JESSICA C. THOMAS, PH.D.

Lecturer
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RESEARCH INTERESTS

Coastal groundwater-seawater interactions; nutrient transport and cycling; restoration of estuarine habitat quality; physical controls on fate and transport; and development, field evaluation, and responsible implementation of in situ permeable reactive barriers for coastal nitrogen mitigation.

EDUCATION

Ph.D., Marine Science and Technology - Coastal Systems Science, University of Massachusetts Dartmouth, School for Marine Science and Technology / *January 2026*
Dissertation: Micro-siting and Nitrogen Removal Efficiency of Liquid-Injection Permeable Reactive Barriers (PRBs) in Residential Watersheds of Southeastern Massachusetts. Advisors: Micheline Labrie, Miles Sundermeyer, and Brian Howes (deceased).

M.S., Hydrogeology, Rensselaer Polytechnic Institute / *May 2002*
Thesis: Modeled Flow in Portions of the Hudson and Mohawk Rivers Using Conductivity as a Conservative Tracer. Advisor: Richard Bopp.

B.S., Hydrogeology, Rensselaer Polytechnic Institute / *December 1996*

ACADEMIC APPOINTMENTS

Lecturer and Introductory Physics Laboratory Coordinator, Roger Williams University / *June 2023-Present*
Teach physics, physical oceanography, climate physics, sustainability, interdisciplinary senior seminar, and food science laboratory; coordinate introductory physics laboratories and instructors; advise and mentor students; develop curriculum; and lead externally engaged coastal research.

Adjunct Faculty, Roger Williams University / *January 2016-May 2023*

Teaching Assistant, University of Massachusetts Dartmouth, School for Marine Science and Technology / *September 2019-December 2022*

Adjunct Faculty, Salve Regina University / *January-May 2018*

Teaching Assistant, Rensselaer Polytechnic Institute / *December 1996-May 1998*

FUNDED RESEARCH AND SPONSORED PROJECTS

Design and Installation of a Full-Scale Permeable Reactive Barrier in the Lagoon Pond Watershed, SNEP Watershed Implementation Grants / Restore America's Estuaries and U.S. EPA Region 1 / *2026-Present*
Principal Investigator. Award: $249,990 (SWIG26-9-RWU), with $83,405 in matching support from the Martha's Vineyard Commission; total project investment $333,395. Selected for full funding to design, install, and monitor a full-scale PRB at the Sail Camp property in Oak Bluffs, Massachusetts.

Micro-Siting a Full-Scale Permeable Reactive Barrier in Oak Bluffs, Massachusetts, Martha's Vineyard Commission / *October 2024-September 2026*
Principal Investigator. Award: $36,000. Led field investigation, sampling, analysis, student researchers, partner coordination, and site evaluation for full-scale implementation.

Aerobic Biodegradation Rates of SRS-NR for Longevity Study, Terra Systems, Inc. / *August 2024-March 2026*
Co-Principal Investigator with Micheline Labrie. Award: $20,500. Evaluated carbon-source longevity and biodegradation relevant to liquid-injection PRB performance.

INVITED AND PROFESSIONAL PRESENTATIONS

Thomas, J. C. (2026, February 24). Managing Cumulative Impacts: Nitrogen Mitigation at the Groundwater-Estuary Interface. Ocean Sciences Meeting, Glasgow, Scotland.

Thomas, J. C. (2026, March 5). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier. U.S. EPA Nonpoint Source Management Regional Coordinators webinar.

Thomas, J. C. (2025, November 7). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier. Town of Mashpee Sewer Commission webinar.

Thomas, J. C. (2024, July 25). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier. Down Island Coastal Ponds Speaker Series, Vineyard Haven, Massachusetts.

Thomas, J. C. (2024, June 12). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier [Poster and presentation]. EPA Southeast New England Program Symposium.

Thomas, J. C. (2023, February 8). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier. UMass Dartmouth School for Marine Science and Technology Seminar, New Bedford, Massachusetts.

Thomas, J. C. (2022, May 18). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier. EPA Southeast New England Program Virtual Symposium.

Thomas, J. C. (2021, December 14). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier. Tisbury Waterways, Inc. Annual Meeting webinar.

Thomas, J. C. (2020, July 8). Siting, Micro-Siting, and Nitrogen Removal Efficiency of a Liquid-Injection Permeable Reactive Barrier. EPA and Boston Society of Civil Engineers Conference on Permeable Reactive Barriers for Groundwater Nitrate Treatment webinar.

