

Curriculum Vitae

William D. Shuster, Ph.D. (US Citizen), wshuster@wayne.edu

Education:

Ph.D., Environmental Science, 2000. The Ohio State University, Columbus. Dissertation: *Influence of earthworm community dynamics on soil structure, carbon distribution, solute transport, and leachate production in Ohio agroecosystems*

B.S., Physics, 1987. University of Michigan, Ann Arbor.

Research and Work Experience:

Chair, Professor, Department of Civil and Environmental Engineering, College of Engineering, Wayne State University. August 2019 – present. Lead 13 faculty members across structural, transportation, construction mgmt., and environmental sub-disciplines. Day-to-day administration (budgeting, grant-proposal analysis, promote positive departmental culture, performance review of faculty and staff), maintain industrial advisory board, advise ASCE Student Group Chapter.

College level: Work with faculty, Environmental Technology chair, and Dean to re-develop construction engineering and management programs and curricula to better match industry demand, and enhance student recruitment and retention, recruited faculty member in this area who is joint between our departments; Re-started and Chaired Diversity, Equity, and Inclusion Committee for College of Engineering (January through July 2020); stepped down to serve as liaison between COE and WSU Social Justice Action Committee (through December 2020); Review Engrg. Tech. Division Chair, Program (Jan. – March 2022); led committee, developed and administered survey materials to faculty, staff, students. Conducted follow-up interviews. Analyzed and summarized survey results in report to College of Engrg. Dean.

Departmental, Teaching: Lead department through 2020-22 COVID19 pandemic and coordinate with University-level policy on an ongoing basis; Engage faculty and administration to develop administrative and funding supports to enhance junior faculty competitiveness on grant proposals; Oversaw process to hire on and mentor two new faculty members; Work with faculty to develop tenure, promotion packages. To date, successfully promoted three faculty to Associate w/tenure, two faculty to tenured Full Professor; Reconstruct industrial advisory board, develop charter, recruit new members; Work with College and other Dept. Chairs to structure a cooperative (co-op) education program for rising Juniors, Seniors. Work with academic advisors to develop 3 credit sequence to translate course in employment preparation with up to two co-op work experiences for technical elective credit; Secured internal grants to re-build undergraduate geotechnical engineering teaching lab, with capacity to serve department research functions; Develop general education (social inquiry) course CE2000 How Cities Work to introduce civic and environmental infrastructure and services to a broader student body (taught this course WI21, WI22 semesters)

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Service, Research: Develop and work with local residents, faith communities, non-governmental organizations, and State environmental agencies to write urban watershed (sewershed) management plan that represents the unique urbanized water resources setting of Detroit River and Lake St. Claire coastal and near-inland communities, and from data-, service-equity perspectives; serve as a source of an engineering – data equity – social equity perspective for local Detroit communities in the face of widespread flooding and capacity issues in the regional wastewater system; Conduct externally-funded, ongoing study of wastewater-based epidemiology investigating SARS-CoV-2 viral material in sewer flows as a leading indicator for spread of COVID19 through WSU and the Greater Downtown Detroit communities; Maintain research program centered on the integration of improved quantification of urban soil hydraulics as it impacts on runoff formation and stormwater management, wastewater system function (esp. sewer overflows); inflow and infiltration processes; fate and transport of contaminants in novel urbanized soils; quantify and qualify the rendering of ecosystem services from urbanized landscapes and green infrastructures.

Senior Research Hydrologist, U.S. EPA, National Risk Management Research Laboratory, Water Resources Recovery Branch, February 2003 – July 2019. *Promoted to GS-14 by peer-review board process, 7/9/2009; GS-15-5 by peer-review, 5/10/2018.*

Rendering hydrologic ecosystem services in urban ecosystems via green-gray infrastructures; study operational and management aspects of integrated green-gray infrastructure for coupled stormwater-wastewater management. Develop recommendations on sustainable approaches to urban water resources management that resolve conflicts among hydrologic, economic, demographic, and legal interests. ***Conceived technical content of green infrastructure pilot plan for a Clean Water Act negotiated consent decree process.*** Develop, plan, attract funding for, and lead (2011-2013) Safe and Sustainable Water Resources (SSWR; 4.1 inaugural GI program, 5.01A modeling focus, 5.02A field focus) research program to ***study integration of green infrastructure into U.S. communities.*** Continue to attract funding and maintain vigorous research program (2013-2019). Conduct ***national urban soil hydrologic assessments (2010-2016) in 12 urban core communities; apply to design of green infrastructure, development of Green Demolition contract bid specifications.*** Complete long-term (2005-2011) ***field research to test hydrologic and ecological effectiveness of economic incentives to place retrofit residential parcels with green infrastructures for stormwater management;*** design rain garden utilizing native soils and develop choice of three different plant communities.

Acting Branch Chief (detail), USEPA, National Risk Management Research Laboratory, Sustainable Environments Branch, April 2009 – August 2009.

Oversee day-to-day science administration for 13 Ph.D. level research staff, and 6 support staff with an annual budget of \$1.5M. Write multi-year plan goals, annual performance measures for sustainability metrics and develop programmatic areas in sustainable watershed management. Learn about sustainability metrics and indicators and work with team leads to develop and expedite their research work. Develop cross-division approach to pursuing water resources management through linkages with EPA

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program offices on climate change, land revitalization/Brownfields-Superfund, and ageing water infrastructure programs and regional, state, county, and city-level partners.

Postdoctoral Researcher, USEPA, National Risk Management Research Laboratory, Sustainable Environments Branch, May 2001 – February 2003.

Initiate a study on the effects of simulated urbanization on hillslope hydrology;

Collaborate with U.S. EPA economists and lawyers to develop a tradable credit tool to abate excess stormwater runoff in urban watersheds; contribute streamflow monitoring component to inter-lab aquatic ecosystem assessment project, Little Miami River (OH).

Environmental Specialist 2, Ohio Environmental Protection Agency, Division of Emergency and Remedial Response, Voluntary Action Program, August 2000- May 2001.

Work as risk assessor in state-level brownfield remediation program. Represented Ohio EPA on the Great Lakes Commission on Strategic Land Use Initiatives task force. Train and present to the regulated community and Ohio EPA staff on nonparametric and geospatial methods of environmental data analysis.

Postdoctoral Researcher, Horticulture and Crop Sciences, The Ohio State University, April 2000-August 2000.

Develop and carry out experimental approach to ***compare watershed-level field surveys to track populations of an invasive weed species (Alliaria petiolata; garlic mustard). Modeled soil and landscape-level impacts on crop (Glycine max)-weed (Abutilon theophrasti) relationships.***

Graduate Research Associate, School of Natural Resources, The Ohio State University, September 1995-March 2000.

Experimentally-manipulate earthworm communities and research their impacts on water quality and hydrology in row-crop agroecosystems. Apply field and lab competencies to support funded USDA project. Develop skills with mixed-model analysis of variance, multivariate techniques, and spatial statistics. Build custom radiometry instrumentation to monitor drought stress in turfgrass cropping systems. ***Characterize baseline soil physical properties for organic agroecosystems research project.*** Advisor: E.L. McCoy, Ph.D.; SNR, Williams Hall, Ohio Agricultural Research and Development Center, Wooster, OH 44691, mccoey.13@osu.edu, 330-263-3884.

Research Assistant 2, Department of Entomology, The Ohio State University March-September 1995.

Design, test, and apply apparatus to determine water stability of aggregated soil material and earthworm casts. ***Develop protocols and train postdoctoral researchers and graduate students in soil physical characterization.*** General field operations and sampling in managed agroecosystems.

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Agricultural Consultant – Snake Hill Farm, Chagrin Falls, OH
March-September 1995.

Work with owner-operators to assess objectives and fully utilize existing infrastructure and natural resources, to develop a farm management plan. ***Advise on: transition to organic vegetable cropping systems, flax (*Linum usitatissimum*) culture, and selection of appropriate tillage implements, fertility management.***

Farm Manager, Farm Operations, Department of Entomology, The Ohio State University,
November 1992-January 1995.

Manage 50 ha. experimental farm (horticultural crops) to study sustainable agroecosystems management. Designed and maintained cropping systems to study productivity and economics of conventional, integrated, and certified organic agroecosystems. Manage teams of up to twelve seasonal student interns and state employees. Train field scouts to aid in the monitoring of pest populations and integrated pest management. Market produce through farmers markets, retail, wholesale, and institutional channels. Serve on board of local farm market group. Summarize seasonal results in technical reports. Successfully compete for grant funds to support staff and on-farm research efforts.

