout the semester. Participatory, learner-centered approach with elements of flipped-classroom design.

*Washington State University*

- Engineering Aspects of Environmental Chemistry (CE 583), 4 credit hour course, Fall 2007
- Engineering Aspects of Environmental Chemistry (CE 583), 4 credit hour course, Spring 2009

  Fundamental course for environmental engineering students with a focus on aquatic and soil chemistry relevant to water/wastewater treatment and natural ecological systems. Shifted from more lecture centered to active learning approach between semesters that incorporated in-class problem solving sessions.

*Texas A&M University* (teaching assistantships)

- Technology for Environmental & Natural Resources Engineering, Fall 2000
- Foundations of Engineering I, Spring 2001
- Agricultural Electronics & Controls, Fall 2004
- Foundations of Engineering II, Spring 2005
- Conservation Principles in Thermal Sciences, Fall 2005

*Duke University* (teaching assistantships)

- Microbial Ecology, Fall 1997 (developed new course in collaboration with professor)
- Wetland Ecology, Spring 1998

*Cornell University* (teaching assistantships)

- Introduction to Resource Management, Spring 1994
- Introductory Field Biology, Fall 1994
- Introduction to Environmental Science, Spring 1996 (led section)

## Advising: M.S./Ph.D. Chairman

- Guillaume Paternostre, M.S. Civil & Environmental Engineering, WSU, Dec. 2008
  Thesis: *Assessing the Role of Physicochemical and Biochemical Soil Characteristics on Escherichia coli Attachment*
- John Foltz, M.S. Engineering Science, WSU, Dec. 2009
  Thesis: *Impacts of Contaminated Sediment Remediation on Early Life Stages of Rainbow Trout*
- Reuven Miroposkiy, M.S. Chemical Engineering, WSU, Dec. 2009
  Thesis: *The Effects of Soil Properties on the Sorption of Selected Cephalosporin Antibiotics*
- Brian Bodah, Ph.D. Biological & Agricultural Engineering, WSU, Dec. 2013
  Dissertation: *Effective Suspended Sediment and Soluble Nutrient Load Mitigation in Irrigated Agricultural Return Flows Through the Use of Vegetated Filter Strips*
- Shannon Mitchell (co-chair, primary), Ph.D. Civil & Environmental Engineering, WSU, Dec. 2013
  Dissertation: *Antibiotic Fate in the Environment and During Anaerobic Digestion and Composting*
- Raina S. Zantout (co-chair, primary), M.D.P. Sustainable Development, UF, May 2014
  Project: *Wastewater Reuse for Irrigation in Tunisia: Human & Environmental Health and Gender*
- Ming Zhang (co-chair, secondary), Ph.D. Agricultural & Biological Engineering, UF, Aug. 2014
  Dissertation: *Synthesis, Characterization and Applications of Biomass-Derived Carbonaceous Materials*
- Kimberly Johnston, M.S. Agricultural Operations Management, UF, May 2015
  Thesis: *Evaluating Fluorescently Labeled Escherichia coli as a Method for Studying Fate and Transport of Pathogens in Soils*
- Iram Ayez (co-chair) M.S. Water, Sanitation & Health (WaSH), USPCASW, 2019
  Thesis: *Comparison of Homemade and Laboratory-Produced Biochars for Removal of Fluoride and Arsenic from Water*

## Advising: Undergraduate Honors Thesis Advisor

- Ella Baar, Agricultural & Biological Engineering, UF, Fall 2014
  Title: *Removing Antibiotics in the Environment Using Biochar*
- Joseph Gross, Agricultural & Biological Engineering, UF, Fall 2014
  Title: *Construction of Magnetic Water Treatment Test Apparatus to Reduce Mineral Scale Deposits*

