Turn the Tide: Solving Hawaii's Wastewater Workforce Shortage

Work-4-Water

Gabby Saba Zimmer
Director of Workforce Development

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Presented at NOWRA 2025 Mega-Conference, October 19-22, 2025.

GABBY SABA

gabby@waicleanwater.org

Director of Workforce Development, Wastewater Alternatives & Innovations (WAI)

BA, MT University of Virginia
O‘ahu, Hawai‘i

Agenda

Presentation

1) Hawai‘i Cesspool Crisis

2) Hawai‘i Workforce Crisis

3) Work-4-Water DOL Certificate Training Program

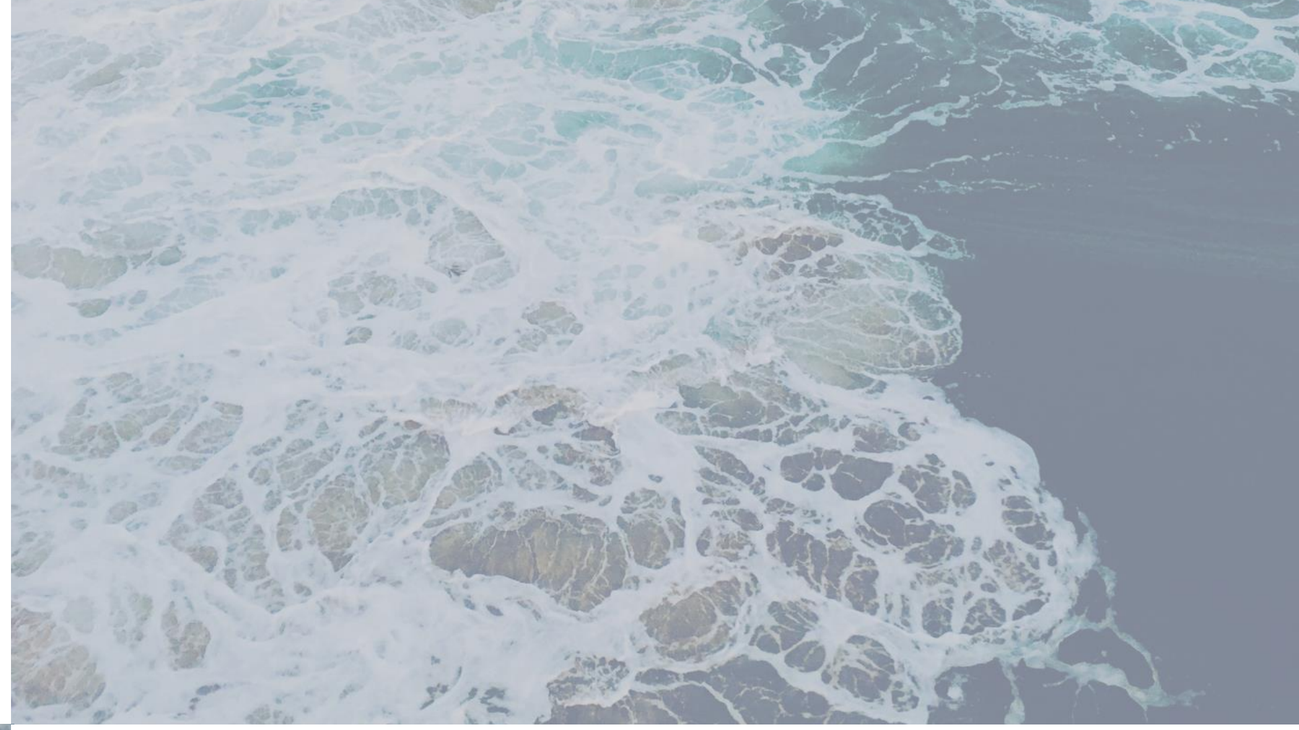
4) EPA Work Based Learning Expansion Program

Q&A Session

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

WAI's Mission

Protect water quality by providing affordable, eco-friendly solutions to wastewater management

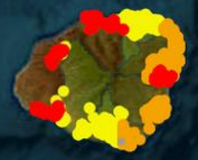


WAI's Vision

WAI helps Hawaiʻi homeowners and communities to upgrade cesspools to better systems

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

83,000+ CESSPOOL PROBLEM



Kauaʻi

14,301

Oʻahu

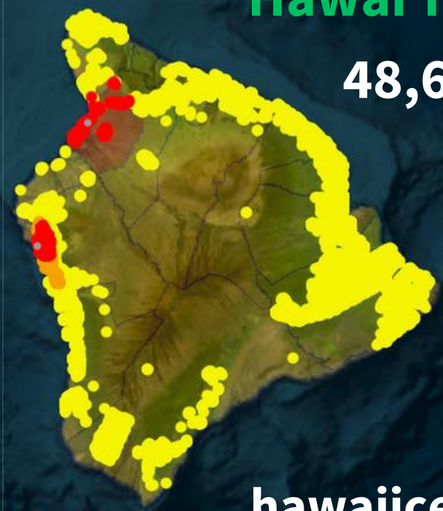
8,135

Molokaʻi

1,239

Maui

11,105



Hawaiʻi Island

48,600

Priority 1 = 13,821 cesspools

Priority 2 = 12,367 cesspools

Priority 3 = 55,237 cesspools

hawaiicesspooltool.org

Gove et al. 2023 Nature

Increasing land-based sources of pollution and decreasing herbivore fish populations are two of the biggest stressors on the survival of Hawai‘i’s reefs

Gove, J.M., Williams, G.J., Lecky, J. et al. Coral reefs benefit from reduced land–sea impacts under ocean warming. Nature 621, 536–542 (2023). https://doi.org/10.1038/s41586-023-06394-w

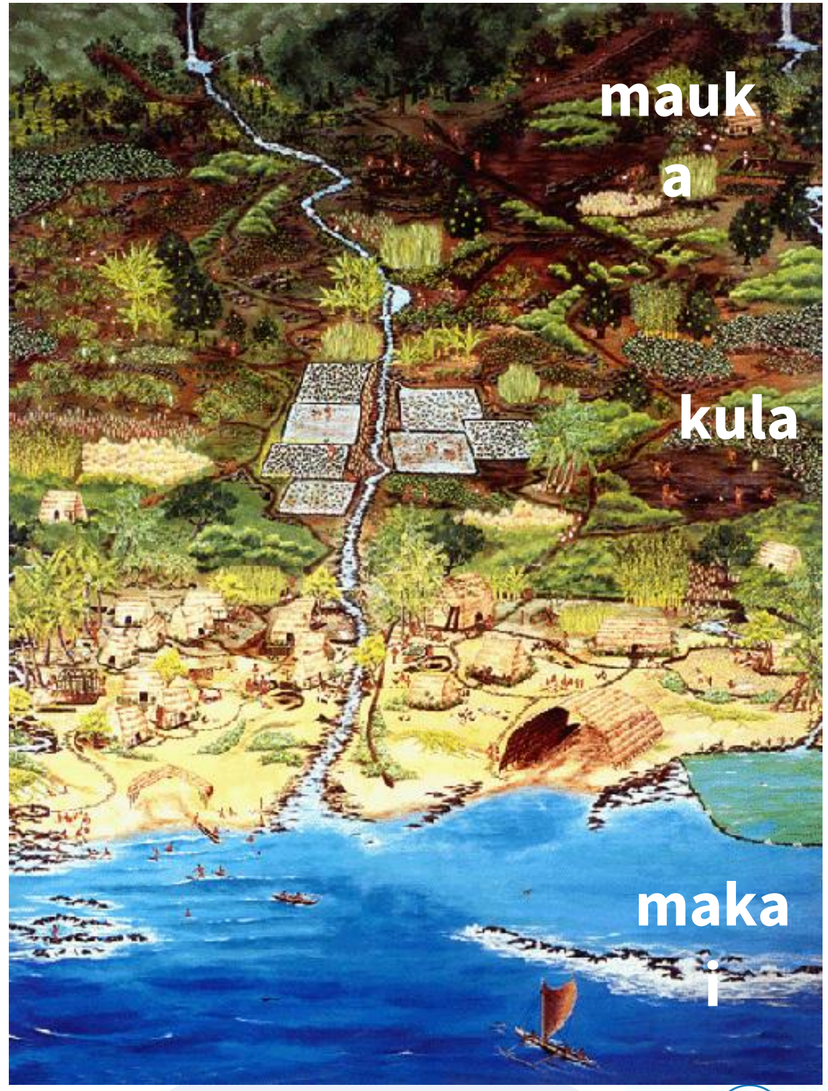
Photograph: Dr. Greg Asner, Hawai‘i Marine Education and Research Center & Arizona State University