Research Assistant 2, Department of Entomology, The Ohio State University, December 1990-November 1992.

Work with farm manager to design and build experimental farm infrastructure. Apply appropriate pest management techniques to each of conventional, integrated lower-input, and organic agroecosystems. Assess water needs of five, 6-ha. agroecosystems, and implement drip irrigation system. Develop database for labor and material input data, and set up protocols for periodic sampling and analysis of soil and plant tissue. Create basic agroecology curriculum; coordinated farm visits and tours. Licensed pesticide applicator (1991-1995) with certifications in: research and demonstration; fruit, vegetable, and field crops.

Research Assistant 1, Department of Agronomy, Soil Physics Laboratory, The Ohio State University, December 1988-November 1990.

Apply tillage and compaction treatments to field plots; conduct laboratory and field measurements to understand soil physical and hydrologic processes and responses to compaction and other influences on production in row-crop agroecosystems. Set up and equip soil physics laboratory. Responsible for determining proper testing protocols, conducting analyses, and maintaining records and databases pertaining to up to twelve field projects at any given time.

Farm intern, Blueberry Ledge Farm, Gardiner ME. May 1988 – September 1988. Lived and worked on a 45 ha. family farm. Cultivate, maintain, and market vegetable and fruit crops.

Grants and Fiscal Management (approx. \$9,000,000 over 12 years)

2022-23. NSF Civic Innovation Challenge (CIVIC) proposal (CNS-2228584; Planning: SCC-CIVIC-PG Track A: Recovering from Expected Flooding Under Residential Buildings (REFURB), Shuster, WD; Smith R, **\$50,000**

2022-2027. Center for Leadership in Environmental Awareness and Research (CLEAR). P42 Superfund Center, National Institutes of Health. Co-PIs: Miller, C.; Runge-Morris, M., et al. [*Role*: Senior Personnel, steering committee], **\$13,175,442**

2022-2024. Healthy and Resilient Gulf of Mexico 2021– Building Community Resilience Through the Reduction and Prevention of Nonpoint Source Pollution. Project Title: Conjunctive deployment of distributed stormwater infiltration and bioretention infrastructures to mitigate flooding and related non-point source pollution in Beaumont and Port Arthur, Texas. Qian, Q (Lamar U., PI), W Shuster, Y Zhang (Co-PIs). 3-year grant, **\$448,625 (~\$90,000 for WSU)**

2021-2023. Monitoring SARS CoV-2 markers to support wastewater-based epidemiology to inform public health actions (Wayne State University and Detroit MI). Funded by State of MI. Principal Investigator (PI): Jeffrey Ram WSU School of Medicine (Co-PI: Bill Shuster); **\$3,000,000**

2020. Dorm-level Wastewater monitoring for SARS CoV-2 material: a process-based approach to inform early-warning and control (Wayne State U., Detroit MI). Funded by State of MI. Principal Investigator (PI): Shuster, Bill (Co-PI: Ram, Jeffrey (WSU School of Medicine); Co-PI: Miller, Carol (Professor WSU CEE); **\$306,000**

2016. Interagency Flood Risk Management Project City of New Orleans Non-Structural Green Infrastructure Water Management. Louisiana Silver Jackets, US Army Corps of Engineers. **\$100,000**

2012-2019. Safe and Sustainable Water Resources (SSWR) research program. Lead for Project 4.1, transition to Task Lead for 4.1A; task lead for 5.01, 5.02: Determine integration of green infrastructure in communities. **\$1,520,000** FY 2012, 13, then **\$1,100,000** FY 2014-15, average of \$360,000 FY 2016, 17, 18, 19.

2013. Hydrologic Investigation of Green Infrastructure & its Impacts on Urban Water Cycles & Water Quality. Interagency agreement with USGS-OH, MI, NE. 2012-2017 (DW-14-95831101-0), **\$1,250,000**.

2012. Regional Applied Research Effort (RARE) Grant Region 7. U.S. EPA Green infrastructure monitoring – investigation of soils for green infrastructure implementation in Omaha, NE and development of a monitoring strategy. 2012-2013. Collaboration with USGS-NE, City of Omaha, **\$100,000**.

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2012. Urban soil taxonomic descriptions and characterization of soil chemical properties as applied to the sustainable use of vacant land (Cleveland OH, Detroit MI, Omaha NE). 2012-2013. Contract with Cedarville Engineering. (EP-12-C-00071), **\$148,475**.

2011. Hydrologic Investigation of Green Infrastructure Projects along Lick Run, Hamilton County, Ohio. 2011-2013. Interagency agreement with USGS-OH (DW-14-95705201-1-4), **\$352,000**.

Potential improvements to urban water resources through transnational sharing of experience and technology – a comparative and synthetic analysis of the German and American experiences. Contract with Ecologic. 2011-2012 (EP-11-C-000067), **\$49,750**.

Urban soil taxonomic descriptions and characterization of soil chemical properties as applied to the sustainable use of vacant land in Cleveland OH and Cincinnati OH. 2011-2012. Contract with Cedarville Engineering. (EP-C-11-033), **\$89,696**.

Urban soils survey and hydrologic characterization work for sustainable use of vacant land in Cleveland OH. 2010-2011. Contract with Cedarville Engineering. (EP-10-C000151), **\$50,000**.

Post-treatment hydrological monitoring for benefits and economic attributes of on-lot stormwater best management practices. 2007-2011. Interagency agreement with USGS-OH (DW-14-92275701-0), **\$417,450**.

Hydroecological benefits and economic attributes of on-lot stormwater management. 2004-2007. Interagency agreement with USGS-OH (DW-14-92160001-2), **\$520,718**.

Order-1 soil survey for the Shepherd Creek watershed. Interagency agreement with Natural Resources Conservation Service-OH, 2004-2006 (DW-12-92159701), **\$20,000**.

Investigation of urbanization impacts on watershed hydrology and water quality. Interagency agreement with USDA-ARS, North Appalachian Experimental Watershed, Coshocton OH, 2003-2005, (DW-12-93976301), **\$350,000**.

Awards and Extramural Grants

2019 - U.S. EPA Superior Accomplishment Recognition Award

2018 – U.S. EPA Superior Accomplishment Recognition Award, August 2018

2017 – Honor Award for Exceptional/Outstanding ORD Technical Assistance to the Regions or Program Offices, October 2017; U.S. EPA Superior Accomplishment Recognition Award, August 2017.

2016 – GreenGov Presidential Awards: Good Neighbor award for Greener Demolitions in Distressed Cities, Sept. 2016; U.S. EPA Superior Accomplishment Recognition Award, August 2016.

2015 – Embassy Science Fellow, detailed to U.S. Embassy, Majuro atoll, Republic of the Marshall Islands; U.S. EPA Superior Accomplishment Recognition Award, U.S. EPA Scientific and Technological Achievement Awards (STAA). Honorable Mention for three projects: “Research on understanding the nature of urban soils and their role in stormwater and sewer management”, “Integrating green infrastructure, adaptive management toward water-resource sustainability in US cities”, and “A demonstration of enhanced methane-gas transfer from a large river”.

2014 – U.S. EPA Superior Accomplishment Recognition Award, U.S. EPA Scientific and Technological Achievement Awards (STAA), Honorable Mention for: Moving beyond the udorthent – a proposed protocol for surveying urban soils to service data needs for contemporary urban ecosystem management (2011). U.S. EPA Quality Step Increase, GS-14-6 to GS-14-7.

2013 – U.S. EPA Quality Step Increase, GS-14-5 to GS-14-6, May 2013.

2012 – U.S. EPA Superior Accomplishment Recognition Award

2011 – U.S. EPA National Honor Award, Silver Medal for Superior Service and U.S. Dept. of Justice: Certificate of Commendation (developed green infrastructure pilot plan as a part of settling a Clean Water Act negotiation); U.S. EPA, Office of Research and Development Bronze Medal; Safe and Sustainable Water Resources Research Action Plan Development Team; U.S. EPA Scientific and Technological Achievement Awards (STAA), Honorable Mention for: Nitrous oxide emissions from a large, impounded river: the Ohio River 2010. J. Beaulieu*, W Shuster, J Rebholtz, Env. Sci. Tech.; USEPA-ORD-NRMRL Health and Safety award: addressed unique safety issues that arise in urban environmental field research work.