## Advising: Ph.D./M.S. Committee Member

- Li Wang, M.S. Biological Systems Engineering, WSU, Dec. 2007
  Thesis: *Modeling Reactive Transport of Strontium-90 in Heterogeneous Variably-Saturated Subsurface*
- Zain Al-Houri, Ph.D. Civil & Environmental Engineering, WSU, May 2008
  Dissertation: *Modifications on the Existing Design Parameters to Improve the Performance of Infiltration Treatment BMPs in Cold Climates*
- Tyler Oester, M.S. Civil & Environmental Engineering, WSU, May 2008
  Thesis: *Enhancing Bioremediation of PAH-Contaminated Sediments with Solid Peroxides*
- Ian Turner, M.S. Civil & Environmental Engineering, WSU, May 2008
  Thesis: *Phosphorus Removal from Aqueous Solution Using Biogenic Iron Oxides*
- Antoine Cordray, M.S. Civil & Environmental Engineering, WSU, Dec. 2008
  Thesis: *Phosphorus Removal Characteristics on Biogenic Ferrous Iron Oxides*
- Dian Wen, M.S. (non-thesis) Civil & Environmental Engineering, WSU, Aug. 2009
- Katherine Schaffnit, M.S. Civil & Environmental Engineering, WSU, Dec. 2009
  Thesis: *Solid Peroxide Stimulated Phenanthrene Removal from Contaminated River Sediment*

- Venkata Vaddella, Ph.D. Biological Systems Engineering, WSU, May 2010
  Dissertation: *Ammonia Emissions Management and Modeling from Storages of Dairy Manure*
- Josh Van Wie, M.S. Civil & Environmental Engineering, WSU, Aug. 2010
  Thesis: *Hydrologic Modeling of Conservation Farming Practices on the Palouse*
- Erika Ottenbreit, M.S. Civil & Environmental Engineering, WSU, May 2011
  Thesis: *Modeling the Impacts of Climate Change and Agricultural Management Practices on Surface Erosion in a Dryland Agricultural Basin*
- Murugan Subbiah, Ph.D. Veterinary Microbiology & Pathology, WSU, Dec. 2011
  Dissertation: *Factors Involved in the Proliferation of bla$_{CMY-2}$ Plasmid-Bearing E. coli*

## Post-Doctoral Fellows & Visiting Professors Supervised

- Dr. William Johnson, post-doctoral fellow, WSU – fish toxicology, Jan. 2007 – Aug. 2007
- Dr. Xiaoqiao Lu, post-doctoral fellow, WSU – environmental chemistry, Oct. 2009 – Dec. 2011
- Dr. Nader Salman, visiting professor (at WSU) from Basrah University, Iraq – fish toxicology, Sept. 2010 – May 2011
- Dr. Nawal M. Jajjo, visiting professor (at UF) from University of Mosul, Iraq – irrigation and drainage, May – April, 2013
- Dr. Aurélien Desaunay, post-doctoral fellow, UF – microbiology, July 2012 – July 2014

## Interns

- David Ochieng Sande, Irrigation management and scheduling focus, recent graduate from EARTH University, Costa Rica, July 2022 – July 2023
- Carlos Busingye, *Irrigation Extension Program for Small-Scale Farmers*, RICA, Jan. – July, 2023
- Jean Claude Dukuzumuremyi, *Mobile Poultry House "Chicken Tractor"*, RICA, Jan. – July, 2023
- Livine Tuyisingize, Irrigation systems, senior at Univ. of Rwanda, Aug. 2023 – Sept. 2023
- Greuther Nibeza, Irrigation systems, senior at Univ. of Rwanda, Jan. 2024 – Feb. 2024

## Undergraduate Independent Study Students Advised

- Jarrell Nelson, BIOL 499 Special Problems, WSU, Spring 2007
  Title: *Zebra Fish Embryonic Exposure to Toxic Chemicals*
- Kristin Brown, CHEM 499 Special Problems, WSU, Fall 2007
  Title: *Pharmaceuticals and Hormones in Wastewater and Receiving Waters*
- Jennifer Runnels-Marquette, MBIOS 499 Special Problems, WSU, Fall 2007
  Title: *Pharmaceuticals and Hormones in Wastewater and Receiving Waters*
- Jennifer Runnels-Marquette, MBIOS 499 Special Problems, WSU, Spring 2008
  Title: *Pharmaceuticals and Hormones in Wastewater and Receiving Waters*
- Lynn Ekwood, MBIOS 498 Directed Research, WSU, Spring 2009
  Title: *Escherichia coli Attachment to Soils and the Effects of Hormones*
- Zackarias Gardenfors, MBIOS 498 Directed Research, WSU, Spring 2009
  Title: *Escherichia coli Attachment to Soils and the Effects of Hormones*
- Catherine Chen, NSF Research Experience for Undergraduates (REU), UF, Summer 2012
  Title: *Assessing Watershed Management Options in the Middle East*
- Katherine Vazquez, Florida Agricultural Experiment Station Intern, UF, Summer 2013
  Title: *Irrigation Systems for Organic Agriculture*
- Kim Bensoussan, Intern from Institut Polytechnique LaSalle Beauvais, France, June – Oct., 2013
  Title: *Bacterial Attachment to Plants in Vegetated Filter Strips*