Ahupua'a

- **Interdependence mauka to makai**
  - water quality & wastewater management

- **Modern water & wastewater management can learn from ‘Ike Kūpuna:**
  - Integrated watershed management
  - Community stewardship
  - Sustainable pono practices

- **‘Āina based education**
  - Ground haumāna in cultural values
  - Engage next generation of watershed stewards in Good Jobs

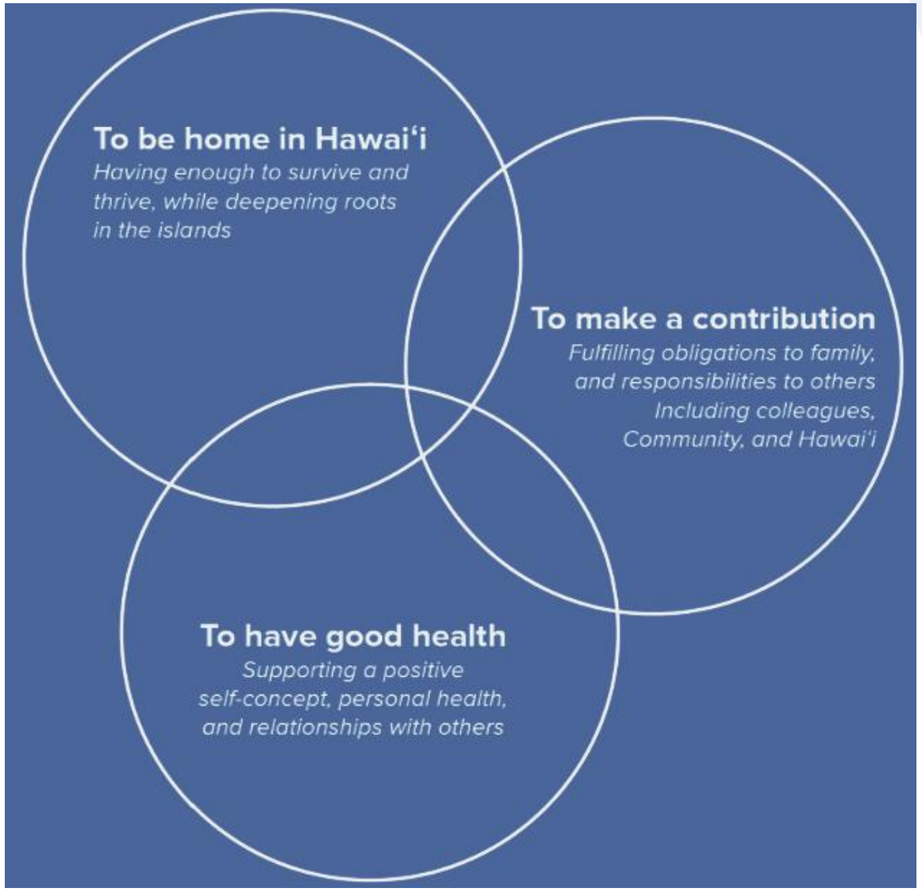


Hawai‘i Workforce Crisis

Hawai‘i Workforce Funders Collaborative

- ~30% of 170,000 youth entering HI workforce over next decade, face lack of opportunities to build a sustainable future here
- Local workers value “Good Job” more than wages
- Factors like ability to help a worker fulfill family obligations, community impact, environmental sustainability and physical and mental health play a crucial role in how jobs are perceived

A Good Job in Hawai‘i



From Crisis to Opportunity: Building Hawai‘i's Workforce Resilience

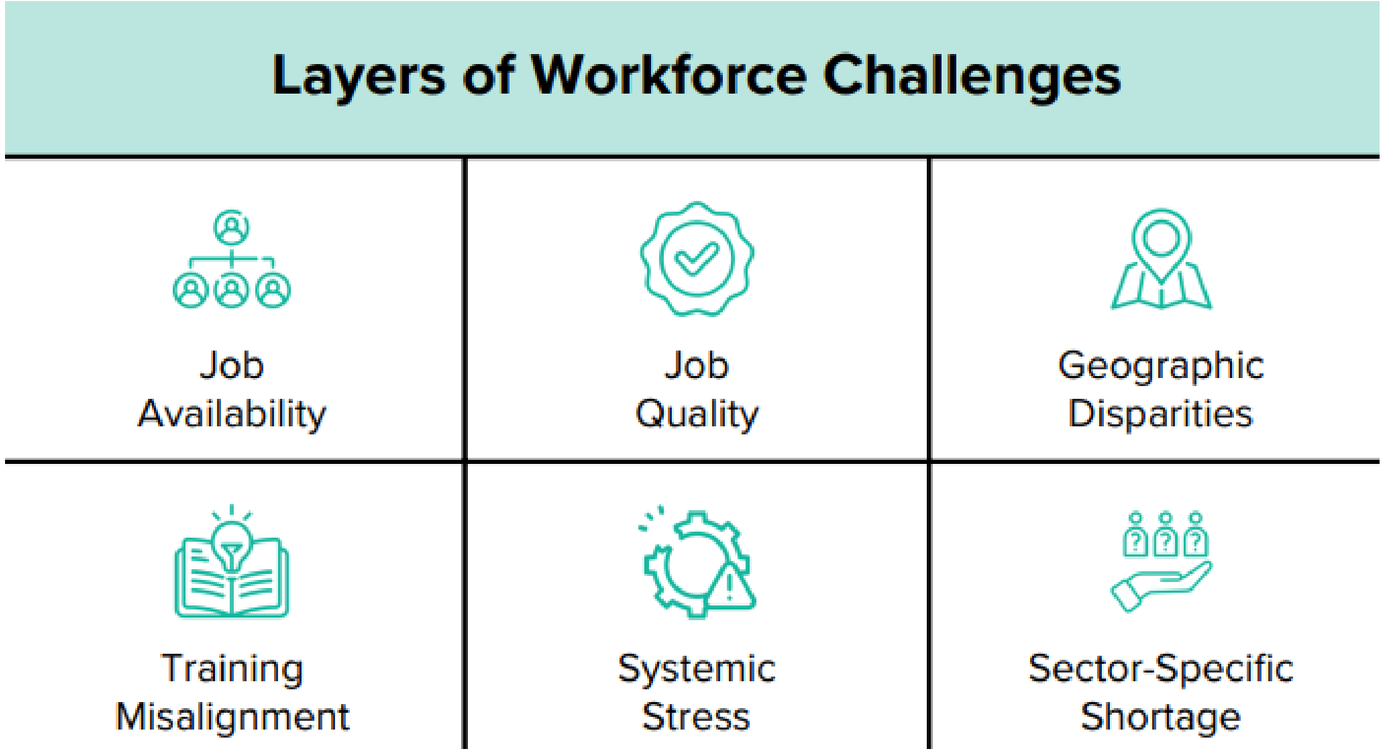
WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Hawai‘i Workforce Crisis

Hawai‘i Workforce Funders Collaborative

“Hawai‘i’s workforce challenges are interconnected layers that collectively contribute to the complexity of this crisis, with each issue influencing and amplifying the others.” - HWFC Report Webinar

From Crisis to Opportunity: Building Hawai‘i's Workforce Resilience Report



WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Training Misalignment

Photograph: Dr. Greg Asner, Hawai‘i Marine Education and Research Center & Arizona State University