2010 – U.S. EPA Superior Accomplishment Recognition Award; U.S. EPA Scientific and Technological Achievement Awards (STAA) Level 3 awards, 2010: Front-loading urban stormwater management for success – a perspective incorporating studies of retrofit low-impact development.2008.WD Shuster*; M Morrison, R Webb. Invited

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paper: Cities and Environment; **and** Prospects for enhanced groundwater recharge via infiltration of urban stormwater runoff – a case study. 2007. **WD Shuster***, R Gehring, and J Gerken. J. Soil Water Conservation.

2009 – **McCloy Fellowship in Environmental Affairs, Amer. Council on Germany** – support for travel and expenses associated with *one-month of study, science diplomacy in Germany on the subject of sustainability in water resources management*, March-April 2009; approx. \$10,000. **U.S. EPA Superior Accomplishment Recognition Award.**

2008 – **U.S. EPA Superior Accomplishment Recognition Award; U.S. EPA-Natl. Risk Mgmt. Res. Laboratory**; Goal One-Environmental Solutions award, using Economic Incentives to Manage Stormwater Runoff. **National Council of Architectural Registration Boards (NCARB) Grant Program**, Course Development Grant, 2008, \$2500. Michael Zaretski (U. Cinti.), PI. *This grant led to the development of an ARC502 studio course to give early-phase graduate students a background in environmental issues pertinent to their architectural experience, presented from a sustainability perspective.*

2004-2007 – **U.S. EPA Superior Accomplishment Recognition Award**

Professional Affiliations and Committee Work

American Society of Agronomy-Soil Science Society of America (SSSA), 2011-2016: serve on two committees: Urban Soils S594 (since incorporated into larger Society focus on urban and anthropogenic soils), create webpage specific to green infrastructure applications in the context of urban soils; Membership and Identity S237: create branding concepts and develop advertising campaign to communicate importance and relevance of SSSA work to a public audience.

Novatech 2013 Scientific Coordinating Committee (2011-2013), work with committee members to develop sessions, promote the conference, and ensure a high-level of organization for June 2013 conference in Lyon FR.

IWA / IAHR Joint Committee on Urban Drainage (JCUD), 2010-2013, committee member in this organization operated jointly by the International Water Association (IWA) and the International Association on Hydraulic Engineering and Research (IAHR) SOCOMA (Source Control for stormwater Management). Work with urban hydrologists to determine knowledge gaps in our area of practice, develop manuscripts to close knowledge gaps.

American Geophysical Union, member since 2006.

Sigma Xi, member since 2000.

Science, Public Community Service

Editorial Board, Landscape and Urban Planning. July 2016 – present.

Embassy Science Fellow, Selected by US Dept. of State to serve at the Embassy of The Republic of the Marshall Islands (Majuro), Oct. - Nov. 2015. Worked with Embassy staff and Marshallese citizens on freshwater availability and related adaptation measures to manage impacts of climate change on a small atoll water cycle.

Associate Editor - Subsurface Hydrology, Journal of the American Water Resources Association. January 2007-January 2010.

Manuscript reviews: *Journal of the Soil Science Society of America*, *Water Resources Research*, *Journal of Hydrology*, *Journal of Environmental Quality*, *Environmental Science: Processes and Impacts*, *Urban Water*, *Environmental Science and Technology*, *Hydrologic Processes*, *Soil Biology and Biochemistry*, *Journal of the American Water Resources Association*, *Applied Soil Ecology*, *American Society of Civil Engineers (J. Hydrologic Eng., J. Water Resour. Mgmt. Planning)*, *Bioresources Technology*, *Hydrology Research*, *Proc. National Conference on Urban Stormwater (USEPA)*.

Grant proposal review: (US) National Science Foundation, Water Environment Research Foundation, USEPA-Natl. Center for Env. Research (Science to Achieve Results (STAR), Sustainability grant programs). Advisory-oversight board member for Water Environment Research Foundation (WERF) project 04-SW-1 entitled: *Successful Integration of Stormwater BMPs into the Urban Landscape*, grant awarded 4/2005, project completed 7/2007.

Training

40-hour training in Ohio EPA Biocriteria program, 2001; 40-hour USEPA Hazardous Materials Operations, 2001; 40-hour training for BASINS 3.0 (Logan UT, 2002); 40-hour EPA course in stream restoration, 2002; 40-hour USGS training in sediment sampling, 2004; USEPA contracts management 2003, 2006, ongoing refresher training completed through to 2013.

Committee and Community Service

USEPA: Gulf Hypoxia Task Force, 2006. Water Quality Research Leadership Team, writer and reviewer, 2005; Katrina Assistance and Response Team – ecosystem restoration subgroup, 2005; Region III Stormwater Action Team, 2004-2007. Volunteer Horticultural Therapist at Central Ohio Psychiatric Hospital, 1995 growing season (copy of news article available on request).

Teaching, Mentoring Experience

CE2000, How Cities Work, Winter 2021, 2022, 3 cr., General Education (Social Inquiry focus). This course will make students aware of the tensions that arise out of the social, economic, and environmental demands on sustaining engineered infrastructure in a diverse and pluralistic society. Intensive practice in writing summaries and abstracts is emphasized. Developed teaching materials, coordinated guest lecturers, graded assignments. Wayne State U.

Visiting Scholar, 2017 – present, Environmental Studies program, McMicken College of Arts and Sciences, University of Cincinnati.

Adjunct Associate Professor, 2004 – 2012, Environmental Engineering Program. School of Energy, Environmental, Biological and Medical Engineering, University of Cincinnati.

Lecturer, Environmental Studies Capstone Course (EVST 501, 502), Center for Env. Studies, University of Cincinnati, Autumn 2010-Spring 2011, 2 quarter credits. Lecture on stormwater management and soils, introduce students to SWMM-5 LID and assist in the development of models to project how a given landscape design might cycle water resources, advised on poster and presentation development, organize field experience for soil assessment and evaluation of soil hydraulic properties.

Visiting Scholar, Graduate Studio (ARC 502), Department of Architecture, University of Cincinnati, Autumn Quarter 2010, 2 quarter credits. Serve on interdisciplinary committee to elucidate sustainability strategies for the Cincinnati Union Terminal (a historic train station in Cincinnati OH) and mentor architecture, planning, and transportation engineering students (BS, MS level) to develop thematic responses on improving sustainability in the areas of infrastructure, mechanical systems, landscape, urban setting for this landmark building.

Seminar in sustainability science (CEE676-907), University of Cincinnati, Department of Civil and Environmental Engineering, Spring quarter 2008, 1-2 credit hours. Co-taught with Dr. Heriberto Cabezas. Develop curriculum and coordinate guest speakers on the topic of sustainability, deliver lectures, facilitate discussions, and grade abstracts handed in by students (50) after each lecture period.

Thomas More College, Summer Lecture Series, 2007. Organized a series of guest lectures by myself and other EPA staff aimed to educate upper-division undergraduates, faculty, and individuals from non-governmental and local government organizations on the nature of interdisciplinary research work at U.S. EPA.

Watersheds: Theory and Management (CEE696), University of Cincinnati Department of Civil and Environmental Engineering, Autumn quarter 2005, 3 credit hours. Co-taught with Dr. Allison Roy. Develop curriculum and lectures, stream hydrology field exercise; administer assignments, readings and examinations.

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Environmental soil physics and unsaturated zone hydrology (CEE899), University of Cincinnati Department of Civil and Environmental Engineering, Special Topics in Environmental Engineering, Winter quarter 2004, 3 credit hours. Developed demonstrations and course materials to cover basic concepts in soil science and saturated and unsaturated flow processes with an emphasis on environmental applications; lectured, administered/graded homework and examinations.

Introductory soil science laboratory (CRPSOIL 2301T) The Ohio State University, Agricultural Technical Institute, Wooster, OH. Winter quarter 1999, 2 quarter credits. Taught 2 lab sections of 20 students each with weekly soil science lab modules covering physical, chemical, and biological aspects.

Advising and Mentoring

Grants:

FY16 Regional Research Partnership Program (R2P2). Project Title: Evaluation of Current and Proposed Green Infrastructure in the Proctor Creek Watershed R2P2 Participant: Christian Braneon - Region 4, ORD mentor: William Shuster, NRMRL - STD

Graduate studies committees:

Brendan O'Leary, Ph.D., ABD, Wayne State University, committee member.

