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Dr. Egan is a program manager with the University of Maryland Environmental Finance Center. She has worked as professional geologist and principal scientist on multidisciplinary water resource projects and research. She provides technical and regulatory expertise, project planning and design with a focus on cost-effective and sustainable solutions for clients. Her experience includes working with stakeholders to provide holistic watershed management, planning, and research; hydrologic and hydraulic modeling; wetland delineation; stream and wetland design and mitigation; permitting and legal expertise; flood and stormwater project analysis and design, including climate resiliency research publication.

Her doctoral research involved legal and economic analysis of policy interventions for nutrient pollution in the Chesapeake Bay. Current projects with the Environmental Finance Center include development of innovative conservation finance and program analysis for meeting total maximum daily load (TMDL) requirements in regulated and non-regulated areas, stormwater best management practice cost and benefit tools, and climate and sustainability planning.

Professional Preparation

- Ph.D. 2016 Water Science and Policy, University of Delaware, Newark, Delaware
Dissertation: “Comparative Institutional and Policy Analysis of Nonpoint Source Agricultural Nutrient Pollution in the Chesapeake Bay”
- M.S. 2002 Geology/Geomorphology, University of Delaware, Newark, Delaware
Thesis: “The Geomorphic Effects of Dam Removal on the Manatawny Creek, Pottstown, PA”
- B.S. 1999 Geology, University of Delaware, Newark, Delaware

Professional Registration: Professional Geologist (P.G.), #S4-0001272, DE

Professional Experience

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| Program Manager | University of Maryland Environmental Finance Center
College Park, Maryland | Jan 2019 - present |
| Associate Professor | Dept. of Applied Economics & Statistics, Univ. of DE | Spring 2016 - present |
| Principal Scientist | Skelly and Loy, Inc., Hunt Valley, Maryland | Sept 2015 - Dec 2018 |

Graduate Assistant	Water Science and Policy, Dept. of Applied Economics and Statistics, University of Delaware	2012 – 2015
Director	White Clay Creek Wild and Scenic Program, PA/DE	2010 – 2012
Project Scientist	Water Resources, Duffield Associates., Inc. Wilmington, DE	2001 - 2011

Relevant Project Experience

Community-enabled Life Cycle Analysis of Stormwater Infrastructure Costs, UMD, College Park, MD (2017 – Present). Working with University of Maryland Environmental Finance Center (UMD EFC) and a national team of scientists and engineers as task lead to develop the framework for a life cycle cost tool (referred to as CLASIC) that assesses grey, green and hybrid alternatives to stormwater infrastructure. The framework will provide a standardized approach for decision makers to estimate infrastructure costs and ancillary benefits associated with green infrastructure practices and be able to customize information specific to their community settings.

Climate Action Plan Mitigation Strategy, UMD Baltimore County, Baltimore, MD (2017 – 2018). Assisted the UMD EFC in climate action planning for the University of Maryland Baltimore County campus. Deliverables included a detail of carbon reduction strategies, and general costs of mitigation alternatives for the University’s efforts to reduce greenhouse gas emissions.

Holistically Analyzing the Benefits of Green Infrastructure, Guidance for Local Governments. (2017). Edited a guide prepared by the UMD EFC for smaller local governments with stormwater programs (MS4 communities) which outlined an approach to holistically evaluate the benefits of implementing green infrastructure or augmenting grey with green infrastructure.

Brandywine Christina Healthy Water Fund (Water Fund) and i2 Capital, USDA Pay for Success (PFS) Conservation Innovation Grant. (Project total \$1.6M, Ongoing). Lead partner of the William Penn Foundation/The Nature Conservancy Water Fund and USDA PFS Supply and Metrics Teams developing an approach to attract private impact capital to fund conservation practices on farms in Pennsylvania. The novel approach is designed to build transactions to support implementation of the Water Fund, a vehicle for private investment in agricultural conservation to meet regulatory requirements of municipal NPDES obligations.