THE COST & WORKFORCE IMPACT OF CESSPOOL CONVERSIONS

- 📜 Act 125 Mandates 83,000+ Conversions Completed By 2050
- 💵 Conversion Costs $30,000-$50,000 Per Home
- 💰 Estimated Total Cost ~$3-4 Billion
- ⚠️ Long term O&M, Regulation & Inspection Of Systems = 📈 Workforce Capacity

Water Sector Silver Tsunami

High demand, low supply across US & Hawai‘i

Rapidly losing experts who have operated & maintained systems for decades

⅓ of US water sector’s current workforce eligible for retirement in the next 10 years (EPA, 2024)

30%-50% of water industry positions will be left vacant in the next 10 years (EPA, 2024)

Waste Water Treatment Plant operators with Certificates in Hawai‘i decreased by 49% from 2012 to 2024 (HDOH, 2024)

Sector-Specific Shortage

Training Misalignment

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Water Sector Vacancies in Hawai‘i Govt. Agencies

****** Note: this an incomplete snapshot in time that is in the process of being updated ******

Agency	Total Positions	Vacancies	Key Challenges
Honolulu Board of Water Supply	~500 positions;	~ 20-30% vacancy	High vacancy rate
City & County of Honolulu Stormwater	~35 positions	7 vacancies	Workforce shortages
City & County of Honolulu Environmental Services	~750 wastewater-related positions	~30% vacancy (50+ engineering vacancies, 60 wastewater operator vacancies)	High demand competition for wastewater professionals
Maui Department of Water Supply	~200 positions; Chronic shortages in engineering; vacancies across the board	N/A	Engineering vacancies, staffing gaps across the board
Hawai‘i County Department of Water Supply	N/A	~70% vacancy for civil engineers	Critical engineering shortages
DLNR - Division of Aquatic Resources	~70 positions	~ 30% vacancy	
Department of Health	N/A	Clean Water Branch: 4 vacancies Safe Drinking Water Branch: 13 vacancies Wastewater Branch: 10 vacancies	Key regulatory roles unfilled & growing department
DLNR - Water Resource Management	25 (expanding to 35)	13 vacancies	Growing Dept
Department of Hawaiian Homelands	5 water system operators, Ideally needs to double staff	vacancies unknown	

Sector-Specific Shortage

Source: DRAFT: Supporting thriving water futures through education and career pathways: perspectives from the Hawai‘i water sector

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Water Sector Workforce Needs

Sector-Specific Shortage

Address Water Sector Shortage

- High vacancy rates in water supply, engineering, and operations
- Some positions remain unfilled for years
- Engineering roles among the most difficult to fill

Training Misalignment

⚠ Workforce Development & Training Access ⚠

- Growing demand for wastewater operators & engineers
- Expanding workforce and aging initiatives are only going to exasperate current workforce demands

Career paths in the water sector are diverse:

Job Availability

- Drinking water utility
- Wastewater management
- Water Resource Planners
- Water System Operators
- Engineers
- Ecologists
- Chemists
- HR Professionals

Source: City & County of Honolulu Department of Environmental Services

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Work-4-Water

PICHTR

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

1. Enhance public awareness
2. Increase wastewater participation
3. Improve wastewater knowledge
4. Strengthen wastewater career pathways

DOL Pilot Program

Focus on Maui and Hawai‘i Counties

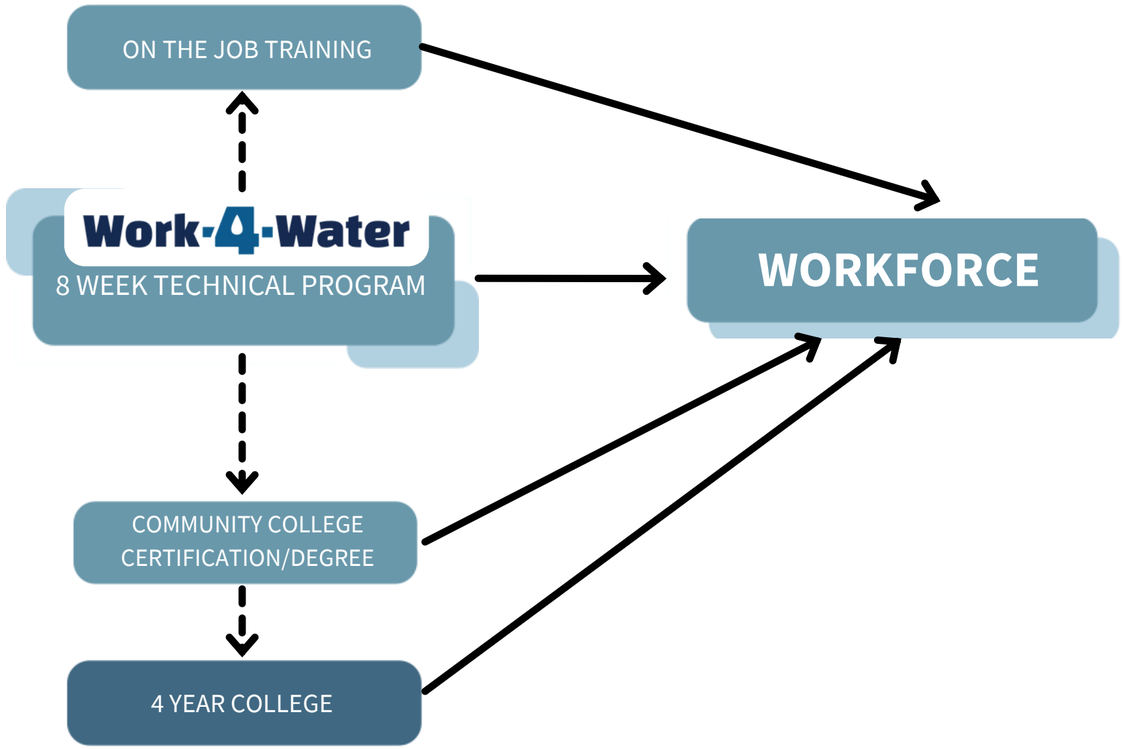
EPA Expansion

Expands program to state and includes On-the-Job Training

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement 84195601 to WAI. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

DOL Pilot Overview



- February 2023 - January 2025
- Maui, Molokaʻi, Hawaiʻi Island
- 97 total graduates
- Introduction to Hawaiʻi Wastewater Field
- Decentralized Wastewater Specialist Certificate
- Career Services
- $500 stipend
- x6 Networking Career Expo Events at University of Maui College & Hawaiʻi Community College