Amanda Laramie, MSCE, 2021, Wayne State University, committee member.

Nicholas Sisco, Master of Community Planning, *Unearthing Soil Science in Green Infrastructure Planning*, committee member, U.S. EPA/U. Cincinnati. Traineeship Program. 2016-2018

Anastasia Fries, Master of Science in Geology, *Biogenic Methane and Nitrous Oxide Emissions from the Wastewater Collection System in Cincinnati, Ohio*, committee member, U.S. EPA/ U. Cincinnati. Traineeship Program. 2016-2017

Amr Safwat, Ph.D. Committee (2014), *Stochastic multimedia modelling of watershed-scale microbial transport in surface water*. Environmental Engineering Ph.D. program. U. Cincinnati College of Engineering.

Krissy Hopkins, Ph.D. Committee (2012-2014), *From small watersheds to regions: variation in hydrologic response to urbanization*. Dietrich School of Arts and Sciences, University of Pittsburgh.

Michael Hudephol, MSE committee (2011- 2014), *Modeling stormwater runoff from synthetic turf systems*. Environmental engineering MS program. U. Cincinnati College of Engineering.

Maya Abi-Aad, MSE committee (2007-2009), *Modeling LID Practices in USEPA-SWMM*. Sustainable Urban Engineering program, U. Cincinnati College of Engineering.

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Diana Mitsova-Benova, Ph.D., dissertation (2006-2008), *Cellular automata – Markov chain model to project future patterns of urbanization in the Greater Cincinnati area, incorporating principles of “green infrastructure”*, School of Planning, U. Cincinnati.

Chandrima Pal, Master of Community Planning, (2004-2005), *Improving conventional subdivision design by incorporating runoff impacts into land development decisions*, School of Planning, U. Cincinnati.

Samantha Hoffa, Master of Community Planning, (2003-2004), *Stormwater build-out analysis: Amberley Village, 2004*, School of Planning, U. Cincinnati.

Postdoctoral researchers: Dr. Dustin Herrmann, ecologist, (Dec. 2014 – July 2019); Dr. Laura Schifman, environmental engineer (March 2016 – Jan. 2018; now with Boston University); Dr. Lee Rhea, hydrologist, (2011-2013; with U.S. Forest Service); Dr. Jake Beaulieu, biogeochemist (2007-2011, now with USEPA-ORD); Dr. Yu Zhang, hydrologist (2005-2007; now with U. Texas Arlington); Dr. Allison Roy, stream ecologist (2005-2008; now with USGS Cooperative Unit, U. Mass. Amherst).

Post-Graduate researchers: Jessica Mullane, MS, (Jan. 2016 – Jan. 2017), Angela Knerl, MS (Oct. 2014 – Oct. 2015), Katelyn Gilkey, BS, environmental scientist (March 2014 – March 2017) Caitlin Burkman, MS, environmental scientist (2013-2014). Donnie Vineyard, BS, environmental scientist (2013).

Undergraduate research aides: L. Daniel Kowalski, Karsten Head (both for summer 2005); groups of 5 farm interns for each of 1991, 1992, 1993, and 1994 growing seasons.

Peer-reviewed publications

81. Zhang, K., Sebo, S., McDonald, W., Bhaskar, A., Shuster, W., Stewart, R., & Parolari, A. (*In press, Feb. 2023*). The role of inflow and infiltration (I/I) on urban water balances and streamflow regimes: A hydrograph analysis along the sewershed-watershed continuum, *Water Resources Research*.

80. Sensitive detection of SARS-CoV-2 molecular markers in urban community sewersheds using automated viral RNA purification and digital droplet PCR. 2022. West, NW, AA Vasquez, A Bahmani, MF Khan, J Hartrick, CL Turner, W Shuster, JL Ram. *Science of The Total Environment*, <https://doi.org/10.1016/j.scitotenv.2022.157547>

79. Loss of Street Trees Causes 10,000 L/Tree Increase in Leaf-on Stormwater Runoff for Great Lakes Urban Sewershed. 2022. J Kruegler, Co-Authors: R Coville; W Selbig; S Hirabayashi; S Loheide; W Avery; W Shuster; R Haefner; B Scharenbroch; T Endreny; D Nowak. *Urban Forestry & Urban Greening*. <https://doi.org/10.1016/j.ufug.2022.127649>

78. Defining passive green infrastructure, and an ecosystem services perspective to make it count (Detroit MI, USA). 2021. Shuster, W.D.*, M.A. Pavao-Zuckerman, A.L. Mayer, D.L. Herrmann, and L.A. Schiffman. ASCE J. Sust. Water Built Environ. <https://ascelibrary.org/doi/full/10.1061/JSWBAY.0000979>
77. Quantifying the stormwater runoff volume reduction benefits of urban street tree canopy. 2021. William R. Selbig, Steven P. Loheide, William Shuster, Bryant C. Scharenbroch, Robert C. Coville, James Kruegler, William Avery, Ralph Haefner, David Nowak. Science of The Total Environment. <https://doi.org/10.1016/j.scitotenv.2021.151296>.
76. Wastewater Surveillance for SARS-CoV-2 on College Campuses: Initial Efforts, Lessons Learned and Research Needs. 2021. S Harris-Lovett*, K Nelson, P Beamer, H Bischel, A Bivins, A Bruder, C Butler, T Camenisch, S De Long, S Karthikeyan, D Larsen, K Meierdiercks, P Mouser, S Pagsuyoin, S Prasek, T Radniecki, J Ram, D Roper, H Safford, S Sherchan, W Shuster, T Stalder, R Wheeler, K Korfmacher. Intl. J. Environ. Research Public Health. doi: 10.3390/ijerph18094455
75. K in an urban world: new contexts for hydraulic conductivity. 2021. W.D. Shuster*, A Bhaskar, H Golden, D Herrmann, C Kelleher, T Parolari, R Stewart, and L Schiffman. J. Am. Water Resour. Assoc. <https://doi.org/10.1111/1752-1688.12918>
74. Predicting near-saturated hydraulic conductivity in urban soils. 2021. J Jian, A Shiklomanov, W.D. Shuster, R.D. Stewart*. J. Hydrology, <https://doi.org/10.1016/j.jhydrol.2021.126051>
73. Urbanization drives convergence in soil profile texture and carbon content. 2020. D. L. Herrmann*, L. A. Schiffman, W. D. Shuster. Environ. Res. Lett. 15, 114001. DOI: 10.1088/1748-9326/abbb00
72. Urban sponges: vacant lands impart hydrological benefits across city landscapes. C Kelleher*, H Golden, S Burkholder, and W Shuster. 2020. Nature Communications. <https://rdcu.be/b3ftG>
71. Modeling and scenario analysis of a long-term monitored rain garden for rainfall-runoff reduction to a combined sewer in Cincinnati, OH. 2019. J Alikhani, C Nietch, S Jacobs, B Shuster, and A Massoudieh*. ASCE Journal of Sustainable Water in the Built Environment. <https://doi.org/10.1061/JSWBAY.0000903>
70. Full Water-Cycle Monitoring in an Urban Catchment Reveals Unexpected Water Transfers (Detroit MI, USA). 2018. Hoard, C., Haefner, R.*, Shuster, W., Pieschek, R., and Beeler, S., Published online, Journal of American Water Resources Association. <https://doi.org/10.1111/1752-1688.12814>

69. An analytic approach to discerning saturation-excess and infiltration-excess overland flow regimes in urban soils. R Stewart*, A Bhaskar, T Parolari, J Jian, D Herrmann, L Schifman, and WShuster. Hydrological Processes. <https://doi.org/10.1002/hyp.13562>
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124. Detroit Dialogue on Flooding and Infrastructure. WD Shuster. University Research Corridor (URC) Road Tour and Roundtable on MI Flooding & Failing Infrastructure, April 18 2022. IP
123. Wastewater-based epidemiology from a Civil-Environ. WD Shuster. Engrg. Perspective. Engineering Society of Detroit (April 23, 2021, online). IP

122. Joint AWRA National Capital Virtual Water Symposium “Human Dimension to Resilient and Sustainable Water Management: Promoting Integrated Collaboration” (April 15-16 2021). Session: Social Hydrology: A Paradigm Shift Toward More Resilient Water Resources Management. WD Shuster. Presentation: Translation of resources to services via infrastructure: socio-hydrologic challenges to resilience. IP

