

Moving Sustainability Forward Floating Island Technology in Real-World Environments



A team of researchers, partners and funders
get the floating islands assembled.

Finding natural and sustainable ways to produce high-quality recycled water at Olds College Centre for Innovation (OCCI) has grown from controlled greenhouse trials to real-world environment studies after years of applied research with promising results.

In 2018, researchers at OCCI began examining how native wetland plants and floating island technology could remove excessive nutrients and contaminants from water in a greenhouse study. Years of promising research findings and advancements to floating island technology made OCCI confidently expand the applied research to complex 'real-world' situations — 55 floating islands were recently launched on two feedlot runoff ponds near Linden, Alta.

This applied research project titled Floating Island Technology for Livestock Water Remediation aims to provide producers with sustainable, low-cost management practices that improve runoff water quality for livestock drinking water and irrigation. The project is now in its third phase of research which includes evaluating floating islands on feedlot runoff ponds to study real-world implications.

Dr. Daniel Karran, ecohydrologist and instructor in the Werklund School of Agriculture Technology at Olds College, is the principal investigator responsible for managing the project activities, data analysis and technical reporting. Promising results from the previous phases of floating island research has shown the importance of testing the technology in real-world environments.

“Improving water resource management is crucial, especially in agriculture as the world needs to feed a growing population with fewer resources,” says Dr. Karran. “Being able to recycle water that is typically not useful for anything — and do it in an environmental, sustainable and economical way — is a huge opportunity for the College and we’re thrilled to be moving into the real-world phase of research. The next two years will provide tangible insights into the ability to remediate feedlot runoff water without the need of water treatment plants or unnecessary chemicals.”

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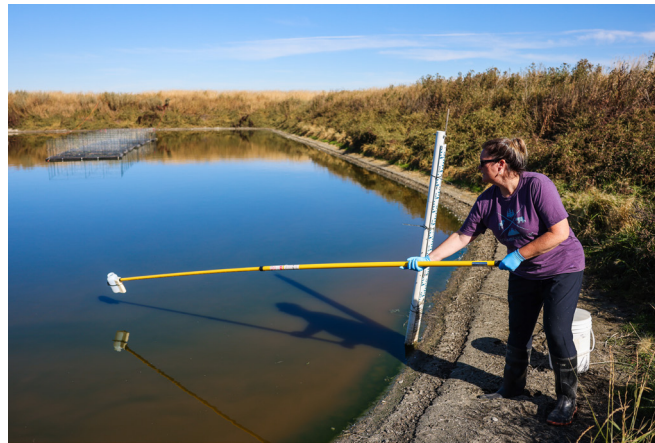
Krista Pick (bottom left), Research Technician, collects plant samples during the deployment with Ruth Elvestad (right), Project Lead (retired), and Steven Tannas (far left).



Fifty-five floating islands were launched between two feedlot ponds at producer sites Klassen Agriventures Ltd. and Penridge Feeders Inc. in September 2022 before freeze-up to get the plants climatized. The floating islands stay in the frozen feedlot ponds throughout winter in order to begin remediating the water in spring, and will be closely monitored for two years of research. The innovative and sustainable floating island technology should also help producers with maintenance, appearance and odour control of the ponds.

Researchers will be evaluating the feedlot runoff ponds with floating islands installed, as well as two control feedlot ponds without islands to provide continual baseline data of how ponds are performing with and without the technology. The monitoring period is predominantly during the summer months, and researchers will be collecting weekly water samples and plant samples late spring, summer and fall.

Krista Pick, Research Technician, Environmental Stewardship with OCCI, has been a key researcher on the project for over four years. She works alongside research technician Emilie Edgar to monitor the ponds and islands, perform water and plant sampling, and check weather parameters, precipitation and contaminant concentrations at the sites on a weekly basis.



Krista Pick, Research Technician, collects water samples during the deployment.

“We were all amazed to see how well native wetland plants on floating islands removed excessive nitrogen, phosphorus and potassium from contaminated water in the previous greenhouse trials,” says Pick. “We’ve been monitoring and testing four feedlot runoff ponds for the last 18 months to collect baseline data for the project. It was a monumental step to launch the 55 floating islands on the water, and we look forward to collecting and analyzing data over the next two years to see if they can produce high-quality recycled water for producers.”

This project continues in close partnership with Steven and Eileen Tannas from Tannas Conservation Services Ltd. who designed and patented the floating island technology, and helped the College select the native wetland plants for this real-world phase of research.

This applied research into natural ways to remove contaminants from water systems evolved thanks to funding from the Alberta Real Estate Foundation, Highfield Investment Group, Results Driven Agriculture Research and United Farmers of Alberta.

Stay up-to-date with research findings and results of floating island technology at oldscollege.ca/smartfarm.

Project timeline