Geographic Disparities

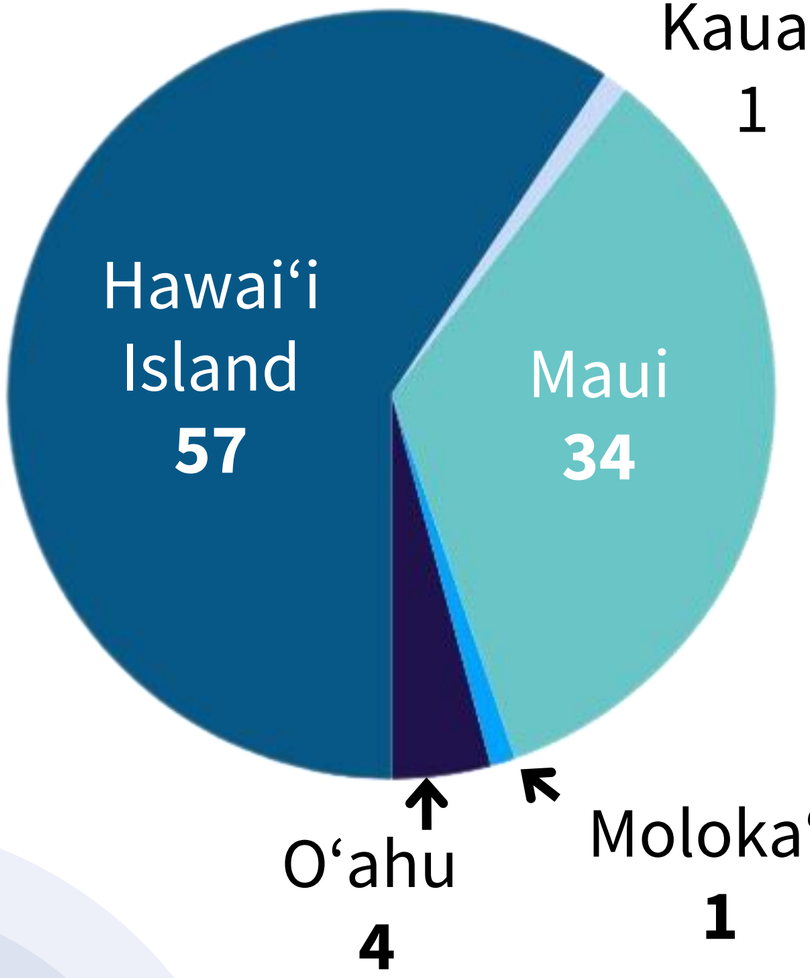
Sector-Specific Shortage

Training Misalignment

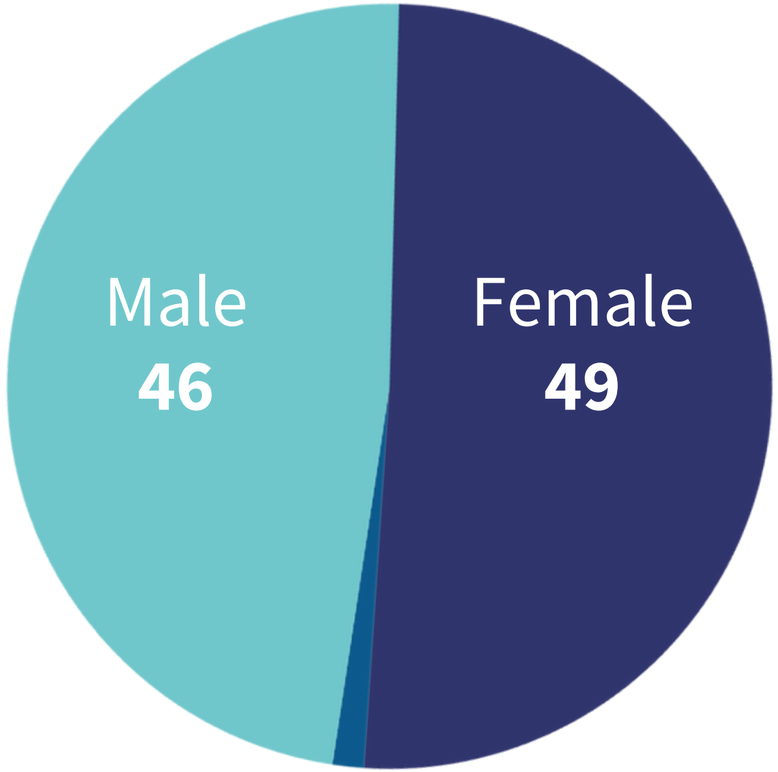
WAI WASTEWATER ALTERNATIVES & INNOVATIONS