- Ella Baar, University Scholars Program, UF, Summer 2013 – Spring 2014
  Title: *Removing Antibiotics in the Environment Using Biocha*
- Joseph Gross, Agricultural & Biological Engineering honors project, UF, Fall 2014
  Title: *Construction of Magnetic Water Treatment Test Apparatus to Reduce Mineral Scale Deposits*
- Brittany Ferry, Florida Agricultural Experiment Station Intern, UF, Summer 2014
  Title: *Influence of Biochar on Escherichia coli and Listeria innocua Transport in Amended Soils*
- Sarah McIntyre, McNair Fellow, UF, 2015-2016
  Title: *Impacts of Saline Irrigation Water on Vegetables under Florida-Specific Conditions*
- Mackenzi Shepherd, University Scholars Program, UF, Summer 2015 – Spring 2016
  Title: *Evaluation of Different Biochar Production Techniques for Use as a Filtration Media*

### Other Advising

- Serve as faculty advisor for University of Florida Engineers Without Borders (EWB) – Nepal team, Fall 2013 – 2016

  UF-EWB chapter won EWB-USA Premier Chapter Award, 2014
- Youth teaching activities with primary emphasis on disadvantaged populations (particularly Native American) to encourage them to enter STEM (Science, Teaching, Engineering & Mathematics) fields (see Extension/Outreach Activities section below)

## EXTENSION/OUTREACH ACTIVITIES

### Extension Videos

- "*E. coli* in Urban Streams and Rivers" in Barr-Milton Watershed Association 2020 Urban Water Cycle Tour, presenter (starting 24:00), 2020
  https://www.youtube.com/watch?v=ZZVHyVFeuqQ&feature=youtu.be
- "Riparian Grazing: Introduction to Riparian Grazing and Water Quality", co-producer, 2013
  http://www.youtube.com/watch?v=YgHWV_mv6Zs&list=UUO_J3MbC2_x772upBPM-CvQ&feature=c4-overview
- "Riparian Grazing: Water Quality Risks", co-producer, 2013
  http://www.youtube.com/watch?v=f2kdtPSUq9E&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=2
- "Riparian Grazing: Tools & Techniques", co-producer & presenter, 2013
  http://www.youtube.com/watch?v=UN89SLL_iLU&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=3
- "Riparian Grazing: Ecosystem Interactions", co-producer & presenter, 2013
  http://www.youtube.com/watch?v=a6loUp4KR90&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=4
- "Riparian Grazing: Bacterial Ecology", co-producer & presenter, 2013
  http://www.youtube.com/watch?v=dtlnVWovdp8&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=5
- "Riparian Grazing: Risks of Livestock Direct Access & Solutions", co-producer, 2013
  http://www.youtube.com/watch?v=U5-w_aFBulk&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=6
- "Riparian Grazing: Risks of Complete Exclusion", co-producer & presenter, 2013
  http://www.youtube.com/watch?v=dwS1oY5KLFQ&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=7
- "Riparian Grazing: Grazing Effects Evaluation", co-producer, 2013
  http://www.youtube.com/watch?v=DhF0JZexyk4&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=8
- "Riparian Grazing: Bacteria Research & Water Standards", co-producer, 2013
  http://www.youtube.com/watch?v=xMPNJrswIgc&list=PLajA3BBVyv1wgJuA7CJQ3NO_qflbxRN3O&index=9

