

## Brian T. Scull

Annis Water Resources Institute  
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### Education

B.S., *cum laude*, Natural Resources Management, April 2014  
Grand Valley State University, Allendale, MI

A.S., Environmental Science, August 1999  
Santa Fe Community College, Gainesville, FL

### Certifications & Awards

Phi Kappa Phi, Grand Valley State University, April 2013  
40 Hour HAZWOPER Operational Training, May 2013  
Sustainability Champion, Grand Valley State University, October 2011  
Employee of the Year, Annis Water Resources Institute, December 2008  
Phi Theta Kappa, Santa Fe Community College, January 1998

### Professional Experience

2019 – Present. Research Laboratory Supervisor, Annis Water Resources Institute, Grand Valley State University, Muskegon, MI.

- Managing operations of the AWRI Water Chemistry, qPCR, ddPCR, and SARS CoV-2 extraction labs.
- Conduct analyses for nutrients using wet chemistry, ion chromatography, elemental analyzers, qPCR, ddPCR, and discrete/segmented flow analyzers.
- SARS CoV-2 in wastewater analysis using ddPCR, Molecular Source Tracking (USEPA Method 1696), E. coli using qPCR an Applied BioSystems StepOnePlus Realtime PCR Instrument, and Bio-Rad Digital Droplet PCR Systems.
- Repair and maintain laboratory equipment.
- Oversee student workers.
- Order laboratory equipment and supplies.
- Member of the AWRI Equipment Committee.
- Maintain chemical and equipment inventories.
- Report project data to students, faculty and clients.
- Develop budgets and project plans.

2009 – 2018. Research Assistant & Inorganic Lab Manager, Annis Water Resources Institute, Grand Valley State University, Muskegon, MI

- Teaching Assistant for a laboratory section of NRM 452, Watershed and Wetland Management, taught in the fall semesters of 2015, 2016, 2017, and 2018.

- Train and supervise undergraduate, REU-Quest students, graduate students, and Post-docs on qPCR Draft Method C for *E. coli* protocols, proper field sampling techniques, inorganic analyses, and laboratory best practices.
- Manage and operate the qPCR Laboratory facility for the Muskegon County Health Department's Beach Monitoring Program for *E. coli*, using an Applied BioSystems StepOnePlus Realtime PCR Instrument.
- Work with MDEQ and EPA Cincinnati, EPA Office of Water on the validation and implementation of Draft Method C for *E. coli* determination in surface waters using qPCR.
- Completed training in Molecular Source Tracking (MST), EPA Method 1696, at Michigan State University in August, 2018.
- Served as a trainer for the qPCR Training Workshop at Michigan State University in February, 2016.
- Completed a Train the Trainer Workshop on qPCR Analysis at EPA Cincinnati in December, 2015.
- Conduct laboratory analyses for nutrients using wet chemistry, ion chromatography, elemental analyzers qPCR, and discrete/segmented flow methods using: SEAL Analytical AQ400, AQ2 Discrete and AA3 Segmented Flow Analyzers, Perkin Elmer AAnalyst 300 FLAA and AAnalyst 800 GFAA, Dionex ICS 2100 Ion Chromatograph, Shimadzu TOC-5000, and Perkin Elmer 2400 CHN-O analyzers.
- Develop new analytical methods and implemented quality assurance/quality control protocols in the laboratory.
- Organize data and provided data summaries for use in reports and presentations.
- Implemented multiple scientific research projects, including experimental planning and set-up, coordination of field sampling, and collection and processing of field samples.
- Served as a laboratory project manager and/or lead technician for multiple projects working with; Lake Associations, State Conservation Districts, EGLE, USEPA, USGS, MDOT, Trout Unlimited, GLRI 319 Grants, and internally funded grant projects.
- Extensive experience in dry/wet weather stream flow monitoring, and hydrologic assessments for the development of stream discharge rating curves and pollutant loadings.
- Collect watershed survey data on stream conditions, and conducted macro-invertebrate habitat and population assessments.
- Conducted algal bioassays and toxicity assessments of runoff water.
- Acquired, maintained and repaired laboratory instruments, and field equipment.
- Designed, constructed, and utilized specialized sampling equipment for the assessment of benthic macroinvertebrate populations in areas impacted by sawmill debris.
- Field technician collecting water quality data and samples for Cyanobacteria toxin analysis in several West Michigan lakes.
- Maintain laboratory chemical supplies and inventory.
- Develop project budgets and work plans.
- Serve as webmaster for the Environmental Chemistry webpages for the Institute.