DOL Pilot Demographics

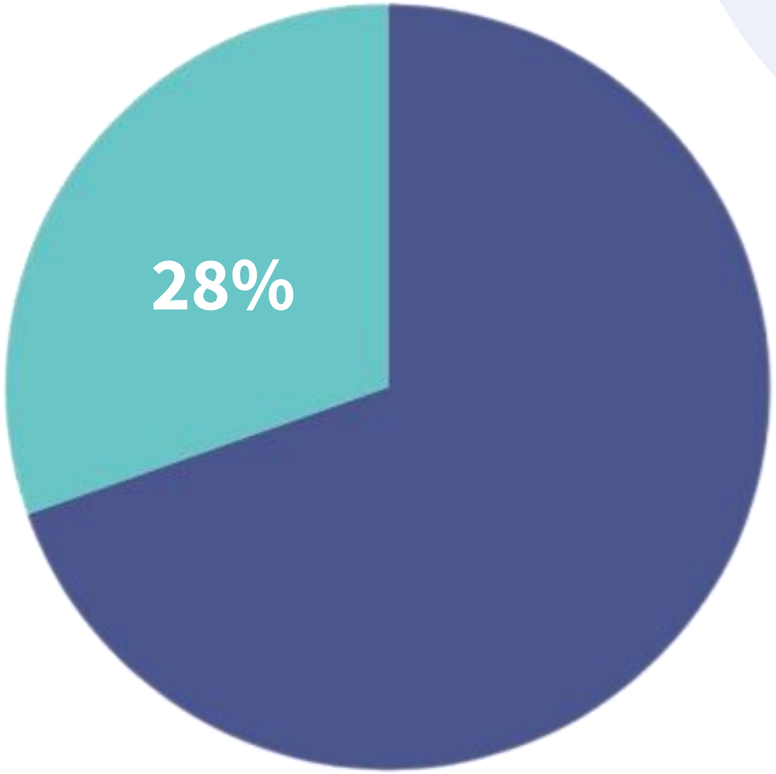
Location



Gender



Native Hawaiian or Pacific Islander



Community Engagement & Outreach

engaged over 4,700 community members

Career Fairs

8 Town Halls

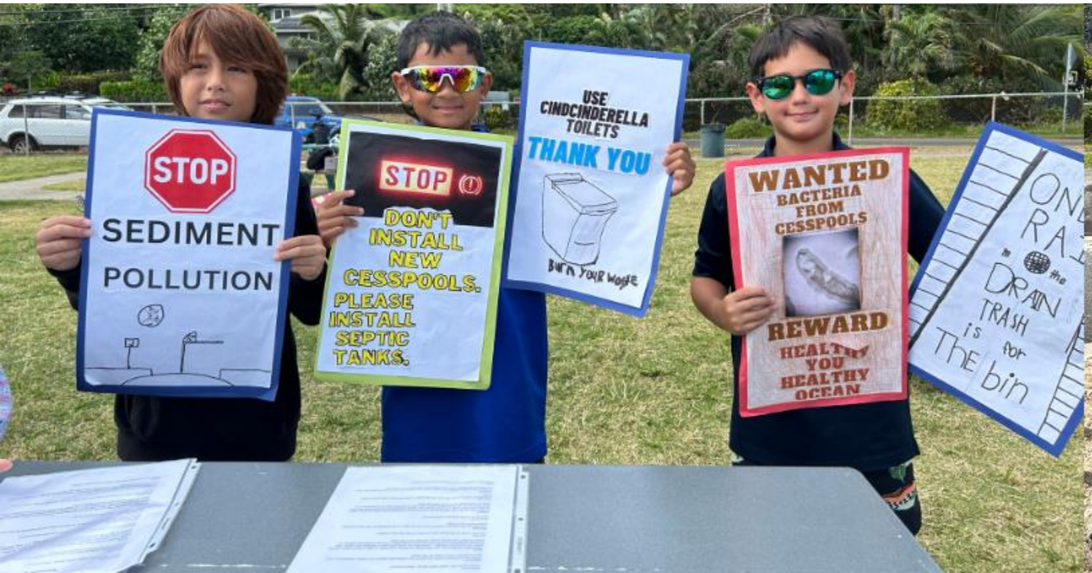
Partner Events

Geographic Disparities

Sector-Specific Shortage

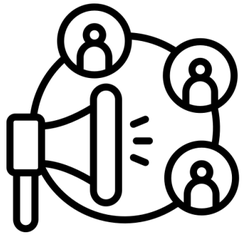
ʻĀINA BASED EDUCATION

Ola I Ka Wai with Kamehameha Schools



EPA Expansion Overview

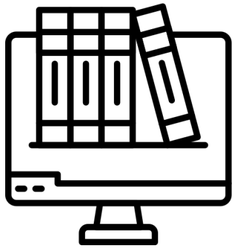
Goals



Increase Public Awareness

Expand Across All Islands

Work Based Learning



Online Resource Library

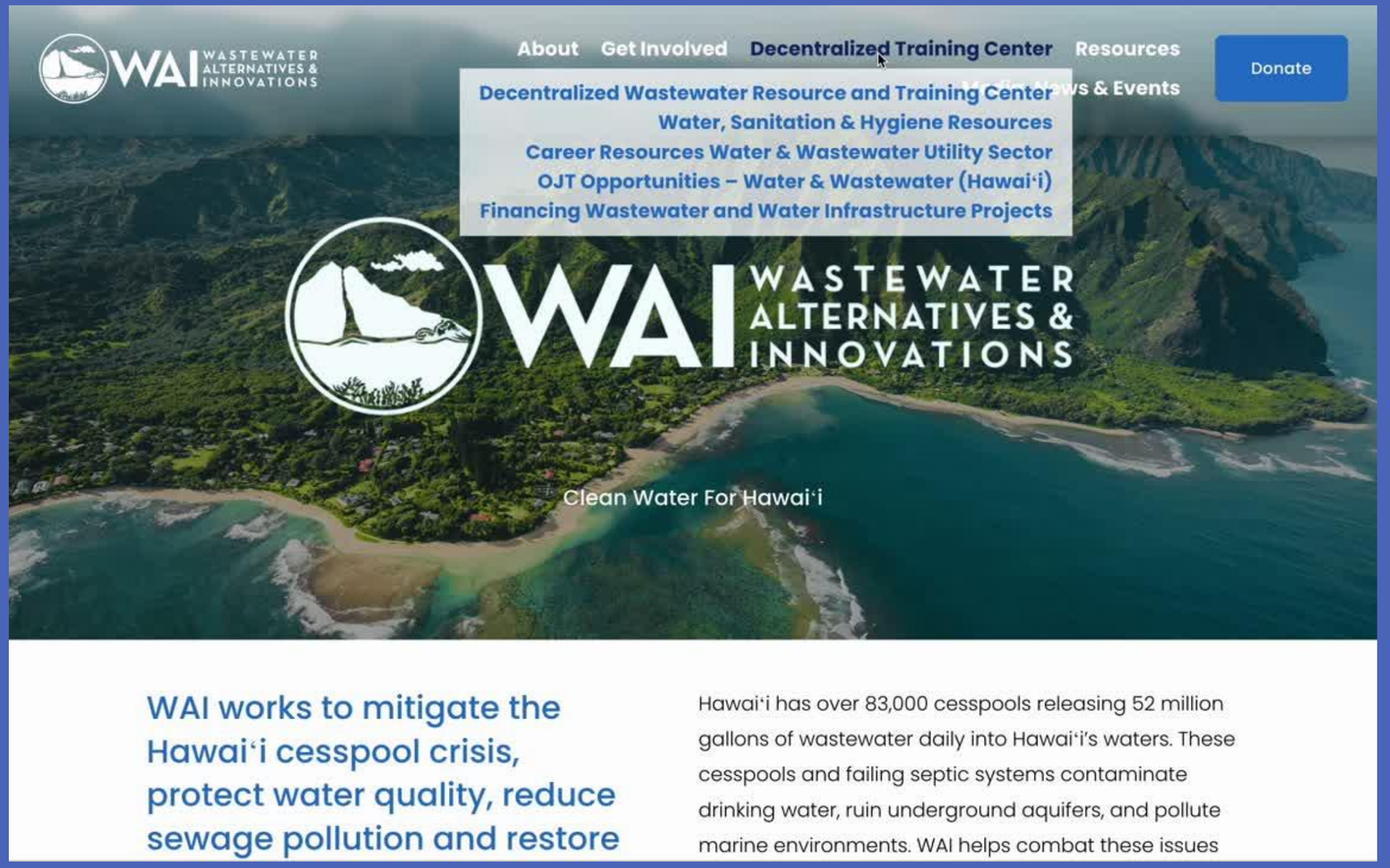
- September 2024 to August 2027
- State Wide
- Goal of 140 graduates and 21 OJT Placements
  - So far: 32 graduates and 4 OJT Placements
- Introduction to Hawai‘i **Water** and Wastewater Field
- Weekly Talk-Story Sessions
- Decentralized Wastewater Specialist Certificate
- On-the-Job Training
- $250 stipend

Geographic Disparities

Sector-Specific Shortage

Training Misalignment

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

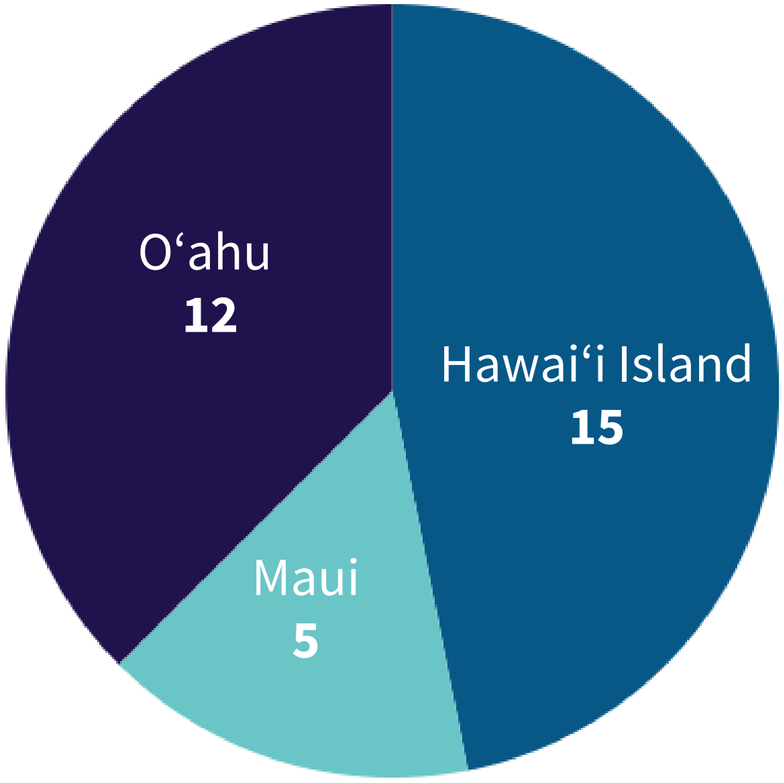


https://www.waicleanwater.org/dwrtc

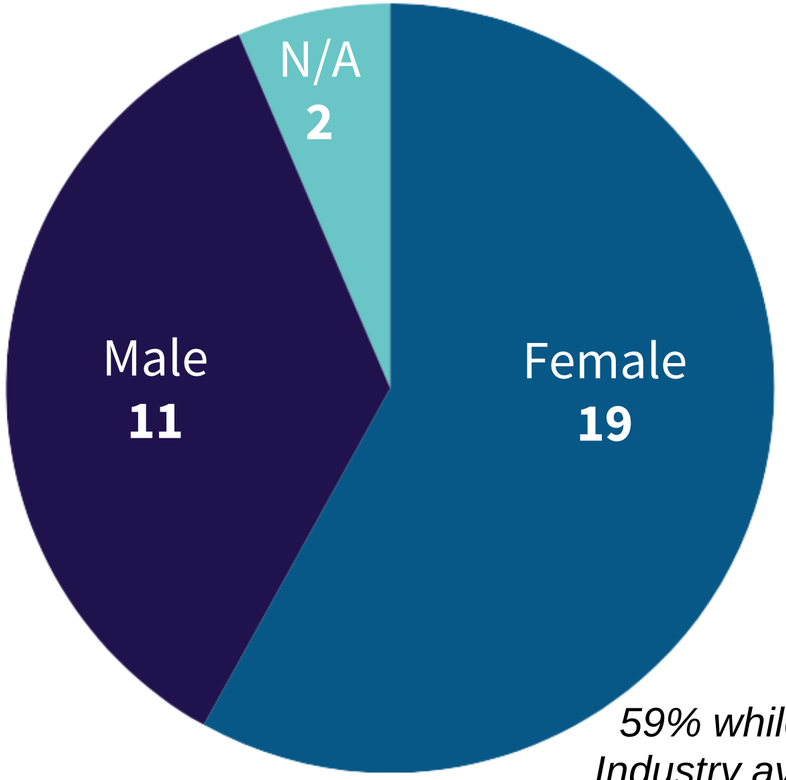
WAI WASTEWATER ALTERNATIVES & INNOVATIONS

