Wendy F. Hensel
President

UNIVERSITY of HAWAI'I®
Ke Kulanui o Hawai'i

DEPT. COMM. NO. 84

December 9, 2025

The Honorable Ronald D. Kouchi,
President and Members of the Senate
Thirty-Third State Legislature
Honolulu, Hawai'i 96813

The Honorable Nadine K. Nakamura, Speaker
and Members of the House of Representatives
Thirty-Third State Legislature
Honolulu, Hawai'i 96813

Dear President Kouchi, Speaker Nakamura, and Members of the Legislature:

For your information and consideration, the University of Hawai'i is transmitting a copy of the Interim Report on the New Wastewater System and Individual Wastewater Technology Testing Pilot Program (Act 198, Session Law of Hawai'i 2025) as requested by the Legislature.

In accordance with Section 93-16, Hawai'i Revised Statutes, this report may be viewed electronically at: https://www.hawaii.edu/govrel/docs/reports/2026/act198-slh2025_2026_wastewater-system-technology-pilot_report_508.pdf.

Should you have any questions about this report, please do not hesitate to contact Stephanie Kim at (808) 956-4250, or via e-mail at scskim@hawaii.edu.

Sincerely,

Wendy F. Hensel
President

Enclosure

2444 Dole Street, Bachman Hall
Honolulu, Hawai'i 96822
Telephone: (808) 956-8207
Fax: (808) 956-5286
An Equal Opportunity Institution

UNIVERSITY OF HAWAIʻI SYSTEM REPORT

REPORT TO THE 2026 LEGISLATURE

Interim Report on the New Wastewater System and Individual Wastewater System Technology Testing Pilot Program

Act 198, SLH 2025

December 2025

Introduction

Pursuant to Act 198, Session Laws of Hawai‘i 2025, the University of Hawai‘i Water Resources Research Center (WRRC) submits this interim report on the New Wastewater System and Individual Wastewater System Technology Testing Pilot Program. The Legislature established this pilot program to facilitate the certification of new wastewater treatment technologies that can reduce the financial burden of cesspool conversions for homeowners, protect the State's water resources and public health, and accelerate the commercialization of new technologies in the water industry. This interim report fulfills the requirement to update the Legislature on the testing, research, and outcomes of the pilot program, detailing the planning activities, technology selection, and testing protocols established to evaluate these new technologies during the first year of the program.

Program Status and Activities

The pilot program is currently in the planning stage. Since July 2025, the WRRC has engaged in critical ordination efforts to establish the infrastructure and procedural pathways for the upcoming technology testing. The following key activities have been carried out.

- Stakeholder coordination: The WRRC has held a series of strategic meetings with the City and County of Honolulu Department of Environmental Services (ENV) and the Hawai‘i Department of Health (DOH) in September and October of 2025, aiming to streamline the certification process for new wastewater technologies.
- Site selection: Following discussion with ENV and site visits, the Wahiawa Wastewater Treatment Plant has been selected as the primary site for pilot testing. A lot has been allocated to place testing systems, with access to municipal wastewater influent required for continuous and rigorous testing.

Technology Overview

The first technology selected for evaluation under the pilot program is Honu Hub, a compact decentralized wastewater treatment system designed for small clusters of communities that are not connected to the centralized wastewater collection system. The system utilizes an anaerobic membrane bioreactor to treat wastewater without aeration need, which is developed by the University of South Florida (*Figure 1*). This technology generates biogas for energy recovery, provides high quality effluent through membrane filtration, and integrates nutrient recovery systems before discharge. Honu Hub offers distinct advantages in energy efficiency, independence of electricity grid, and potential for water reuse with the high-quality effluent. The testing runs in parallel with research and product development funded by the National Science Foundation (NSF) Convergence Accelerator Program for Future Water Systems.

Project Timeline

- January – March 2026: Site preparation at the Wahiawa Wastewater Treatment Plant, and hiring of personnel including project managers and graduate students for the testing program.
- April – May 2026: Delivery of Honu Hub to Hawai‘i, installation and initial operation of the pilot testing system.
- June – December 2026: A six-month period of continuous testing will commence.
- Early 2027: Testing is projected to conclude by the end of 2026, and a report of technology evaluation will be synthesized.

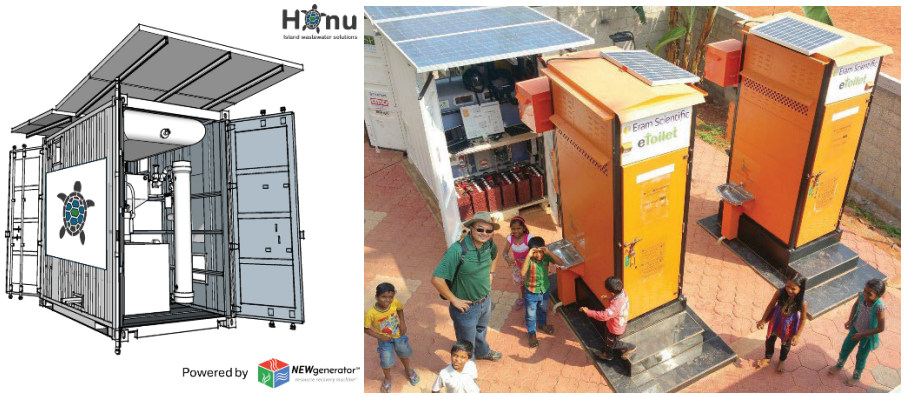

Figure 1. The schematic diagram of Honu Hub (left) and the installation of such technology in South Africa (right).

Evaluation Methodology

The system will be evaluated in accordance with the protocols of NSF/ANSI 40 (Residential Wastewater Treatment Systems) and NSF/ANSI 245 (Wastewater Treatment Systems - Nitrogen Reduction). Water samples will be collected onsite, transported to WRRC, and analyzed in the Environmental Engineering Laboratory. To ensure the system meets the stringent requirements for onsite residential wastewater treatment and nitrogen reduction, the following detailed water quality parameters will be tested via 24-hour composite sampling and grab samples:

- NSF/ANSI 40 Parameters (General Treatment)
    - Carbonaceous Biochemical Oxygen Demand (CBOD5): Measures the amount of dissolved oxygen needed by biological organisms to break down organic material.
    - Total Suspended Solids (TSS): Measures the mass of solids floating in the water.
    - In situ measurements: pH, Temperature, Dissolved Oxygen.
    - Aesthetic Parameters: Color, Odor, Oily Film, and Foam.
- NSF/ANSI 245 Parameters (Nitrogen Reduction)
    - Total Kjeldahl Nitrogen (TKN): The sum of organic nitrogen, ammonia (NH_3), and ammonium (NH_4^+).
    - Total Nitrogen (TN): The sum of TKN, nitrite, and nitrate.
    - Nitrite (NO_2^-) and Nitrate (NO_3^-): Oxidized forms of nitrogen.
    - Alkalinity: Measures the water’s capacity to resist acidification.

Closing

The WRRC will continue implementing the testing protocols, coordinating with agency partners, and advancing the evaluation of emerging wastewater treatment technologies throughout the coming year. A second interim report will be submitted to the Legislature prior to the 2027 legislative session, providing updated testing results, analysis of system performance, and a summary of program progress as the pilot moves into its next phase.