## Short Courses, Field Demonstrations and Extension Presentations

- Colorado Department of Public Health & Environment, Permits webinar, "Introduction to Total Maximum Daily Loads (TMDLs)", broadcast throughout Colorado, July 16, 2020. Number of attendees: 335
- Awareness Session on XDR (Extreme Drug Resistance) Typhoid and Its Remedial Measures, Panelist for public outreach and media session in response to outbreak in Karachi and Hyderabad held in Jamshoro, Pakistan, Feb. 22, 2019. Number of attendees: 300
- Water Environment Federation webcast Emerging Contaminants in Biosolids, "Antibiotics in Environmental Systems: Implications for Land Application of Biosolids" (with speakers E. Topp and K. Kumar), broadcast to 350 locations, March 1, 2017. Number of attendees: 525
- Spring Ranchers Forum, "Mobile Solar Digester: Design and Construction" (with M. Pazmino & A. Puskot), Oviedo, FL, April 27, 2015. Number of attendees: 280
- Irrigation Systems and Current Technologies Available for Use in Vegetable Crop Production, "Irrigation and Salinity Problems in Vegetable Production", held at ASHS (American Society for Horticultural Science) Annual Meeting, Orlando, FL, July 31, 2014. Number of attendees: 32
- Irrigation Management Strategies and 4R Nutrition (UF In-Service Training Short Course, IST#30762), "Considerations for Establishing and Maintaining Irrigation Sources: Irrigation Sources, Well Installation and Sizing", Clearwater, FL, June 3, 2014. Number of attendees: 43
- Citrus Irrigation Workshop, "Irrigation and Fertilization Management to Minimize Salinity Risk to Citrus", Arcadia, FL, April 29, 2014. Number of attendees: 40
- Vegetable Cost Share and BMPs Workshop, "Water Quality Risk Factors Associated with Irrigation and Fertilization Strategies", Balm, FL, April 28, 2014. Number of attendees: 45
- Highlands County Citrus Best Management Practices Meetings. "Risk Factors Associated with Irrigation and Fertilization Strategies", Sebring, FL, April 23, 2014. Number of attendees: 28
- Dairy Research and Education Meeting, "Health and Reducing Economic Risk: Assessing the Prevalence of Antibiotic-Resistance in the Southeast", Gainesville, FL, April 8, 2014. Number of attendees: 15
- Grower Workshop, "Best Management Practices (BMPs) to Maximize Water and Nutrient Use", Sunnyside, WA, Feb. 21, 2014. Number of attendees: 20
- Joint Citrus and Vegetable Best Management Practices producer meeting, "Water Quality Risk Factors Associated with Irrigation and Fertilization Strategies", Immokalee, FL, Nov. 12, 2013. Number of attendees: 60 (35 for Citrus Grower Session and 25 for Vegetable Grower Session)
- Optimizing Efficiency of Irrigation and Fertilization Practices and Evaluating the Risks Associated with Climate Change for Vegetable Crops (UF In-Service Training Short Course, IST#30738), "Salinity Impacts on Crop Production: How to Manage Soils and Irrigation Water with High Salinity Levels", Gainesville, FL with broadcast to Osceola County, Nov. 7, 2013. Number of attendees: 12
- Certified Crop Advisor CEU session, "Irrigation Water Quality: Risks Related to What Goes on and What Comes Off", broadcast to Lake Alfred, Balm, Ft. Pierce, Gainesville and Immokalee, FL, Oct. 9, 2013. Number of attendees: 81
- "Antibiotic Effects and Mitigation Options in Relation to the Dairy Industry" presented at the North Florida Manure Group (consisting of county extension agents, agricultural business representatives and academics), Alachua, FL, Oct. 4, 2013. Number of attendees: 12
- Strategies for Minimizing Salinity Problems and Optimizing Crop Production (UF In-Service Training Short Course), Designed and taught module on "Soil Salinity in Agricultural Systems: The Basics", Hastings, FL, March 26, 2013. Number of attendees: 25

- Small Farms Pasture Management School (Short Course), Designed and taught module on "Managing Pastures to Protect Water Quality", Marion County, FL, March 19, 2013. Number of attendees: 30
- Grazing Management for Riparian-Wetland Areas & Water Quality Risk Assessment (Short Course), Conducted in coordination with National Riparian Service Team, Designed and taught module on "Riparian Zone Ecosystem Functions", Mount Vernon, WA, May 21-22, 2012. Number of attendees: 25
- Grazing Management for Riparian-Wetland Areas & Water Quality Risk Assessment (Short Course), Conducted in coordination with National Riparian Service Team, Designed and taught module on "Riparian Zone Ecosystem Functions", White Salmon, WA, May 24-25, 2012. Number of attendees: 25
- Grazing Management for Riparian-Wetland Areas & Water Quality Risk Assessment (Short Course), Conducted in coordination with National Riparian Service Team, Designed and taught module on "Riparian Zone Ecosystem Functions", Ellensburg, WA, Oct. 20-21, 2011. Number of attendees: 25
- Grazing Management for Riparian-Wetland Areas & Water Quality Risk Assessment (Short Course), Conducted in coordination with National Riparian Service Team, Designed and taught module on "Riparian Zone Ecosystem Functions", Colfax, WA, Oct. 17-18, 2011. Number of attendees: 25
- Demonstration of tillage management impacts on runoff and erosion rates using a rainfall simulator, Coordinated Resource Management (CRM) tour (interagency program with aim to solve land use and natural resource issues), Lamont, WA, Oct. 8, 2009. Number of attendees: 40
- Demonstration of vegetation filter strip efficacy in mitigating sediment transport to surface waters using interactive physical model, Salmon Summit, Benton County Conservation District, Kennewick, WA. May 12, 2009. Number of attendees: 250