EPA Expansion Demographics

Location

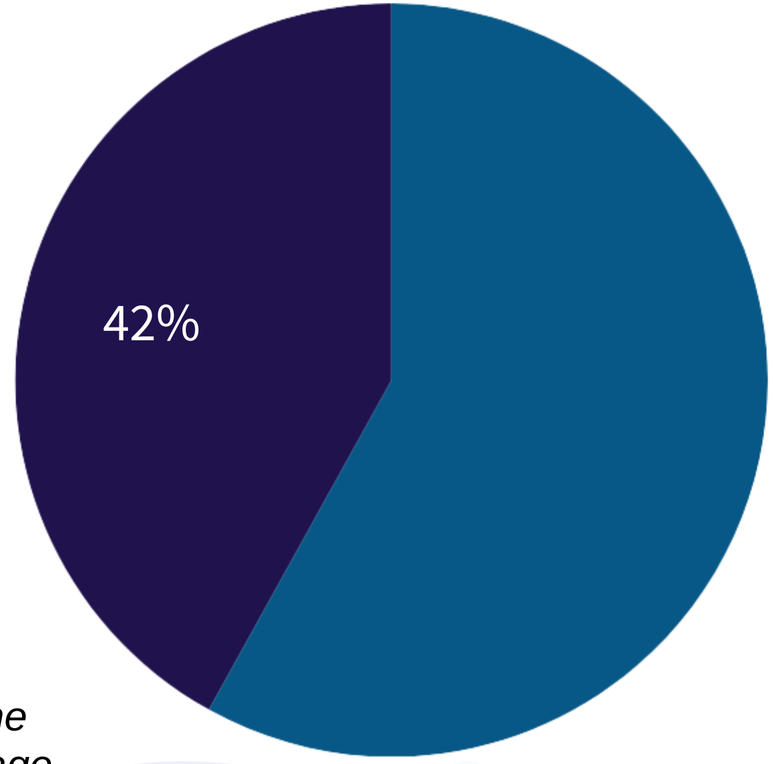


Gender



59% while the Industry average is only 17.5%!

Native Hawaiian or Pacific Islander



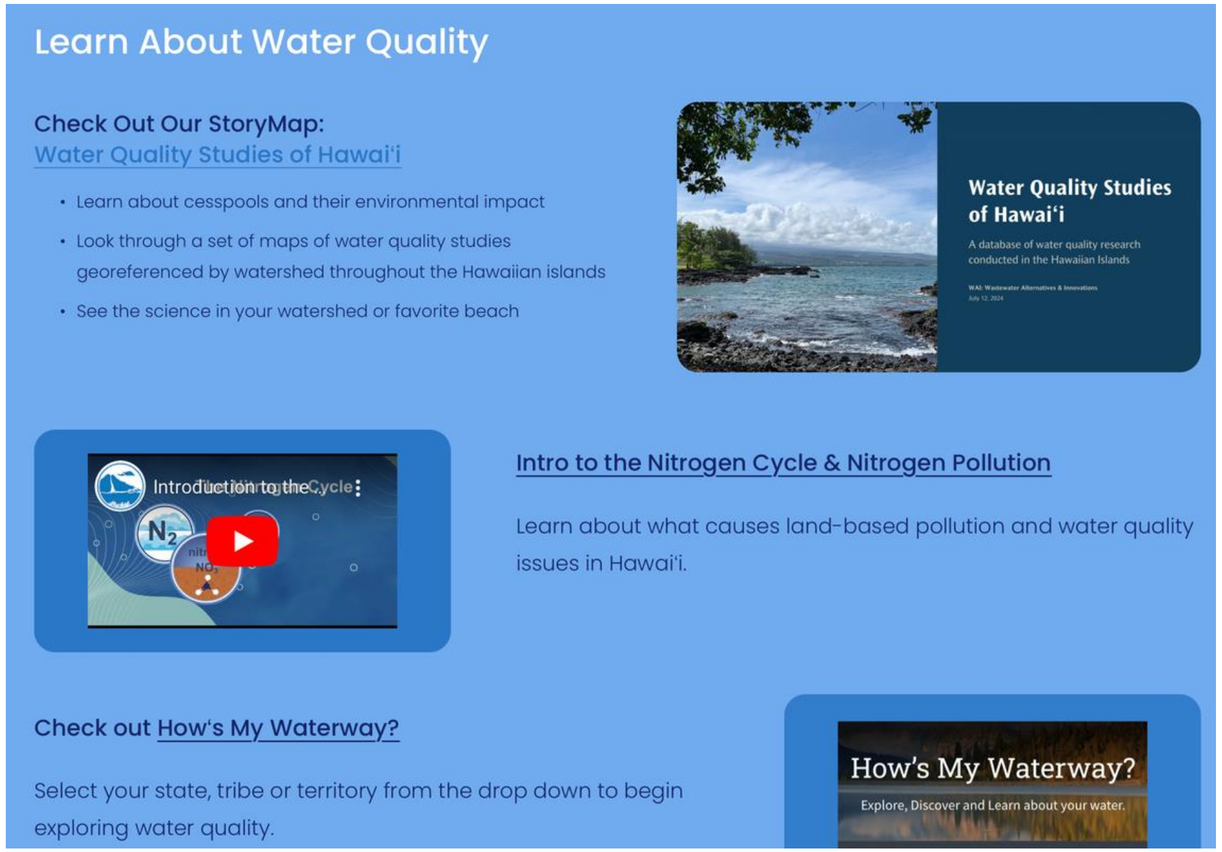
WAI WASTEWATER ALTERNATIVES & INNOVATIONS

EPA Expansion Outcomes

- 100% of participants reported an increase in knowledge and would recommend the course.
- The course components were highly rated, with 96% or more satisfaction across the curriculum, online materials, and guidance.
- 92% feel prepared for a career in wastewater management.
- 74% are now actively seeking jobs in the wastewater field.
- 92% are interested in further education
- "Talk Story" sessions were a popular feature, with all attendees reporting satisfaction.

Relevant & Applicable Curriculum

- Culturally responsive
- Hawai‘i specific Challenges
- Customized materials
- Local water quality data
- Access to local resources
- Rural community needs
- Decentralized wastewater focus