2007 – 2009. Adjunct Research Assistant, Annis Water Resources Institute, Muskegon, MI

- Functioned as a lead technician on multiple projects looking at internal loadings of phosphorus in lake sediments.
- Determined negative ion concentrations in water using ion chromatography.
- Performed solid and liquid phase extractions on water and fish tissue samples.

- Performed maintenance and repair services on laboratory instruments and field sampling equipment.
- Designed and constructed a semi-automated drain/fill/aerate system for AWRIs sediment bioassay incubation room, resulting in a substantial reduction in labor costs.

2003 – 2007. Technical Call-In, Annis Water Resources Institute, Muskegon, MI.

- Functioned as a lead technician on multiple field sampling projects.
- Collected water, soil, plant tissue, and sediment core samples.
- Constructed an elutriator for benthos identification and enumeration projects.
- Collected water quality and flow data from streams and rivers for urban runoff, groundwater protection, wetland management, and nonpoint source pollution projects.

2000 – 2008. Operations Specialist 1, Earth Tech, Grand Rapids, MI

- Conducted laboratory analyses on potable water, and wastewater samples.
- Managed the daily operations and maintenance of potable water and class D wastewater facilities.
- Conducted hazardous waste inspections and monitored the non-contact cooling water discharge (for an NPDES permit) for a local chemical company.
- Site safety officer for the potable water and wastewater systems at the Kraft Lake Office Park.
- MDEQ certified construction site and industrial storm water runoff technician.

1999 - 2000 Laboratory Technician, Environmental Science & Engineering, (a Mactec Co.), Gainesville, FL.

- Conducted definitive acute and chronic effluent, soil and sediment bioassay tests according to ASTM and EPA guidelines.
- Sample shipment and receipt, logging in of laboratory chemicals, and test organisms.
- Implemented quality assurance / quality control measures for the toxicology laboratories.
- Fabricated a drawn down system for test aquariums, resulting in substantial savings in labor costs.

### **Transferable Skills**

- Excellent writing and editing abilities.
- Excellent communication and interpersonal skills.
- Use of specialized equipment and protocols for collecting physical, biological, and chemical data in aquatic habitats.
- Ability to diagnose and repair laboratory equipment, as well as construct specialized sampling and laboratory equipment.
- Experience working in environmental chemistry and molecular biology laboratories.
- Demonstrated testing proficiency as defined by USEPA and other reference methods.
- Excellent record-keeping skills.
- Commitment to working as a team with a diverse group of students, staff, and faculty to make the research labs run effectively.

## Peer-Reviewed Journal Publications

James N. McNair, Molly J. Lane, John J. Hart, Alexis M. Porter, Shannon Briggs, Benjamin Southwell, Tami Sivy, David C. Szlag, **Brian T. Scull**, Schuyler Pike, Erin Dreelin, Chris Vernier, Bonnie Carter, Josh Sharp, Penny Nowlin, Richard R. Rediske, 2022.

*"Validity assessment of Michigan's proposed qPCR threshold value for rapid water-quality monitoring of E. coli contamination"*, Water Research, Volume 226, 2022, 119235, ISSN 0043-1354, <https://doi.org/10.1016/j.watres.2022.119235>.  
(<https://www.sciencedirect.com/science/article/pii/S0043135422011800>)

Lane, M.J., Rediske, R., McNair, J.N., Briggs, S., Rhodes, G., Dreelin, E., Sivy, T., Flood, M., **Scull, B.**, Szlag, D. and Southwell, B., 2020.