## Invited Expert Evaluation

- Invited expert evaluation provided for Southeast Washington Intensively Monitored Watershed Project for assessment of stream habitat for stream restoration projects being conducted by Snake River Salmon Recovery Board, Asotin Creek Basin, WA, for Eco Logical Research Inc., Sept. 15-16, 2010.

## Invited Outreach Presentations

- "International Development: A Shared Responsibility" Invited speaker for Vail Mountain School (entire middle school), Vail, CO. Oct. 2, 2017.
- "Engineering Aspects of BMPs, TMDLs and On-Farm Irrigation Management" Invited speaker for University of Florida Department of Agricultural and Biological Engineering, Gainesville, FL. Dec. 13, 2010.
- "Pulse crop management: Implications on N-fixation potential" (prepared by Ullman but given by J. Rentz due to presentation in Toppenish, WA). Cool Season Food Legume Special Research Program (held by USDA-ARS and USA Dry Pea & Lentil Council), Moscow, ID. Feb. 4, 2010.
- "Vegetative filter strips" Invited speaker for Irrigated Agriculture Research & Extension Updates (joint Oregon-Washington interagency program), Prosser, WA. Dec. 17, 2009.
- "Integration of filter strip research into the Yakima WATERS Program" Invited speaker for Yakima WATERS Program, Central Washington University, Ellensburg, WA. Oct. 14, 2009.
- "Crop management impacts on cool season food legume production" Speaker for Cool Season Food Legume Special Research Program (held by USDA-ARS and USA Dry Pea & Lentil Council), Moscow, ID. Feb. 6, 2009.

- "Impacts of endocrine disrupting chemicals (EDCs) on spawning male salmonids exposed to treated wastewater effluent" Invited speaker for Tulalip Tribe Department of Natural Resources, Quil Ceda, WA. July 25, 2008.
- "Water conservation in a semi-arid watershed through changes in cropping practices" Speaker for Palouse R.Water Resource Inventory Area 34 (WRIA 34) Planning Unit, Colfax, WA. Jan. 9, 2008.

## Additional Outreach Presentations

- "Middle Snake River stream habitat assessment: Response to comments". Speaker for Water Resource Inventory Area 35 (WRIA 35) Planning Unit, Clarkston, WA. Oct. 15, 2009.
- "Middle Snake River stream habitat assessment: Final results". Speaker for Water Resource Inventory Area 35 (WRIA 35) Planning Unit, Clarkston, WA. June 11, 2009.
- "Middle Snake River stream habitat assessment: Update report". Speaker for Water Resource Inventory Area 35 (WRIA 35) Planning Unit, Clarkston, WA. Feb.12, 2009.
- "Middle Snake River stream habitat assessment". Speaker for Water Resource Inventory Area 35 (WRIA 35) Planning Unit, Clarkston, WA. Oct. 16, 2008.

## Youth Outreach Activities

- HOIST (Helping Orient Indian Students and Teachers in STEM (Science, Technology, Engineering and Math) fields), University of Idaho Native American Education program – hosted Native American high school student John Skinner for 6 weeks to provide first-hand experience in laboratory research, Washington State University laboratory facilities, June-July, 2010.
- NYEHE (Native Youth Exploring Higher Education) Native American summer youth camp presented by Washington State University Tribal Liaison. Conducted two-day field program "Watershed Processes", Pullman, WA, July 13-14, 2010. Students attending: 24
- Cougar Quest, Academic Summer Camp for grades 7-12 (disadvantaged youth). Conducted two week-long short courses "Watersheds – Linking Land & Water", Pullman, WA, July 20-21, 2009. Instructor rating: 4.8/5. Students attending: 24
- NYEHE (Native Youth Exploring Higher Education) Native American summer youth camp presented by Washington State University Tribal Liaison. Conducted two-day field program "Watershed Processes", Pullman, WA, June 16-17. Students attending: 36
- Cougar Quest, Academic Summer Camp for grades 7-12 (disadvantaged youth). Conducted two week-long short courses "Watersheds – Linking Land & Water", Pullman, WA, July 20-21, 2009. Instructor rating: 4.7/5. Students attending: 37
- Invited speaker for USDA College Assistance Migrant Program (CAMP). Presented "Opportunities in environmental & agricultural engineering" to Hispanic freshman students. Pullman, WA, April 22, 2009. Students attending: 15
- Coeur d'Alene Tribal student job fair. Presented day-long activities introducing Tribal students from 5-12 grades to environmental job possibilities. Plummer, ID, Nov. 5, 2008. Students attending: 200