Geographic Disparities

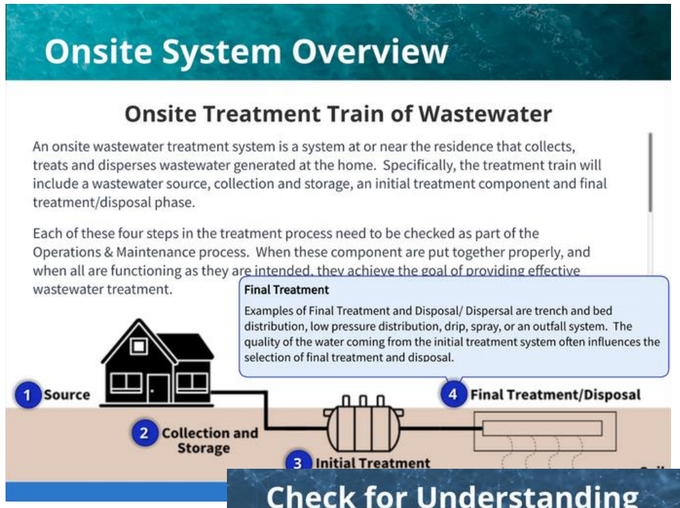
Training Misalignment

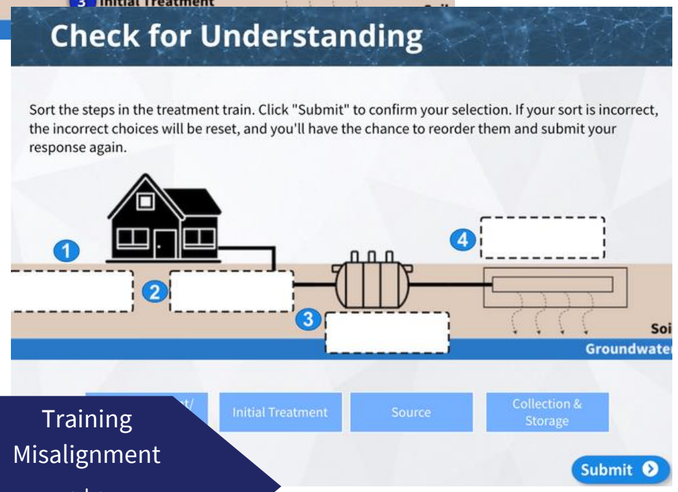
www.waicleanwater.org

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Innovative Learning

Self-paced Webinars





Geographic Disparities

Training Misalignment

Weekly Zoom Class

Case Study #2

Site Conditions Description: The installation location is on a site where there is a groundwater table of 4 feet. The percolation rate is 99 min/in and the ground slope is 7%. The site is 75 feet from coastal waters. * 1 point

Site Conditions for Different Onsite Disposal Technologies

Technology	Technology Status	Proximity to Groundwater	Soil Perc Rate	Maximum Ground Slope	Proximity to Coastal Waters
Absorption Bed	Approved	> 3 feet	< 60 min/in	<12 %	> 50 ft away
Absorption Trench	Approved	> 3 feet	< 60 min/in	8 % < slope < 12 %	> 50 ft away
Seepage Pit	Approved	> 3 feet	< 60 min/in	≥ 12 % and absorption system not feasible	> 50 ft away
Evapotranspiration	Approval Required	< or ≥ 3 feet	> 60 min/in	< 12 %	> 50 ft away
Constructed Wetland	Approval Required	> 3 feet	> 60 min/in	< 12 %	> 50 ft away
Drip Irrigation	Approval Required	> 3 feet	> 60 min/in	Bed if < 8 % Trench if 8 % < slope < 12 %	> 50 ft away

- [ ] Absorption Bed
- [ ] Absorption Trench
- [ ] Seepage Pit
- [ ] Evapotranspiration
- [ ] Constructed Wetland
- [ ] Drip Irrigation (Bed)
- [ ] Drip Irrigation (Trench)

Industry Expert Lectures

Senior Planner County of Hawaii
Specializing in Special Management Area

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Customizing Career Pathways

- Career Services
- Resume development
- Custom career pathways
- Occupational profiles
- Connection with On-the-Job Opportunities
- Resources
- $250 Stipend

Training Misalignment

Job Availability

Job Quality

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

“My Takeaway: Wastewater is a huge industry in Hawai‘i with lots of different ways to plug in. There are many business and career opportunities associated with cesspool conversion.”

W4W STUDENT TESTIMONY

“Good Jobs” in Water Sector

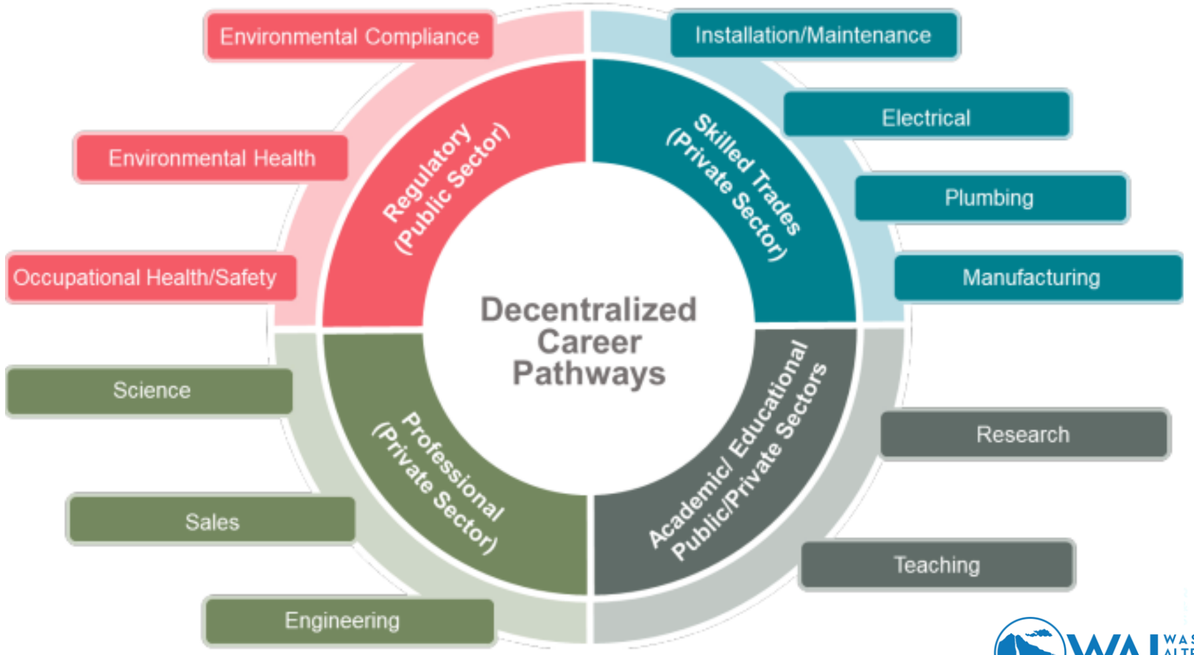
Pipeline to a Sustainable Workforce:

A Report on Decentralized/
Onsite Wastewater Occupations

EPA Office of Wastewater Management
February 2021

EPA

Figure 2: Decentralized Wastewater Career Pathways and Associated Job Clusters



WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Success Stories & Career Services

Kahina and Swope, Sweet ʻŌkole Cesspool and Septic Pumping LLC. (Cohort 2 Grad)

Lahaina survivors taking course to support career change

Hawaiian Trades Academy

Sal Pumping needing CDL drivers and collaborating with Hawaiian Trades Academy

Operators like Shawn getting a PWC scholarship helping pass Operator exam

HWEA

W4W Grad John found his career path in wastewater through our program, which gave him the foundation to make a successful transition.

CDF engineering hiring Arianna to help with Lahaina rebuild

cdf

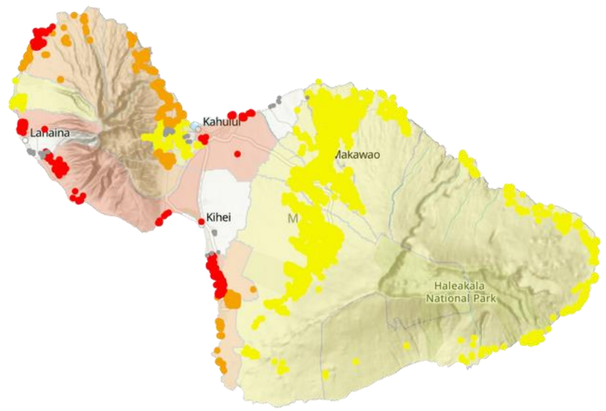
Lyn Warne

Lyn Warne hosting community workshops for Puna community sharing WAI resources - especially financial resources

Entrepreneurs like Jacob who used the program as an alternative to getting a contractor license and to launch his own stormwater company Backflow Solutions Maui LLC

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Success Stories:
CDF Engineering LLC

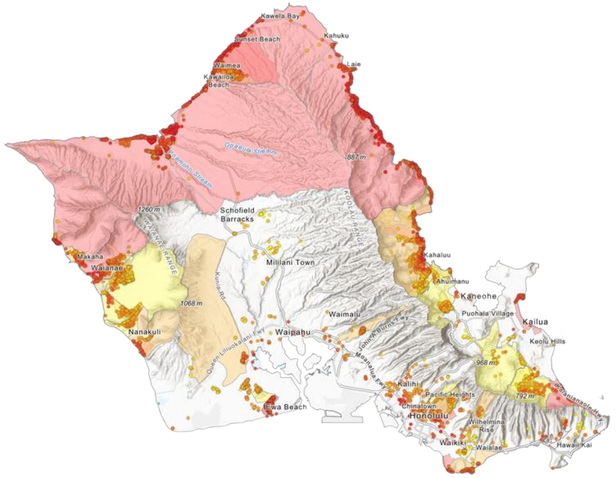


"Thanks to the Work 4 Water program, I connected with CDF Engineering at the job fair and am now working on a special project with the EPA in Lahaina to support fire victims rebuilding after the wildfires. I've already learned so much and feel more confident starting this career with the strong foundation the course gave me."