121. Issues and Factors in CSO mitigation. With Dan Schechter (GHD Consultants, Detroit MI). Detroit Green Task Force, Sierra Club, Detroit MI (March 16 2021, online). IP

120. Tradeoffs in ecosystem services: engagement with vulnerable residents in urban landscapes. Shuster, WD, R Mohamed, A Najor-Durack, and RJ Smith. First conference on global health, justice, and the environment, Wayne State University, Detroit MI, Sept. 10-11, 2019. IP

119. Aligning scales in social and environmental elements of urban green infrastructure. Herrmann DL, A Berland, and WD Shuster. April 2019. Association of American Geographers Annual Meeting, Washington, DC. VP

118. Managing infiltration of stormwater in urban environments. Bhaskar, A, B Choat, D Zampieri, WD Shuster, R Stewart, DL Herrmann, LA Schifman, J Jian, and A Parolari. March 2019. National Water Quality Monitoring Conference, Denver, CO. IP

117. Landforms of urban watersheds. Herrmann DL, A Prues, and WD Shuster. December 14, 2018. American Geophysical Union Fall Meeting, Washington, DC. VP

116. Rendering hydrologic ecosystem services from urban soils: a combined field and simulation study. Shuster WD, J Jian, A Bhaskar, DL Herrmann, A Parolari, LA Schifman, and RD Stewart. December 14, 2018. American Geophysical Union Fall Meeting, Washington, DC. IP

115. Soil property profiles in urbanized landscapes and their convergence across cities. Herrmann DL, LA Schifman, and WD Shuster. November 4, 2018. Geological Society of America Annual Meeting, Indianapolis, Indiana. VP

114. Garmestani, A. and W.D. Shuster. “Transformation in urban systems”, Ecological Society of America Annual Meeting, August 5-10, 2018, New Orleans, Louisiana. VP

113. Urban soils as a basis for expanded ecosystem services. WD Shuster. Workshop: Building Sustainable Urban Communities from the Ground Up. June 6 2018, Penn. State U., State College PA. IP

112. Ecosystem services from urban places. WD Shuster. Marquette University *Water Conversations*. Milwaukee WI, May 14, 2018. IP

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111. Need to improve SWMM's subsurface flow routing algorithm for green infrastructure modeling. 2018. Joong Gwang Lee, William Shuster, and Sudhir Kshirsagar. Oral presentation at the 51st International Conference On Water Management Modeling, Feb 28 - Mar 1, 2018. Toronto, Canada. VP

110. Patterning between urban soil color and carbon stocks. LA Schifman, DL Herrmann, WD Shuster. B41E Soil Carbon Dynamics at Broad Scales: Linking Mechanistic Knowledge to Broad-Scale Applications II Posters. Am. Geophysical Union Fall Meetings, Dec. 11-15 2017. New Orleans LA. VP

109. The Hydrologic Implications Of Unique Urban Soil Horizon Sequencing On The Functions Of Passive Green Infrastructure. WD Shuster, LA Schifman, DL Herrmann. H11K Advances in Green Infrastructure Development: Benefits from Point to Watershed Scale I. Am. Geophysical Union Fall Meetings, Dec. 11-15 2017. New Orleans LA. VP

108. The Vertical Structure of Urban Soils and Their Convergence Across Cities. DL Herrmann, LA Schifman, WD Shuster, K Schwarz. 44G Modeling the Critical Zone: Integrating Processes and Data Across Disciplines and Scales II. Am. Geophysical Union Fall Meetings, Dec. 11-15 2017. New Orleans LA. VP

107. Stormwater management via passive green infrastructure. WD Shuster. Department of Environmental Science and Technology Seminar Series. University of Maryland, College Park, Nov. 8 2017. IP

106. Stormwater management via passive green infrastructure. WD Shuster. School of Environment and Natural Resources. Urban Land Restoration (course). The Ohio State University. Columbus OH, Oct. 30 2017. IP

105. Stormwater management via passive green infrastructure. WD Shuster. School of Architecture and Planning. University at Buffalo, SUNY. Buffalo NY, Oct. 17 2017. IP

104. Demolition, vacant lots, and the concept of passive green infrastructure. WD Shuster, Brooke Furio, and Jon Grosshans. Great Lakes and St. Lawrence Green Infrastructure Conference. Detroit MI, May 31-June 2, 2017 VP

103. An agroecological approach to managing for resilience in shrinking cities. Presented as part of the organized session *Framing urban sustainability: Smart, efficient, green, or just?* 2016. DL Herrmann, K Schwarz, TM Bowles, W-C Chuang, AS Garmestani, T Eason, and WD Shuster. April 2017, Association of American Geographers Annual Meeting, Boston, MA. VP

102. Culture, hydrology, and other situational controls on atoll freshwater availability (Majuro, Republic of the Marshall Islands). WD Shuster. 2016 AGU Fall Meetings, Dec. 11-14, 2016, San Francisco CA. VP

101. Urban Soil Hydrology: bridging the data gap with a nationwide field study. 2016. LA Schifman, WD Shuster. American Geophysical Union Fall Meeting. San Francisco, CA. December 12-16, 2016. (p)

100. Quantification of Methane and Nitrous Oxide Emissions from Wastewater Collection Systems (Cincinnati, Ohio, USA). 2016. A Fries, A Townsend-Small, WD Shuster, LA Schifman. American Geophysical Union Fall Meeting. San Francisco, CA. December 12-16, 2016. (p)

99. Water, Energy, and Society in Urban Systems II, Chairperson w/ A Bhaskar, Oral session, 12 December 2016. 2016 AGU Fall Meetings, Dec. 11-14, San Francisco CA.

98. Understanding urban rain garden performance through observations and modeling RD Stewart, JG Lee, WD Shuster, LA Schifman, RA Darner Soil Science Society of America 2016 annual meetings, Phoenix AZ, Nov. 6-9 2016.

97. Pedogenesis and hydrologic function in an established rain garden. J Mullane, WD Shuster, K Gilkey, and DL Herrmann. November 7, 2016. Soil Science Society of America Annual Meeting, Phoenix, AZ.

96. A field hydrogeology approach to planning for “sponge cities” and managing the urban water cycle. WD Shuster, T Bai (presenter), AL Mayer, S Dadio, and GH Tian. The 3rd International Conference on Hydrogeology, August 16-19 2016, Beijing China. VP

95. Is the ecological homogenization of cities superficial? A multi-city soil analysis. DL Herrmann, WD Shuster, LA Schifman. Ecological Society of America Annual Meetings, August 7-12 2016, Ft. Lauderdale FL. VP

94. Comprehensive monitoring of the urban water cycle and implications for determining the effectiveness of green infrastructure. WD Shuster, D Carpenter (presenter), H Reeves, C Hoard, S Beeler, R Pieschek, and R Haefner. ASCE Env. Water Resources Institute International Low Impact Development Conference, August 29-31 2016, Portland ME. VP

93. Accounting for Green Infrastructure Performance Through Collaborative Monitoring in Omaha, Nebraska. D Rus, A Szatko, K Strauch, B Groskinsky, and WD Shuster. Great Plains Low Impact Development Research and Innovation Symposium. March 7-9, 2016, Omaha NE. VP

92. A Coming of Age For Vacant Lots As Urban Service Providers. WD Shuster, DL Herrmann, AL Mayer, AS Garmestani. Special invited session on Urban Greening, ISSRM, June 22-26 2016, Houghton MI. IP