Thomas, J. C. (2019, October 25). Siting, Installation, and Monitoring of PRB Technology for Nitrogen Mitigation in the Lagoon Pond Watershed, Oak Bluffs and Tisbury, Massachusetts. SNEP Forum: Tomorrow Starts Today.

CONFERENCE ABSTRACT

Lee, M. D., Raymond, R. L., Jr., Dombrowski, P., Charrette, M., Henderson, P., Rathjen, K., Begley, J., Parece, T., Owen, M., Marrion, J., Thomas, J. C., Howes, B., Paulsen, B., & Heely, D. (2023, May 8-11). Design of Permeable Reactive Barriers to Reduce Nitrogen Flux. Battelle Bioremediation and Sustainable Remediation Symposium, Austin, Texas.

CURRICULUM AND COURSE DEVELOPMENT

PHYS 105: Physics for Building Science, Roger Williams University | *Developed and approved 2025-2026*
Designed from a multi-semester pilot to serve Architecture and Construction Management students through applied study of statics, torque, fluids, heat transfer, and circuits; advanced for General Education Systems Thinking consideration.

PHYS 260: Climate Physics, Roger Williams University | *Developed and approved 2025-2026*
Developed an interdisciplinary physics course addressing Earth's energy balance, atmospheric and oceanic processes, feedbacks, and climate-system evidence; approved as a Sustainability major and minor elective.

CORE 479: How Not to Kill Your Planet, Roger Williams University | *Developed 2025*

Designed and implemented an interdisciplinary senior seminar integrating scientific evidence with ethical, political, and social analysis of global environmental challenges.

COURSES TAUGHT

Physics I and II with Calculus; Physics I and II with Algebra; Physics for Building Science; Physical Oceanography; Climate Physics; Basic Statistics; Finite Mathematics; Introduction to Sustainability Studies; Food Science Laboratory; and interdisciplinary Senior Seminar.

UNDERGRADUATE ADVISING AND RESEARCH MENTORING

- Supervised four students in funded summer research supporting PRB micro-siting in Oak Bluffs through field methods, sample collection, laboratory analysis, and data interpretation.
- Mentored a fifth student over multiple semesters through research credit and work-study on the growth and response of Phragmites australis and Spartina alterniflora under different nitrogen conditions.
- Served on Connor Huntley's senior thesis committee, advising on research design, analysis, and development of an independent argument.
- Advised students across programs, including a student who added Physics as a second major and a SUST 101 student who declared Sustainability; assigned a formal advising cohort beginning in 2026-2027.

ACADEMIC LEADERSHIP AND SERVICE

Director, Marine Biology Camp, Roger Williams University / *2026*

Directed five weeks of field- and laboratory-based programming, including planning, recruitment, communications, staffing, logistics, safety, and implementation.

Introductory Physics Laboratory Coordinator, Roger Williams University / *2023-Present*

Coordinate laboratory courses, train and support instructors, troubleshoot instructional issues, and manage equipment and supplies.

- Feinstein School of Social and Natural Sciences Dean Search Committee, 2026.
- General Education Curriculum and Policy Committee, 2025-2026.
- Academic Dismissal Committee, 2025-2026.
- Provost's AI Working Group, 2025-2026.
- Faculty Senate Diversity Committee, 2023-2025.
- Physics and Astronomy SEA Change Committee.
- Provided nineteen Physics Sunday study sessions and two extended Reading Day sessions during the 2023-2026 review period.
- Contributed to admissions events, General Education programming, the Student Academic Showcase, Architecture critiques, and community-facing coastal science outreach.

PROFESSIONAL SOCIETIES

Association for the Sciences of Limnology and Oceanography; Coastal and Estuarine Research Federation; American Association of Physics Teachers; The Oceanography Society; American Geophysical Union; Phalanx Honor Society; and Pi Beta Phi.

INDUSTRY EXPERIENCE

Founder and Executive Officer, Thomas and Thomas Development, Inc., Newport, Rhode Island / *October 2003-April 2015*

Led project selection, budgeting, financing, project management, environmental-risk evaluation, Phase I assessments, OSHA-related safety programs, SOPs, investor reporting, and green-energy coordination.

Environmental Consultant, Vanasse Hangen Brustlin, Inc., Watertown, Massachusetts / Providence, Rhode Island | *October 2000-September 2003*

Conducted groundwater and soil investigations, remediation oversight, risk assessment, environmental reporting, drilling and well installation, sampling, regulatory coordination, and file review across New England.

Project Manager, Handex Environmental Inc., Marlborough, Massachusetts | *June 1999-October 2000*

Managed remediation projects, client and regulator communications, site investigations, drilling and sampling, underground-storage-tank removal, budgets, billing, and proposals.