

David Immanuel Green

251 Bessey Hall 2200 Osborn Dr., Ames, Iowa 50011 | 515-441-1430 | dgreen1@iastate.edu

EDUCATION

PhD, Environmental Science – 2016

Emphasis in environmental and wetland hydrology, hydraulics, and biogeochemistry
Iowa State University, Ames, Iowa

BS, Environmental Science with a double major in Chemistry – 2003

Emphasis in hydrology, hydrography, and environmental chemistry
University of New Mexico, Albuquerque, New Mexico

PROFESSIONAL EXPERIENCE

Research Scientist III, Iowa State University, Ames, Iowa

Research into wetland and surface water hydrodynamics and water quality, and watershed rainfall-runoff processes. Des Moines River water quality monitoring. Geographic information systems development and programming. Grant development and administration. Mentoring of graduate students.

November 2018 – Present

Doctoral Candidate/Post/Pre -doctoral Research Associate, Iowa State University, Ames, Iowa

Research into wetland and surface water hydrodynamics and water quality, and watershed rainfall-runoff processes. Des Moines River water quality monitoring. Geographic information systems development and programming. Grant development and administration. Mentoring of graduate students. Taught and co-taught various courses in the Environmental Science undergraduate program. Iowa State University Environmental Science Graduate Research Fellow.

August 2007 – November 2018

Water Resources Specialist/Hydrologist, New Mexico Interstate Stream Commission, Albuquerque, New Mexico

Assisted with the development and analysis of large basin-scale surface water supply and groundwater models. Developed a comprehensive water quality and hydrologic database of the Lower Rio Grande Valley (New Mexico and Texas).

February 2004 – August 2007

Water Quality Technician, Parsons Engineering, Albuquerque, New Mexico

Developed water quality sampling protocols. Collected water quality and material samples for a basin-scale fecal coliform loading study.

September 2000 – August 2003

SPECIALIZED TRAINING IN WATER RESOURCES MODELING

Environmental Fluid Dynamics Code/EFDC_Explorer (DSI, Knoxville, TN) – Certified 2012

RiverWare II: Advanced River Basin and Reservoir Routing

(CADSWES, Colorado University, Boulder, CO) - Certified 2006

RiverWare I: Intro. River Basin and Reservoir Routing

(CADSWES, Colorado University, Boulder, CO) - Certified 2005

MikeZero and Mike21 (Danish Hydraulic Institute, DK)

WMS and GSSHA (Aquaveo, Provo, UT)

TECHNICAL SKILLS

ArcGIS and ArcInfo (Advanced) with Emphasis on Automation (using ArcPy) and Water Resources

Python, R, VBA (Excel and MS Access), and Matlab Scientific Scripting and Programming

Excel and Access Development and Programming

Advanced Scientific Computing and Numerical Modeling

Advanced Multivariate, Spatial, and Temporal Statistical Modeling

Grant Development and Technical Writing

Fluorometry and Dye Dispersion Studies in Surface Water Systems

Advanced Contaminant Transport Numerical Model Development, Fitting, and Analysis

Extensive Knowledge of Surface Water and Groundwater Hydrology, Hydrodynamics, and Dispersion Processes