## Public Recognition for Outreach Activities

- "WSU Teams up to Tackle Water Issues" (article on irrigation water quality research) by Anom., Valley Farmer Spring Edition, page. B-6, March 16, 2010.
- "Rain Simulator Shows Benefits of Chem-Fallow in 'Real-World' Farming" (article on CRM field demo) by T.J. Burnham, Western Farmer Stockman, page 40 (Page 1 headline), Dec. 2009.
- "Nothing Fishy about NYEHE" (article on water quality session for Native American summer youth camp) by T. Smith, NYEHE: Native Youth Newsletter, page 1, June 15, 2009.

## INTERNATIONAL CAPACITY BUILDING & EXTENSION/OUTREACH ACTIVITIES

**Pakistan, U.S.-Pakistan Centers for Advanced Studies in Water (USPCASW)**

Technical Advisor, Mehran University of Engineering & Technology, Jamshoro, Pakistan

Lived full-time in Pakistan. USPCASW is a U.S. Agency for International Development (USAID) funded project with the vision to establish a world-class education and research center dedicated to solving water related problems in Pakistan. General duties include:

- Provide research capacity building to faculty and students
- Curriculum, course, and teaching improvement
- Develop and deliver training programs
- National networking and fundraising
- Support mission training visits

In addition to duties conducted under this framework, specific trainings conducted include:

- Grant Proposal Writing Short-Course. April – June, 2018 (weekly)
- The Flipped Classroom: Basic Concepts and Perspectives. Flipped Classroom Workshop. May 18, 2017
- Research Infrastructure and Training Needs. Client-Driven Research Development Workshop. July 31, 2017
- Graduate Student Advising Calendar. Research Mentoring Workshop. Dec. 11., 2017
- Communicating Research Results Workshop. Dec. 14, 2017
    - Data Presentation, Strategies to Effectively Convey Research Results: The Basics
    - Data Presentation, Strategies to Effectively Convey Research Results: Format Selection
- Faculty Performance Evaluation Process. July 16, 2018
- Reviewing and Critiquing Research Proposals. July 17, 2018
- Experimental Design Workshop, Dec. 10, 2018
    - Experimental Design: Basic Concepts
    - Experimental Design: Concepts of Factor Experiments
    - Field Experiments

**Pakistan, Faculty Development Workshop, Pakistan Academy of Science, Islamabad, Pakistan.**

Instructor for faculty attending from throughout Pakistan. Modules included:

- Use of Teaching Technologies: Enhancing Your Impact in the classroom. Aug. 10, 2017.
- The Boot Camp System: Developing Professional Skills. Aug. 11, 2017.

**Nepal, Engineers Without Borders (EWB), Drinking Water Improvement Project**

Faculty Advisor, University of Florida, 2013 – 2016; Professional advisor, 2017 - present

Project involves evaluation, design, implementation and monitoring of a filtration system and distribution network to provide a clean water source for a community school in the village of Khanalthok, Nepal. Team won the EWB-USA Premier Chapter Award, 2014. Additional Nepali work presented at the Comparative and International Education Society 2015 Annual Conference.

**Tunisia, Reclaimed Wastewater Use for Agricultural Irrigation in North Africa**

Project lead on USDA Foreign Agricultural Service funded project, 2012 - 2014

Investigated the safe use of wastewater reuse for irrigation with the aim of mitigating human and environmental risk. Researched water quality parameters and socio-economic considerations with results applied to multiple workshops provided to local farmers. Particular attention was placed on gender issues to address women workers who receive little training. Results presented at AIAEE (Association for International Agricultural and Extension Education) 2014 Annual Meeting including published abstract with publication using additional data in preparation.