91. Transitioning to sustainable trajectories in shrinking cities. DL Herrmann, WD Shuster, AL Mayer, AS Garmestani: Abstract for invited session Urban Greening II, ISSRM (June 22-26 2016) in Houghton MI. IP
90. Hydrology, culture, and sustainability: the case of Majuro Atoll, Republic of the Marshall Islands. WD Shuster. Joint seminar, UNESCO Water Access and Sustainability and U. Cincinnati Environmental Studies Program. U. Cincinnati (OH), April 4 2016. IP
89. Urban design: do rain gardens support biodiversity and ecosystem services? MR Spring, S Albro, R Darner, AS Garmestani, WD Shuster, and MM Gardiner. Graduate Student Ten Minute Paper-Presentation: PI-E. The Entomological Society of America National Meeting. Minneapolis, MN, 11/16/2015. VP
88. Urban Groundwater dynamics. RA Darner, WD Shuster, H Reeves, C Hoard, S Beeler, and D Herrmann. 2015. Investigating groundwater component of managed urban water cycles. Symposium: Geological Society of America Meeting in Baltimore, MD, November 1-4, 2015. VP
87. Management of urban green infrastructure for ecosystem services production and the imperative for field data support. Sustainability and resilience in major urban areas: the need for earth and environmental science information in formulating plans, policies, and programs. DL Herrmann; WD Shuster; AS Garmestani; R Haefner. 2015. Symposium: Geological Society of America Meeting in Baltimore, MD, November 1-4, 2015. IP
86. Ecology for the Shrinking City. 2015. D Herrmann, WD Shuster, AS Garmestani, A Berland, K Schwarz, B Chaffin, M Hopton. Ecological Society of America Conference, Baltimore MD, August 2015. IP
85. Urban Soils: Another Final Frontier? 2015. AG Prues, WD Shuster, and A Knerl. ESRI National GIS Conference. VP
84. Urban design: rain gardens support biodiversity and ecosystem services? 2015. ML Spring, S Albro, R Darner, A Garmestani, WD Shuster and M Gardiner. Entomological Society of America Annual Meeting, Nov 15-18 2015, Minneapolis MN. VP
83. Soils of Shrinking Cities: Properties and Potential for Multiple Ecosystem Services. 2015. DL Herrmann, WD Shuster, AS Garmestani, A Knerl, K Gilkey. 9th IALE World Congress, Portland, Oregon, 9 July 2015. IP
82. Adaptive management of urban green infrastructure. 2015. AS Garmestani, WD Shuster and OO Green. World Environmental & Water Resources Congress, May 17-21, 2015, Austin, Texas. IP
81. Soil hydrologic assessments – implications for urban water resources management: A briefing on New Orleans work. 2015. D Wiegand and WD Shuster. April 29 2015, City of New Orleans LA. IP

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80. Connecting urban soil hydrology to Brownfield GI planning. 2015. WD Shuster and D Wiegand. Regional Planning Commission, Region 6, Dallas TX. April 16, 2015. IP

79. Urban Soil Hydrology and Applications to Improve Demolition Practice. 2015. WD Shuster and J Grosshans. ORD Green Infrastructure Webinar Series, January 28th 2015. Internal IP

78. Soil hydrologic assessments – implications for urban water resources management: Briefing for Region 1 Partners. WD Shuster. April 2015. Region 1 HQ, Boston MA. Internal IP

77. Connecting Urban Soil Hydrology to Sewershed Management and Ecosystem Services. 2015. WD Shuster and D Wiegand. Region 2 – San Juan PR, for Urban Waters roundtable, March 19 2015. IP

76. Sustainability in urban water resources management – some notes from the field. 2014. WD Shuster, AS Garmestani, OO Green. H42E Water, Energy, and Society in Urban Systems I. American Geophysical Union Fall Meetings, De. 18 2014, San Francisco CA. IP

75. Catching the ball on the first rebound – the role of a new urban water cycle in sustainability. 2014. WD Shuster. Kent State University Water Symposium Oct.29-31 2014, Kent OH. IP

74. Understanding, Managing, and Sustaining Water and Soil Resources in Urban Ecosystems - Some Notes from the Field. 2014. WD Shuster. School of Natural Resources and the Environment Seminar Series, The Ohio State University. October 9 2014. IP

73. Some insights into rain gardens as green infrastructure for wastewater management. 2014. WD Shuster. Franklin County (OH) Soil and Water Conservation District Green Infrastructure Workshop. October 9 2014, Columbus OH. IP

72. Soil hydrologic assessments – implications for urban water resources management. 2014. D Wiegand and WD Shuster. Urban Waters Seminar Series Sept. 11 2014, webinar. IP

71. Looking back, Looking forward. 2014. WD Shuster. Presentation to Environmental Careers course students, University of Cincinnati. Sept. 9 2014, Cincinnati OH. IP

70. Green urban stormwater management: A fertile ground for collaborative adaptive management. 2014. AS Garmestani., OO Green and WD Shuster. Conference on Ecological and Ecosystem Restoration, July 28-August 1, 2014, New Orleans LA IP

69. Adaptive management of urban green infrastructure. 2014. AS Garmestani, WD Shuster and OO Green, 69th Soil and Water Conservation Annual Meeting, July 27-30 2014, Lombard IL. IP
68. Urban Fingerprints on Soil Morphology and Hydrology: Field Investigations in U.S. Cities Across Soil Orders. 2014. WD Shuster and S Dadio. Soils in the City Conference. July 1 2014. Chicago IL IP
67. Urban fingerprints on soil morphology and hydrology – a summary of field investigations in US cities, across different soil orders. 2014. WD Shuster and S Dadio. Michigan Green Infrastructure Conference. May 8-9 2014, Lansing MI. IP
66. Spatial Risk Maps as a Decision Making Tool in Watershed Management. A Teklitz, T Whiteaker, L Rhea, WD Shuster, D Maidment, L Yeghiazarian. *AWRA Spring Specialty Conference: GIS and Water Resources VIII - Data to Decisions*. May 2014, Salt Lake City UT. VP
65. Cities in Flux: Wastewater, Urban Soils, and Environmental Management. 2014. WD Shuster. Webinar as a part of Icelandic Green Days Seminar Series. March 2014. IP
64. Catchment-scale stormwater management via economic incentives – an overview and lessons-learned. WD Shuster, AS Garmestani, OO Green (presenter), LK Rhea, AH Roy, and HW Thurston. Nominated for Novatech award; Novatech, June 2013; Lyon, France. IP
63. Considerations for the implementation and operation of stormwater control measure (SCM) performance monitoring systems. R Kertesz (presenter), D Murray, WD Shuster. NOVatech, June 2013; Lyon, France. VP
62. Urban Soils and the Sustainable Management of Stormwater. S Dadio, WD Shuster, A Barkasi, R Losco. NOVatech, June 2013; Lyon, France. VP
61. Toward a hydro-pedological framework for urban stormwater management. WD Shuster, T Hartsig, and S Dadio. Soil Sci. Soc. Am. Annual Meetings, Tampa FL. Nov. 3-6 2013. (Hydro-pedology session). IP
60. Modeling stormwater runoff from synthetic turf fields using HYDRUS 2D/3D and SWMM. M Hudepohl, S Buchberger, WD Shuster, and C Honkomp. ASCE EWRI World Water Congress. Cincinnati, Ohio May 19-23, 2013. VP
59. Poster – Urban soil surveys and their use in planning for green infrastructure. Infill Philadelphia: Soak It Up. WD Shuster and S Dadio. Community Design Collaborative. Sept. 17 – Oct. 19 2012, AIA Philadelphia’s Center for Architecture. Philadelphia PA. (presented by S. Dadio). VP

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58. Cycling water in urban core area neighborhoods - some prospects for management (Cleveland, Ohio). WD Shuster, AS Garmestani, LK Rhea, O Green. EcoSummit 2012, September 30-October 5, 2012, Columbus, Ohio. VP
57. Utilization of Municipal Parks to attenuate Stormwater from a Combined Sewer System. A Barkasi, S Dadio, and WD Shuster. StormCon, August 19-23 2012. Denver CO. VP
56. Great Lakes vacant land potential to participate in biogeochemical capture and storage. T Auch, S Albro, G Unger, WD Shuster. Soil and Water Conservation Society 2012 Meetings. July 22-25, Ft. Worth TX. VP
55. Urban water resources, the Clean Water Act, and the consent decree process. A Garmestani, WD Shuster, and O Green. 5th Annual Ecosystem Services Partnership conference, July 31-August 4, 2012, Portland, Oregon. VP
54. Adaptive management for urban watersheds. A Garmestani, WD Shuster and O Green, Reclaiming Vacant Properties Conference, June 20-22, 2012, New Orleans, Louisiana. IP
53. Urban Soils and Vacant Land as a Stormwater Resource. AM Barkasi, SD Dadio, RL Losco, and WD Shuster. EWRI Annual Conference, May 2012 Albuquerque NM. VP
52. Managing Stormwater for Freshwater Ecosystems: Go Big or Go Home. AH Roy, LK Rhea, WD Shuster, A St. Amand. Annual Meeting of the Society for Freshwater Science (SFS). May 2012. Louisville KY. VP
51. Great Lakes vacant land restoration potential to remediate CSO flow and chemistry. T Auch, S Albro, G Unger, WD Shuster. US-IALE Annual meeting. Newport, RI. April 8-12 2012. VP
50. The Role of Vacant Land in the Development of a New Urban Hydrologic Cycle. WD Shuster. USEPA Green Infrastructure Seminar Series, March 2012. IP
49. Stream Responses to a Watershed-Scale Stormwater Retrofit. A Roy, LK Rhea, WD Shuster, A St. Amand, HW Thurston. New England Association of Environmental Biologists (NEAEB). March 2012. Falmouth MA. VP
48. Hydrologic Analysis of a Residential Green Infrastructure Project, Cincinnati OH, USA. LK Rhea, WD Shuster. Am. Water Resources. Assoc. 2011 Annual Meeting, Albuquerque NM, Nov. 7-10 2011. VP
47. Webinar "Stormwater Management in the Shepherd Creek Watershed". WD Shuster; Rhea, LK. USEPA Green Infrastructure Seminar Series. July 2011. IP
46. SWMM5-LID modeling of a small suburban catchment, Shepherd Creek (OH). WD Shuster. Joint Australian-US workshop on catchment-scale stormwater retrofit for urban stream restoration. University of Melbourne (AU), June 2011. IP