Extensive Knowledge of Environmental Biogeochemical Processes

RELEVANT ACADEMIC TRAINING

Physical Hydrology|Watershed Hydrology

Intermediate Engineering Hydrology

Open Channel Hydraulics

Environmental Flows and Fluid Mechanics

Hydrogeology|Groundwater Modeling

Groundwater Contaminant Transport Processes

Soil Physics|Advanced Soil Physics

Environmental Biogeochemistry

Wetland Ecology

Aquatic Ecology

Environmental Engineering Chemistry

Quant., Organic, Phys., Bio. Chem. Sequences

Applied Water Quality Modeling

Ecosystems Ecology

Environmental Systems Modeling

Classical Physics I & II

Calculus Sequence for Mathematics Majors

Differential Equations and Laplace Transforms

Numerical Methods and Scientific Computing

Numerical Methods for ODEs and PDEs

Time-series Analysis|Spatial Statistics

Statistics for Researchers|Experimental Design

GIS for Water Resources|Advanced GIS

Programming for GIS Applications

PUBLICATIONS | REPORTS

- Green, D.I.S.**, Crumpton, W.G. 2023. “Depressional runoff cascade networks of the Des Moines Lobe of Iowa. *JAWRA Journal of the American Water Resources Association*. 00(0):1-31. <https://doi.org/10.1111/1752-1688.13103>.
- Zhang, J., Lu, C., Crumpton, W., Jones, C., Tian, H., Villarini, G., Schilling, K., **Green, D.** 2022. Heavy precipitation impacts on nitrogen loading to the Gulf of Mexico in the 21st century: Model projections under future climate scenarios. *Earth's Future*, 10, e2021EF002141. <https://doi.org/10.1029/2021EF002141>
- Crumpton, W.G., Stenback, G.A., Fisher, S.W., Stenback, J.Z., **Green, D.I.S.** 2020. Water Quality Performance of Wetlands receiving nonpoint-source nitrogen loads: Nitrate and total nitrogen removal efficiency and controlling factors. *Journal of Environmental Quality* 1-10. <https://doi.org/10.1002/jeq2.20061>
- Green, D.I.S.**, McDeid, S.M., Crumpton, W. G. 2019. Runoff Storage Potential of Drained Depressions on the Des Moines Lobe of Iowa. *JAWRA Journal of the American Water Resources Association* 55(3):543-558. <https://doi.org/10.1111/1752-1688.12738>
- Green, D.I.S.**, Crumpton, W.G., van der Valk, A., Helmers, M., Gelder, B.K., McDeid, S.M. 2018. Characterization of Wetland Depressions in Iowa and Their Potential Influence on Downstream Waters. Report to the United States Environmental Protection Agency, Wetlands Development Program Grant #97754001
- McDeid, S.M., **Green, D.I.S.**, Crumpton, W.G. 2018. Morphology of Drained Upland Depressions on the Des Moines Lobe of Iowa. *Wetlands*. <https://doi.org/10.1007/s13157-018-1108-4>
- Green, D.I.S.** 2017. Empirical Assessment of the Potential Impact of Hetch Hetchy Reservoir Removal on Temperature Regimes within the Upper Tuolumne River. Report to Restore Hetch Hetchy, Berkeley, CA.
- Green, D.I.** 2016. Environmental Factors Affecting the Residence Time Distribution Dynamics of Agricultural Wetlands. Dissertation. Iowa State University. Ames, Iowa
- Otis, D. L., Crumpton, W. G., **Green, D.I.**, Loan-Wilsey, A., Cooper, T. and Johnson, R. R. 2012. Predicted Effect of Landscape Position on Wildlife Habitat Value of Conservation Reserve Enhancement Program Wetlands in a Tile-drained Agricultural Region. *Restoration Ecology*. doi: 10.1111/j.1526-100X.2012.00898.x
- Crumpton, W.G., **Green, D.I.**, Loan-Wilsey, A., McNeely, R., Kane, K., Otis, D., Cooper, T., and Johnson, R. 2010. Assessment of Environmental Services of CREP Wetlands in Iowa and the Mid-western Corn Belt. USDA Progress Report.

RESEARCH GRANT AWARDS

Morphology of Drained Upland Depressions on the Des Moines Lobe of Iowa and their Hydrologic Connectivity. PIs: **Green, D.I.**, Crumpton, W.G., van der Valk, A., Helmers, M. Gelder, B.K., *EPA Wetlands Development Grant. Award Number 97754001. October, 2015 – October, 2018.*

Edge-of-Field (EOF) Practice Location, Performance and Feasibility Analysis: Strategically Located Wetlands. PIs: Crumpton, W.G., Helmers, M., **Green, D.I.S** *Iowa Department of Agriculture and Land Stewardship. Award Number 17WQI-EOF-2. December 31, 2017 – December 31, 2018.*

Assessing Patterns in Nutrient Transport and Loads. PIs: Crumpton, W.G., Stenback, G., **Green, D.I.S**, Iowa Nutrient Research and Education Council. *December 1, 2017 – December 31, 2018.*

Impacts of Drained Depressions on Runoff and Nutrient Exports in Tile-Drained Agricultural Watersheds. PIs: **Green, D.I.S**, Crumpton, W.G., Stenback, G.A. *EPA Wetlands Program Development Grant. Award Number 97770701. October, 2019 – October, 2021.*

Linking Agricultural Practices to Water Quality Improvement: The Importance of Scale in Accurately Characterizing Nonpoint Source Nutrient Loads in Iowa Streams. PIs: **Green, D.I.S.**, Crumpton, W.G., Chaoqun, L, Isenhardt, T., Rehmann, C., Wilkinson, G. *Iowa Nutrient Research Center. Award Number 2019-15. July, 2019 – June, 2021*

PRESENTATIONS

Morphology of Drained Upland Depressions on the Des Moines Lobe of Iowa and their Hydrologic Connectivity. **Green, D.I.S.**, S.M. McDeid, W.G. Crumpton. April, 2017. American Water Resources Association Spring Specialty Conference on Hydrological Connectivity. Snowbird, Utah.

Three-dimensional Simulation of Wetland Hydrodynamics and Mixing. Green, D.I.S. April, 2018. Geological Society of America Midwest Section Conference, Ames, Iowa.

Runoff Storage Potential of Drained Depressions on the Des Moines Lobe of Iowa. November, 2019. American Water Resources Association Annual Conference, Salt Lake City, Utah.

TEACHING

Environmental Science 110. Introduction to Environmental Science. Iowa State University, Ames, Iowa. Fall semester, 2010, 2011, and 2012. Instructor of record. Course development and teaching.

Environmental Science 370X. Introduction to Geographic Information Systems. Fall and spring semesters, 2010, 2011, 2012, and 2013. Instructor of record. Course development and teaching.

Environmental Science 381. Environmental Systems Analysis I. Iowa State University, Ames, Iowa. Fall semester: 2014, 2015, and 2022. Instructor of record. Course development, teaching, supervision of teaching assistants.

Environmental Science 382. Environmental Systems Analysis II. Iowa State University, Ames, Iowa. Spring semester: 2015, 2016, and 2023. Instructor of record. Course development, teaching, supervision of teaching assistants.

ADVISING AND MENTORSHIP

Academic advisor, environmental science undergraduate program, Iowa State University, academic years 2010 through 2012.

Coordinator, environmental science freshman learning community, Iowa State University academic years 2010 through 2012.

Mentor to three graduate students at Iowa State University: Samuel McDeid, MS, 2017; Jacob Eeling, MS, 2019; and Calvin Wong, MS, 2021.