**Egypt, Workshop on Water Resources of Egypt**

Keynote speaker "Alternate Water Development Strategies for Arid Conditions", workshop presented by the National Water Research Center of Egypt and Utah State University Cairo, Egypt, Aug. 13, 2014.

**Iraq Agricultural Extension Revitalization (IAER) Program**

The IAER Program was a USDA funded, multi-university project that involves the training of Iraqi government employees to better prepare them to perform extension activities for farmers throughout Iraq. Paper published titled "Access to agricultural inputs, technology and information, communicating with farmers, and the role of women in agriculture: perceptions of Iraq extension agents" (2013).

- Phase IV part 2; U.S. trainers and Iraqi trainees in Dohuk, Iraq, June 2011
  Designed and taught modules in "Extension Methods" unit:
  1) Needs Assessment
  2) Program Planning
  3) Program Implementation
  4) Program Evaluation
- Phase IV part 1; U.S. trainers and Iraqi trainees in Erbil, Iraq, February 2011
  Designed and taught modules in "Soil & Water Conservation" unit:
  1) Crop Rotations and Cover Crops
  2) Land Preparation, Tillage Systems and Planting
  3) Harvest and Post-Harvest Field Management
- Phase III; U.S. trainers and Iraqi trainees in Erbil, Iraq, May 2010
  Designed and taught modules in "Soil & Water Conservation" unit:
  1) Water Harvesting: Water Conservation Practices for Agricultural Use
  2) Agricultural Best Management Practices for Soil Conservation & Water Quality Protection
  3) Designing Field Demonstrations (joint presentation)
- Phase II; Iraqi trainees in Pullman, WA, June 2009
  Designed and taught modules in "Soil & Water Conservation" unit:
  1) Management of Saline & Sodic Soils
  2) Landform Management for Soil & Water Conservation
- Phase I; U.S. trainers and Iraqi trainees in Amman, Jordan, July 2008
  Designed and taught modules in "Land Reclamation" unit:
  1) Reclaiming Land from Improper Agricultural Practices
  2) Reclamation of Oil Contaminated Soils
  3) Deforestation Reclamation
  4) Reclamation of Salt Affected Soils

**Afghanistan, Afghanistan Agricultural Extension Project: Pistachio and Citrus Industry Improvement Training**

- Herat Province Training for Afghan Extension agents, April 7, 2013
  Designed "Water Harvesting and Storage for Tree Crops" module taught by Dr. Louise Ferguson (UC Davis)
- Kabul Province Training for Afghan Extension agents, April 14, 2013
  Designed "Water Harvesting and Storage for Tree Crops" module taught by Dr. Louise Ferguson (UC Davis)
- Khulum Province Training for Afghan Extension agents, April 17, 2013
  Designed "Water Harvesting and Storage for Tree Crops" module taught by Dr. Louise Ferguson (UC Davis)

## FELLOWSHIPS, AWARDS, HONORS & RECOGNITION

### Fellowships

- U.S. EPA STAR Graduate Fellow, 2001-2003
  Title: *Influence of Chemical Behavior on the Fate and Transport of Hormonal Compounds in Agricultural Systems Receiving Animal Waste*
- Texas Water Resources Institute Mills Scholar, Texas A&M University, 2003
- Willie May Harris Graduate Fellow, Texas A&M University, 2000

### Awards

- 2009 Faculty Excellence Award – WSU Athletic Department, May 1, 2009
- Texas A&M Academic Excellence Award, 2005

### Honors

- ΦΚΦ honor society
- ΓΣΔ honor society
- AE honor society
- Cornell University Agricultural Honor Society
- Gold Key honor society
- Empire Who's Who Executive & Professional Registry (2003)

### Recognition by Media

- Radio Pakistan, interview following "Awareness Session on XDR (Extreme Drug Resistance) Typhoid and Its Remedial Measures" Feb. 22, 2019.
- National Public Radio (NPR), KPBX 91.1 Spokane, interview on contaminated sediment research, Sept. 8, 2008.
- USA Today (national edition), Washington state news, write-up on grant received from the Murdock Trust for high-end analytical equipment, page 11A, Sept. 3, 2008.
- Innovations (WSU College of Engineering magazine), "Maintaining a Safe and Marketable Organic Product" (article on antibiotics in manure grant), page 11, Winter 2008/2009.
- Innovations (WSU College of Engineering magazine), "Examining Pathogen Transport through Riparian Buffers", page 26, Winter 2008/2009.