45. An overview of the Shepherd Creek project (Cincinnati OH; USA). WD Shuster, JJ Beaulieu, A Mayer, LK Rhea, A Roy, HW Thurston. Joint Australian-US workshop on catchment-scale stormwater retrofit for urban stream restoration. University of Melbourne (AU), June 2011. IP
44. Hydrologic implications of SW mgmt. interventions in the Shepherd Creek catchment. LK Rhea, WD Shuster. Joint Australian-US workshop on catchment-scale stormwater retrofit for urban stream restoration. University of Melbourne (AU), June 2011. IP
43. An overview of nutrient cycling and water quality in the Shepherd Creek. WD Shuster, J Beaulieu, D Lye, A de la Cruz. Joint Australian-US workshop on catchment-scale stormwater retrofit for urban stream restoration. University of Melbourne (AU), June 2011. IP
42. An overview of the Shepherd Creek project (Cincinnati OH; USA). WD Shuster, JJ Beaulieu, A Mayer, LK Rhea, A Roy (Kutztown U), HW Thurston. Stream restoration through stormwater management – is it possible? A workshop for the stormwater management industry, held at U. Melbourne (AU), hosted by Clearwater. June 2011. IP
41. Urban watershed management with a focus on green infrastructure. WD Shuster. Presented to Environment Canada, Urban Water Management Section, Burlington Ontario. Dec 10 2010. IP
40. Rooftop disconnection as a stormwater practice: The "Why" and the "How". Webinar. Center for Watershed Protection. WD Shuster. October 20 2010. (Over 350 participants nationwide, plus Canada). IP
39. Vacant lots, soils, and the sustainable management of stormwater. Reclaiming Vacant Properties – The intersection of sustainability, revitalization, and policy reform. WD Shuster, B Furio. October 13-15 2010, Cleveland OH. IP
38. Integrating a cellular automata model of land cover c with an open space conservation network. D Mitsova, WD Shuster and X Wang. 51st ACSP Annual Conference, Getting to Scale: Planning in Multi-Scale, Functionally Integrated Environments; Minneapolis, Minnesota, October 7-10, 2010. VP
37. The Shepherd Creek experience and some lessons learned. WD Shuster, M Morrison, J Beaulieu, H Thurston, A De La Cruz, D Lye. SOCOMA (Source Control – Management subcommittee of Joint Comm. On Urban Drainage, Intl. Water Association) Workshop as part of Novatech Conference, Lyon FR, June 27 – July 1 2010. IP
36. Seasonal and situational impacts on the effectiveness of a decentralized stormwater management program in the reduction of runoff volume (Cincinnati OH; USA). WD Shuster, MA Morrison, HW Thurston. Novatech Conference, Lyon FR, June 27 – July 1 2010. VP

35. Decentralization of storm runoff via engagement of social and cultural capitals – implications for the management of flood risk at the municipal scale. WD Shuster, HW Thurston, AS Garmestani. Proceedings of UNESCO “Road towards Flood Resilient City” Conference, Paris France, November 26-27, 2009. (presented by H. Thurston). VP

34. Linking sustainability, management of urban ecosystems, and ecological practice – study of a model system in the Shepherd Creek (Ohio, USA) watershed. WD Shuster, AH Roy, HW Thurston, MA Morrison, JJ Beaulieu, AS Garmestani, AL Mayer. Presented by AS Garmestani at the 2009 Ecological Society of Am. Meetings, Aug. 2-7, Albuquerque NM. IP

33. A multidisciplinary approach to sustainable management of watershed resources, WD Shuster, M Heberling, HW Thurston. Ground Water Protection Council annual meetings, Cincinnati OH, Sept 21-24 2008. VP

32. Implementation of retrofit best management practices in a suburban watershed (Cincinnati OH) via economic incentives WD Shuster, A Roy, MA Morrison, HW Thurston. Proceedings of the 11th International Conference on Urban Drainage. Edinburgh, Scotland, Aug. 31-Sept. 5 2008. VP

31. A streamlined monitoring framework for sustainable and low-impact development stormwater management practices. MA Morrison, WD Shuster, R Webb. Proceedings of the 11th International Conference on Urban Drainage. Edinburgh, Scotland, Aug. 31-Sept. 5 2008. (presented by WD Shuster). VP

30. Implementation of retrofit BMPs in a suburban watershed via economic incentives. WD Shuster. Northeast Ohio Stormwater Conference, Cleveland OH, May 21-22 2008. IP

29. Are there prospects for enhanced groundwater recharge via infiltration of urban stormwater runoff? WD Shuster. Northeast Ohio Stormwater Conference, Cleveland OH, May 21-22 2008. IP

28. Stormwater, participatory environmental management, and sustainability – what are the connections? WD Shuster. Conference on Urban Landscape Ecology, Oct 29 2007, Cleveland OH. IP

27. Stormwater, participatory environmental management, and sustainability – what are the connections? WD Shuster. Thomas More College, River Research Station. June 13 2007, Fort Thomas KY. IP

26. Storm water best management practices: capacities, capabilities, and some limitations. WD Shuster. NPDES Phase II Implementation Workshop. June 6 2007, New Richmond OH. IP

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25. Rain garden effectiveness for control of water quantity and quality. WD Shuster. Rain Garden Alliance organizational meeting, Dec. 5 2006, Cincinnati OH. IP

24. Stormwater management and the interplay between hydrology and socioeconomics. WD Shuster. Department of Geophysics, Stanford University, May 16 2006, Palo Alto CA. IP

23. Going underground: managing sources of and sinks for stormwater runoff. WD Shuster. May 12 2006; IIHR- College of Engineering, University of Iowa, Iowa City IA. IP

22. Linking stormwater hydrology with biota. 2005. Session: Biogeochemistry and Hydrology of Suburbia. WD Shuster, AH Roy, Y Zhang, MA Morrison, American Geophysical Union (AGU) Winter Conference, San Francisco CA. VPo

21. A multidisciplinary approach to stormwater management at the watershed scale. 2005. A Mayer, AH Roy, WD Shuster, et al. 10th International Conference on Urban Drainage, Copenhagen Denmark, 21-26 August. VP

20. The influence of catchment land use on hydrograph dynamics and implications for stream biological assemblages. 2005. WD Shuster, Y Zhang, A Roy, AGU Spring Conference, Baltimore MD. VP

19. Management of impervious surface impacts on watershed hydrology: allowance trading and opportunity costs. 2004. HW Thurston and WD Shuster, Illinois Water 2004, October 14, 2004. VP

18. RestorationPlus: A collaborative Environmental Protection Agency research program to develop and evaluate ecosystem restoration and management options to achieve ecologically and economically sustainable solutions. 2004. E Striz, J Williams, HW Thurston, WD Shuster, J Newland, and R Brooks. USEPA Science Forum 2004, Washington DC. VP

17. Multidisciplinary management of stormwater runoff: the Shepherd Creek (OH) Pilot Project. WD Shuster. March 2005. Invited Lecture, CEE676 Graduate Seminar, University of Cincinnati. IP

16. Detailed soil surveys and distributed BMPs for stormwater quantity control – making the connection. WD Shuster, R Gehring, J Gerken. Agronomy Society of America 2004 meetings, Seattle WA. VP