National Pollution Discharge Elimination System Services, Statewide, MD. (Ongoing). Project Manager to oversee design of swale retrofits within Maryland State Highway Administration (MD SHA) right-of-way and open medians within an 11-mile section from the Pennsylvania state line south along I-81 in Washington County, Maryland. Retrofit designs maximize water quality treatment along the roadway corridor. The task included project management, desktop analysis, field investigation and data collection, stormwater environmental site design, plan sets, permitting, and reports.

Environmental Design and Permitting Services, Statewide, MD. (2016-2018). Project Manager for the Total Maximum Daily Load (TMDL) Stream and Outfall strategy which entails guiding MD SHA projects design through construction (bid) phases. Responsible for coordination among the designer, property owner, and MD SHA departments. Tasks include desktop review; permitting coordination;

review and distribution of submittal materials; and planning property owner meetings and milestone review meetings.

St. Jones River and Broadkill River Watershed Implementation Plans. (2009). For the State of Delaware Department of Natural Resources and Environmental Control developed and published plans which identified urban and non-urban projects to maximize pollution reduction to meet TMDLs. Projects identified were screened for feasibility and cost of implementation.

Peer Reviewed Publications

Perez, V. W. and **J.M. Egan.** 2016. Knowledge and Concern for Sea Level Rise in an Urban Environmental Justice Community. *Sociological Forum*. Vol. 31, No. S1.

Egan, J. M. and J. M. Duke. 2015. Water Quality Conflict Resolution and Agricultural Discharges: Lessons from Waterkeeper vs. Hudson. *William and Mary Environmental Law and Policy Review*.

Skalak, K., J. E. Pizzuto, **J. M. Egan,** and N. Allmendinger. 2011. The Geomorphic Effects of Existing Dams and Historic Dam Removals in the U.S. Mid-Atlantic Region. *Sediment Dynamics upon Dam Removal*.

Bushaw-Newton, K. L., D. D. Hart, J. E. Pizzuto, J. R. Thomson, **J. M. Egan,** et.al. 2002. An Integrative Approach Towards Understanding Ecological Responses to Dam Removal: The Manatwany Creek Study, *Journal of the American Water Resources Association*, Volume 38, Issue 6.

Working Papers

Duke, J.M, J.M. Egan, A. Shober. (Submitted) Policy Effectiveness When Water Quality Trading is Used with the Purchase of Ecosystem Services.

Current Research and Grant Funded Activities

- *EPA National Priorities Grant #836173.* “Community-enabled Life Cycle Analysis of Stormwater Infrastructure Costs.” Award to Water Environment & Reuse Foundation, contract with UMD EFC. Project total \$1,949,785. Lead policy scientist for Life Cycle Cost of Green Infrastructure. 2016 – 2019.
- *USDA NRCS Conservation Innovation Grant, Pay for Success.* “Brandywine Christina Healthy Water Fund.” Award to i2 Capital. Project total \$1,600,000. Project lead for Conservation Supply and Metrics. 2017 – 2019.
- *National Fish and Wildlife Federation (NFWF) Technical Capacity Targeted Watershed Grant,* “Sussex County Delaware Conservation District Chesapeake Bay Water Quality Project.” Award to The Nature Conservancy DE \$39,500.00. Project manager to implement wetlands and water control structures on working lands. 2018 – 2020.

Presentations and Reports

Egan, J.M. 2018. A Tool for Sustainable Water Infrastructure Municipal Planning: A Framework Overview, EPA National Priorities Grant #836173. American Geophysical Union, Washington D.C. (abstract accepted, December 2018 meeting)

Egan, J.M. and N. Young. 2018. Procurement of Ecosystem Services for Municipal Regulator Requirements: Hidden Investor Gems? A Community of Ecosystem Services (ACES), Washington D.C. (accepted abstract, December 2018 meeting)

Duke, J.M., J.M. Egan, A. Shoher, 2016. Simulating Substitutable Water Quality Policies: Payments for Outcomes vs. Payments for Practices. A Community of Ecosystem Services (ACES), Jacksonville, Florida.