- Innovations (WSU College of Engineering magazine), "WSU Researchers Receive Murdock Grant to Investigate Contaminated Sediments" (article on equipment grant), page 28, Winter 2008/2009.
- WSU Today, "WSU Teams up to Develop Water Management Simulator" (article on USDA National Integrated Water Quality grant on irrigation water quality), Nov. 2, 2009.

## PROFESSIONAL MEMBERSHIPS, SOCIETIES & ORGANIZATIONS

- Society of Environmental Toxicology and Chemistry (SETAC), 2006 – present
  - Chair of Technical Issues sub-committee in Technical Committee, 2007 – 2008
  - Active member of Technical Committee, 2007 – present
- Soil Science Society of America (SSSA) – American Society of Agronomy (ASA), 1997 – present
- American Society of Agricultural & Biological Engineers (ASABE), 1999 – present
  - Secretary for Florida section, 2014-2015
- Association for International Agricultural & Extension Education (AIAEE), 2013 – present
- American Chemical Society (ACS), 2007 – present
- Institute of Biological Engineering (IBE), 2013 – 2016
  - Chair of Ecological Engineering Community Group, 2014 – 2015
- Columbia River Toxics Reduction Work Group, 2007 – 2009
  - Monitoring & Research sub-committee, 2008 – 2009

## OTHER ACTIVITIES

- Editorial Board member, Basrah Journal of Agricultural Sciences, appointment 2021
- Advisory Board member, University of Basra, Iraq, appointment 2019-2021
- Served on eighteen (18) US Environmental Protection Agency (US EPA) review panels for granting programs, which include:
  - Science to Achieve Results (STAR) Research grants (5 times)
  - Science to Achieve Results (STAR) Fellowships for Graduate Environmental Study (4 times)
  - P3: People, Prosperity and the Planet (4 times)
  - Small Business Innovation Research (SBIR) Phase I (4 times)
  - Small Business Innovation Research (SBIR) Phase II (1 time)
- Served on National Science Foundation (NSF) Small Business Innovation Research (SBIR) Phase I review panel
- Served on National Science Foundation (NSF) Small Business Innovation Research (SBIR) Phase II review panel
- Proposal reviewer for United States Department of Agriculture (USDA) Small Business Innovation Research (SBIR) program
- Proposal reviewer for Nazarbayev University, Kazakhstan (review panel operated by Oak Ridge)
- Reviewer for numerous academic journals, including panelist on Reader Panel for journal *Nature*, Jan. 2009 – July 2010
- International Advisory Board member for *Hima Mesopotamia*, an international non-governmental organization dedicated to the promotion of responsible stewardship of the Tigris-Euphrates watershed to preserve the Mesopotamian Marshes in Iraq, March 2011 – 2014.
- International Scientific Committee member for International Symposium on Emerging Pollutants in Irrigation Waters, funded by the German Federal Foreign Office, German Academic Exchange

Service (DAAD) and the German-Arab Transformation Partnership through EMPOWER Tunisia, held in Tunis, Tunisia, Nov. 25-28, 2013.

- Session moderators/chairman for conferences:
  - Panelist and closing remarks for special seminar: Antibiotic Resistance. Mehran University of Engineering & Technology, Jamshoro, Pakistan. October 12, 2018.
  - Conference opening remarks as Guest of Honor. 1st Young Researchers National Conference on Water and Environment (organized by U.S.-Pakistan Center for Advanced Studies in Water), Jamshoro, Pakistan. May 22-23, 2017.
  - Conference session moderator: Environmental engineering: Ecological environmental modeling and biological engineering design. Institute for Biological Engineering (IBE) Annual Conference, Raleigh, NC, March 7-9, 2013.
  - Conference session chairman: Plenary session 4: Current status of emerging pollutants. Emerging Pollutants in the Mediterranean Basin (granted by German Academic Exchange Service), Hammamet, Tunisia, Sept. 10-16, 2012.
  - Conference session moderator: Prevention and control of upland and in-stream erosion II. ASABE & AEG (American Society of Agricultural & Biological Engineers and Association of Environmental & Engineering Geologists) International Symposium on Erosion and Landscape Evolution, Anchorage, AK, Sept. 18-21, 2011.