15. Modeling Runoff Processes in Small Catchments. Y Zhang WD Shuster, JV Bonta. 12th Nonpoint Source Monitoring Conference, Oct 2004; Ocean City MD. VP

14. Comprehensive environmental management systems for excess storm water runoff, WD Shuster. 12th Nonpoint Source Monitoring Conference, Oct 2004; Ocean City MD. VP

13. Comprehensive research and management of impervious surfaces impacts on watershed hydrology. WD Shuster. Ohio Agricultural Research and Development Center, Urban Landscape Ecology Program quarterly seminar, Aug. 2004; Wooster OH. IP

12. Comprehensive research and management of impervious surfaces impacts on watershed hydrology, invited presentation, WD Shuster, Y Zhang, JV Bonta; E Warnemuende; HW Thurston, and AL Mayer. USEPA Regional/ORD Science Topic Workshop on Environmental Indicators. May 17-21, 2004, Kansas City, MO. IP

11. Multi-Disciplinary Approach to Stormwater Management in Urban Areas: Shepherd Creek watershed pilot project (WD Shuster and H Thurston) and poster presentation: "A multidisciplinary approach to managing stormwater runoff in an urban watershed," by AL Mayer et. al. at the *Workshop on the Effectiveness and Uses of Best Management Practices (BMPs)*, in Arlington, VA, April 13-15, 2004. VP

10. Impacts of impervious surface on landscape hydrology. WD Shuster, JV Bonta, HW Thurston, E Warnemuende; and DR Smith. 9th Annual Symposium of the United States Regional Association of the International Association for Landscape Ecology: Transdisciplinary Challenges in Landscape Ecology March 30 - April 2, 2004 Las Vegas NV. VP

9. Estimation of entrapped air and pore tortuosity for soils approaching water saturation. EL McCoy, AV Granovsky, and WD Shuster, 2002 Agronomy Meetings, Indianapolis IN. VP

8. Population dynamics of ambient and altered earthworm communities in row-crop agroecosystems in the midwestern U.S. WD Shuster, MJ Shipitalo, CA Edwards. 7th International Symposium on Earthworm Ecology, Cardiff, Wales; September 2002. VP

7. Patterning of resource distributions and hydrologic properties in agroecosystems: implications for soil erosion management. WD Shuster. April 2002, National Soil Erosion Research Laboratory, USDA-ARS, West Lafayette IN. IP

6. Deep burrowing earthworm influenced leachate production and quality in typical Ohio agroecosystems. WD Shuster. 2001 American Society of Agronomy Meetings, Charlotte NC. VP

5. Comparison of sampling protocols for a watershed scale survey of an invasive plant species *Alliaria petiolata* (Garlic mustard). WD Shuster. 2001 Midwest Ecology and Evolution Conference, Oxford, OH. VP

4. Issues in non-parametric data analysis. WD Shuster. 2000 Certified Professional Workshop, Ohio EPA Central Office. IP

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3. Poster and presentation. WD Shuster. Manipulated earthworm communities and their impact on the spatial distribution of carbon in row-crop agroecosystems. International Conference on Earthworm Ecology. Sept. 1998. Vigo Spain. VP

2. Earthworm Ecology. WD Shuster. 1997 Ohio Ecological Food and Farming Association Conference. Wooster OH. IP

1. Implements for small-scale tillage and cultivation. WD Shuster. 1992, 1993. Ohio Ecological Food and Farming Association Conference(s). Wooster OH. IP

Peer-reviewed conference proceedings

11. Catchment-scale stormwater management via economic incentives – an overview and lessons-learned. WD Shuster, AS Garmestani, OO Green, LK Rhea, AH Roy, and HW Thurston. Nominated for Novatech award; Novatech, June 2013; Lyon, France.

10. Considerations for the implementation and operation of stormwater control measure (SCM) performance monitoring systems. R Kertesz, D Murray, WD Shuster. NOVAtch, June 2013; Lyon, France.

9. Urban Soils and the Sustainable Management of Stormwater. S Dadio, WD Shuster, A Barkasi, R Losco. NOVAtch, June 2013; Lyon, France.

8. Demolition and its role in urban soil development and its impact on stormwater management. S Dadio, WD Shuster, A Barkasi, R Losco. NOVAtch, June 2013; Lyon, France.

7. Seasonal and situational impacts on the effectiveness of a decentralized stormwater management program in the reduction of runoff volume (Cincinnati OH; USA). WD Shuster, Morrison MA, Thurston HW. NOVAtch, June 2010; Lyon, France.

6. Decentralization of storm runoff via engagement of social and cultural capitals – implications for the management of flood risk at the municipal scale. WD Shuster, Thurston HW, Garmestani AS. Proceedings of UNESCO “Road towards Flood Resilient City” Conference, Paris France, November 26-27, 2009.

5. A streamlined monitoring framework for sustainable and low-impact development stormwater management practices. MA Morrison, WD Shuster, R Webb. Proceedings of the 11th International Conference on Urban Drainage. Edinburgh, Scotland, Aug. 31-Sept. 5 2008.

4. Implementation of retrofit best management practices in a suburban watershed (Cincinnati OH) via economic incentives. WD Shuster, AH Roy, HW Thurston, M Morrison, M. Taylor, and M Clagett. Proceedings of the 11th International Conference on Urban Drainage. Edinburgh, Scotland, Aug. 31-Sept. 5 2008.

3. Simulated rain garden effectiveness and performance in response to synthetic and natural rainfall patterns. 2006. WD Shuster, HW Thurston, Y Zhang, Proceedings IDM-WSUD, Melbourne Australia, April 2006. Volume 2, 285-292.

2. Evaluation of economic incentives for decentralized stormwater runoff management: the Shepherd Creek watershed pilot project. 2006. HW Thurston, WD Shuster, MA Taylor, S Stewart, Proceedings IDM-WSUD, Melbourne Australia, April 2006.

1. A multidisciplinary approach to stormwater management at the catchment scale. 2005. AH Roy*, AL Mayer, WD Shuster, HW Thurston, T Hoagland, MP Clagett, PK Parikh, and MA Taylor, 10th International Conference on Urban Drainage, Copenhagen/Denmark, 21-26 August 2005.

Other papers and conference proceedings

7. Engaging Social Capital for Decentralized Urban Stormwater Management . 2012. OO Green, WD Shuster, Ahjond S. Garmestani, Hale W. Thurston, and Lee K. Rhea, 2nd World Sustainability Forum, online, Nov. 1-30, 2012.

6. Applying a Reverse Auction to Reduce Stormwater Runoff. HW Thurston, MA Taylor, AH Roy, MA Morrison, WD Shuster, J Templeton, M Clagett and H Cabezas. *Ambio*, Vol. 37(4), pg. 326.

5. Retrofit stormwater management: Navigating multidisciplinary hurdles at the watershed scale. 2006. AH Roy, H Cabezas, MP Clagett, NT Hoagland, AL Mayer, MA Morrison, WD Shuster, JJ Templeton, HW Thurston.. *Stormwater Magazine*, May-June 2006.

4. Comprehensive research and management of impervious surfaces and impacts on watershed hydrology. 2004. WD Shuster, Y Zhang, JV Bonta, E Warnemuende, and HW Thurston, CIGR International Conference, Beijing, P.R.China, paper 10-077A.

3. Rainfall simulation methods to investigate hydrologic impervious surface effects. E Warnemuende, WD Shuster, JV Bonta, DR Smith. 2003. American Society of Agricultural Engineers Intl. Meeting, 27-30 July, Paper # 032297

2. Quantification of Urbanization in Experimental Watersheds. 2003. JV Bonta, WD Shuster, E Warnemuende, HW Thurston, DR Smith, M Goss, H Cabezas. First Interagency Conference on Research in the Watersheds. Oct 28-30 2003, Benson AZ.

1. Methodology for Determining Effects of Extent and Geometry of Impervious Surface on Hydrologic Balance. 2003. E Warnemuende, WD Shuster, DR Smith, JV Bonta. First Interagency Conference on Research in the Watersheds. Oct 28-30 2003, Benson AZ

Book Reviews

5. Flood Risk Simulation, F.C.B. Mascarenhas (co-authors: Toda, M.G. Miguez, and K. Inoue), 2005 WIT Press Boston MA. 2005. *J. Am. Water Resour. Assoc.* 41, 1243-44.

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