*A comparison of E. coli concentration estimates quantified by the EPA and a Michigan laboratory network using EPA Draft Method C. Journal of Microbiological Methods, 179, p.106086.*

Sivaganesan, M., Aw, T. G., Briggs, S., Dreelin, E., Aslan, A., Dorevitch, S., Shrestha, A., Isaacs, N., Kinzelman, J., Kleinheinz, G., Noble, R., Rediske, R., **Scull, B.**, Rosenberg, S., Weberman, B., Sivy, T., Southwell, B., Siefiring, S., Oshima, K., & Haugland, R. (2019).

*Standardized data quality acceptance criteria for a rapid Escherichia coli qPCR method (draft method C) for water quality monitoring at recreational beaches. Water Research, 156, 456-464.*

Tiong Aw; Mano Sivaganesan; Shannon Briggs; Erin Dreelin; Asli Aslan; Samuel Dorevitch; Abhilasha Shrestha; Natasha Isaacs; Julie Kinzelman; Greg Kleinheinz; Rachel Noble; Rick Rediske; **Brian Scull**; Susan Rosenberg; Barbara Weberman; Tami Sivy; Ben Southwell; Shawn Siefiring; Kevin Oshima; Rich Haugland, 2018.

*Evaluation of multiple laboratory performance and variability in analysis of recreational freshwaters by a rapid E. coli qPCR method (Draft Method C). Water Research. Vol. 156, June 2019, pages 465-474.*

Xie, L., Rediske, R.R., Gillett, N.D., O'Keefe, J.P., **Scull, B.T.**, Xue, Q., 2016.

*The impact of environmental parameters on microcystin production in dialysis bag experiments.* Nature Scientific Reports. 6, 38722. doi:10.1038/srep38722

MacDonald, N.W., R.R. Rediske, **B.T. Scull**, and D. Wierzbicki. 2008

*Landfill cover soil, soil solution, and vegetation responses to municipal landfill leachate applications.* Journal of Environmental Quality 37(5); In Press.

MacDonald, N.W., **B.T. Scull**, and S.R. Abella. 2007.

*Mid-spring burning reduces spotted knapweed and increases native grasses during a Michigan experimental grassland establishment.* Restoration ecology 15 (1): 118-128.

## Presentations

**Brian T Scull**, "Implementing Molecular Testing Methods in a Water Quality Laboratory: A Lab Manager's Perspective," The 20<sup>th</sup> Annual Great Lakes Beach Association (GLBA) Conference, Muskegon, MI. October 2022.

**Brian T. Scull**, Dr. Richard Rediske, Molly Lane, Igor Mrdjen. 2018 *Comparison of Colilert and qPCR Methods for Monitoring Inland Lakes Beaches in Muskegon County, Michigan.*

Great Lakes Beach Association and Great Lakes Water Safety Consortium Joint Conference, Cleveland, OH. October 2018.

**Brian T. Scull**, Dr. Richard Rediske, Molly Lane, Brittany Schultz-Wheaton College. 2018 *Comparison of Colilert® and qPCR Methods for Monitoring Inland Lake Beaches in Muskegon County, Michigan*. Michigan Academy of Science, Arts and Letters Conference, Central Michigan University, Mount Pleasant, MI. March 2018.

**Brian T. Scull**, Dr. Richard Rediske, Molly Lane, Brittany Schultz-Wheaton College. 2017 *E. coli Densities in the Inland Lakes of Muskegon County, Michigan: A Methods Comparison*. State of Lake Michigan Conference, Green Bay, WI. November 2017.

**Brian T. Scull**. *qPCR Draft Method C: Lessons Learned*. 2016. 16<sup>th</sup> Annual Great Lakes Beach Association Conference, Marquette, MI., October 2016.

**Brian T. Scull**. *The Implementation of Micro-scale Chemistry in an Environmental Research Laboratory*. 2013. Michigan Green Chemistry and Engineering Conference, Grand Valley State University, Grand Rapids, MI. October 2013.

**Scull, B. T.**, Rediske, R.R., and Thompson, K.A., *Integrated Nutrient Assessment of Bear Lake, Michigan*. 2010. Michigan Academy of Science, Arts, and Letters Conference, Calvin College, Grand Rapids, Michigan. March 2010.