Duke, J. M., J. M. Egan, D. McAuliffe, T. Gao, Z. Keller, J. McGrath, N. Fiorellino, E. Rosso. 2013. Optimal Adoption of Best Management Practices in Maryland. Ann. Meeting Northeastern Agric. and Res. Econ. Assoc., Ithaca. (Presentation given by McAuliffe)

Duke, J. M., J. M. Egan, and T. Gao. 2013. Cover Crop Adoption: Knowns, Unknowns, and Research Opportunities. Delaware Department of Natural Resources and Environmental Control, Dover. (Invited presentation)

University of Delaware Mitigation Council. University of Delaware Disaster Resistant University Hazard Mitigation Plan. 2011. (Report submitted to University of Delaware and recently updated by UD)

Egan, J. M., 2010. Climate Change and Managing Dam Hazards in the Christina Basin, Delaware. American Water Resources Association Spring Specialty Conference Managing Climate Change Impacts on Water Resources. Baltimore, MD. (Oral Presentation)

St. Jones River Watershed Implementation Plan. 2009. State of Delaware Department of Natural Resources and Environmental Control. (accessed at <http://www.dnrec.delaware.gov/swc/wa/pages/watershedmanagementplans.aspx>)

Broadkill River Watershed Implementation Plan. 2009. State of Delaware Department of Natural Resources and Environmental Control. (accessed at <http://www.dnrec.delaware.gov/swc/wa/pages/watershedmanagementplans.aspx>)

Egan, J. M., 2008. Linking Science, Management, Policy and Funding to Achieve Goals. American Water Resources Association Mid-Atlantic Conference, Newark, DE. (Oral Presentation)

Courses Taught, University of Delaware, Department of Applied Economics

Sustainable Development (APEC 100, 3 credits, undergraduate) Surveys pressing issues in the management of natural resources, environmental protection, and international development. Requires

critical evaluation of these issues by applying basic policy analysis, considering the ethical dimensions of policy, and drawing on economic indicators of environmental quality and human health. (16F, 17F, 17S)

Economics of Agriculture and Natural Resources (APEC 150, 3 credits, undergraduate) This course introduces students to core microeconomic and macroeconomic principles with an emphasis on the economics of agriculture and natural resources. (17F, 18S)

Geological Hazards and Their Human Impact (GEOL 105, 3 credits, undergraduate) Geological processes and events that adversely affect humans and civilization. Methods for predicting and dealing with geological hazards (co-taught, 2009).

General Geology Teaching assistant/lab instructor (GEOL 107, 113, 1 credit lab, undergraduate) Principles of physical geology and its application in interpreting earth processes. Laboratory covers identification of earth materials and the interpretation of topographic and geologic maps (1998 – 2000).

Invited Guest Lecturer, University of Delaware, Newark, Delaware

Water Science and Policy Seminar 2014-2017, “Ditch rule vs definitive protection: the story behind new wetlands and waters proposed rule”

Environmental Law, 2013, 2014, “Wetlands, Waters and Significant Nexus”

Senior Design, Civil and Environmental Engineering, 2010, 2011, “Wetlands and Waters Permitting”

Computer

- Microsoft Office
- JMP statistical analysis including regression
- Hydrologic Engineering Centers Riverine Analysis System (HEC-RAS) surface water modeling
- TR-20 and TR-55 Hydrologic computation for project design
- Geographic Information Systems for sample design and data visualization
- AUTO-CAD for project design

Synergistic Activities

- Invited Panel Speaker, The Carbon Link in Watershed Ecosystem Services, U.S. International Biochar Conference 2018, Wilmington, DE.
- Co-Chair Restoration and Research Subcommittee, White Clay Wild and Scenic Program
- Member, Steering Committee, White Clay Watershed Association
- Reviewer, Biological and Observational Laboratories and Field Stations Strategic Planning Document.

- Planning Committee, Mid Atlantic Conference, American Water Resources Association.
- Member, Watershed Stewardship Committee, Delaware Nature Society
- Board and Subcommittee member, Delaware American Water Resources Association.