

Clean Drinking Water In Rhode Island

Project Type: Annual Base Grant

Project ID: 2019RI233B

Project Impact:

Decreasing Trihalomethanes In The Providence Drinking Water System

Project Type: Annual Base Grant

Project ID: 2019RI231B

Project Impact:

Providing A New Perspective On Groundwater Hydrometry Using Thermal Infrared Sensor Equipped Unmanned Aerial Vehicle

Project Type: Annual Base Grant

Project ID: 2019RI232B

Project Impact:

General Information

Products

Project 2019RI231B: Decreasing trihalomethanes In the Providence drinking water system:

- Goodwill J., Ray, P., Nock, D., and Miller C., "Moving Beyond Resilience and Toward Antifragile Potable Water Systems" Submitted to Environmental Science: Water Research & Technology, January 2021.
- Franco, P., Spellman, C., Addison, E., and Goodwill, J., "Measuring and Managing Trihalomethanes with Novel Gas Chromatography and Aeration Approaches" Submitted to: 2021 UCOWR/NIWR Annual Water Resources Conference. (in preparation)

Project 2019RI232B: Providing a new perspective on groundwater hydrometry using thermal infrared sensor equipped unmanned aerial vehicle:

- Young, K.S.R., & Pradhanang, S. M. 2021 Small Unmanned Aircraft (sUAS)-Deployed Thermal Infrared (TIR) Imaging for Environmental Surveys with Implications in Submarine Groundwater Discharge (SGD): Methods, Challenges, and Novel Opportunities" Remote Sensing (under review)
- Young, K. S. R., Pradhanang, S. M., Robinson, R, Boving, T, Kelly, R.P., Kmetz, J. 2021 Shallow Groundwater Discharge Plumes Across Salt ponds using Drone-based Thermal Infrared: Comparison and Regression against SGD flux via Rn222 /RAD7. Remote Sensing and the Environment (in preparation)

Project 2019RI233B: Clean drinking water in Rhode Island:

Not applicable, this project funded an outreach activity with high school students.

Information Transfer Program

Project 2019RI231B: Decreasing trihalomethanes In the Providence drinking water system:

- The uSAS equipped with TIR needed proper training. The main operator of this unit was a licensed pilot in the Pradhanang Lab. The flight manual was created and used by other students and operators. The PIs and students engaged with homeowners of the Salt Pond areas in the Ninigret and Green Hill Pond on drone demonstration and sharing results.

Project 2019RI232B: Providing a new perspective on groundwater hydrometry using thermal infrared sensor equipped unmanned aerial vehicle:

- The PI had weekly meetings with Providence Water and quarterly meetings with INFICON (the THM analyzer instrument supplier) during the course of this research. The results will be disseminated in a peer reviewed journal article and a regional drinking water community conference (in November 2021).

Project 2019RI233B: Clean drinking water in Rhode Island:

- Summer day camp for high school students learn concepts with regard to clean water from presentation and hands-on activities. Ten high school students from underrepresented groups in STEM field from the Providence school system participated in the summer camp.

Program administration:

- Two graduate students were partially supported to aid the Director managing the Center's activity.

Student Support

Project 2019RI231B: Decreasing trihalomethanes In the Providence drinking water system:

- This project funded one graduate student and one undergraduate student participate in the research activities. Additionally, five undergraduate students participated on the drone training activities.

Project 2019RI232B: Providing a new perspective on groundwater hydrometry using thermal infrared sensor equipped unmanned aerial vehicle:

- This grant supported one graduate and one undergraduate student. Additional three graduate students participated in activities related to the project.

Project 2019RI233B: Clean drinking water in Rhode Island:

- One graduate/undergraduate student during the activity

Program administration:

- Two graduate students were partially funded to support the Director with administrative activities

Overall supported with annual base (104b) and required matching funds:

Undergraduate: 8

Graduate: 4

Postdoc: 0

Notable Achievements and Awards

Project 2019RI231B: Decreasing trihalomethanes In the Providence drinking water system:

- Nothing to report

Project 2019RI232B: Providing a new perspective on groundwater hydrometry using thermal infrared sensor equipped unmanned aerial vehicle:

- The PI has been invited to publish research results as part of the Royal Society of Chemistry's Emerging Investigator Series in Environmental Science: Water Research & Technology

Project 2019RI233B:

- Nothing to report