Arianna, W4W Graduate Maui Cohort

Success Stories
Codee Samala-Passos

ACSI



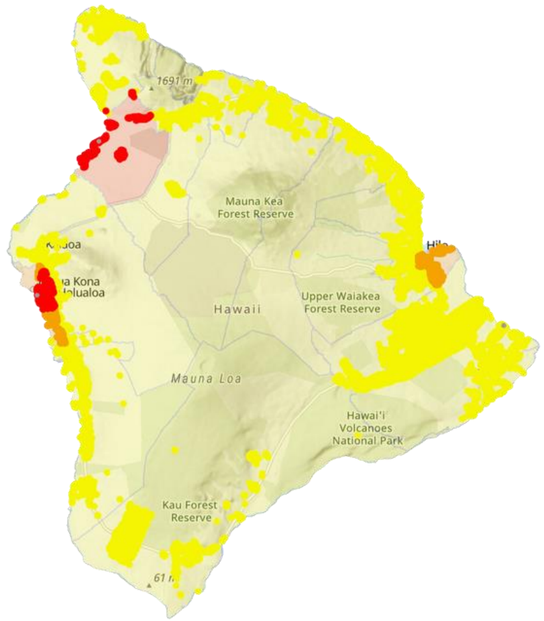
“My long-term goal is to branch off on my own. I am interested in the onsite wastewater / drinking water technologies and want to use my civil engineering license to help people in Hawaii. So thank you all at WAI for helping me! I really enjoyed the W4W program, and the training and connections you all provided were excellent.”

Codee Samala-Passos, W4W Graduate O‘ahu Cohort

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Success Stories
Leni Adams, Project Engineer

HAWAII ENGINEERING SERVICES



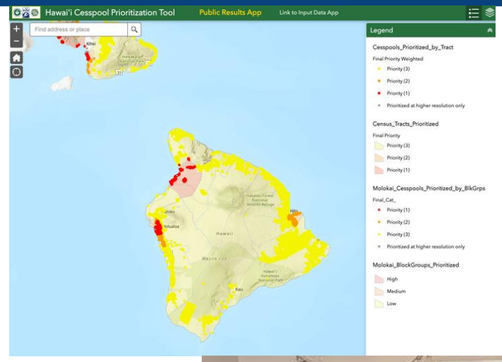
"Going through the Work-4-Water program, with such an adaptable and accessible learning environment and a student community that's as equally (or more) as curious and passionate about wastewater and water as I, I definitely feel more proactive and even comfortable to take part in learning and participating in my field."

Leni Adams, W4W Graduate Hawai'i Island Cohort

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

K-12 Outreach Lessons

Gabby at Kamehameha School 5th Grade Class



Courtney at Volcano Arts and Sciences 9th Grade Class

Mālama i Ke Kai

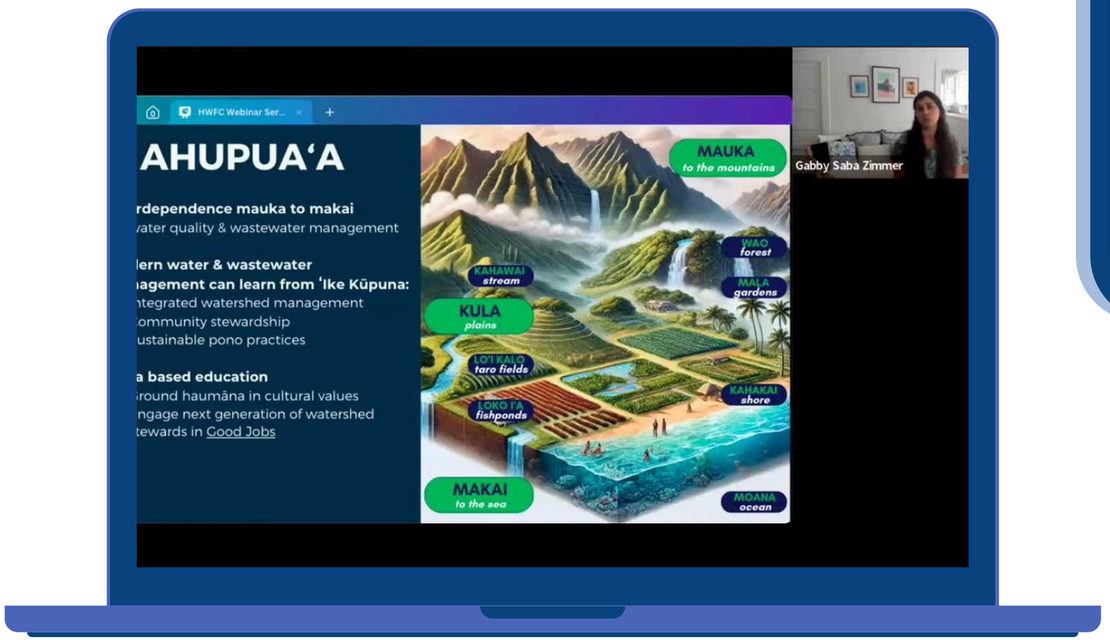
caring for the ocean

A lesson, designed for K–8 students, explores Hawai'i's wastewater challenges, the risks of pollution, and how to use the Cesspool Prioritization Tool to identify cesspools across the islands.

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Hawai‘i Workforce Funders Collaborative Webinar

Hawai‘i Workforce Funders Collaborative



“Turn the Tide: Solving Hawai‘i’s Wastewater Workforce Shortage

“We were honored to hear from Gabby, Stuart, and their team as they shared valuable insights into the challenges facing Hawai‘i’s evolving wastewater sector—and the promising opportunities ahead. It’s clear that through cross-sector collaboration and strengthening partnerships, we can find innovative, community-driven solutions to strengthen and grow this vital workforce.”

LorMona Meredith, Director of Community Programs, Hawai'i Workforce Funders Collaborative

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Call to Action

Collaborate on Work Based Learning

Collective action & investment towards building a robust and sustainable wastewater workforce ecosystem in Hawai‘i.

waicleanwater.org/partner-with-w4w

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

WAICLEANWATER.ORG/WORK4WATER

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Work-4-Water

gabby@waicleanwater.org

@waicleanwater

Work-4-Water

Skills and Knowledge

For employment or further education

Network

Opportunity to network and connect with potential employers

Credentials

Graduates receive a wastewater specialist certificate

Stipend

$250 stipend for successful course completion

Impact

Positive community impact through protecting Hawai‘i's natural resources

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Work-4-Water

- **Building Tomorrow's Workforce**: We connect program graduates with hands-on, on-the-job training (OJT) opportunities in the water and wastewater industry.
- **Ready to Hire?** Partner with us to find motivated and skilled students for your team.
- **Make a Difference**: Help us shape the future of water professionals.
- **Contact Us**: To learn more about hiring a graduate, visit our W4W partner page.

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Work-4-Water

2026 Cohorts
now enrolling

Start Date: March 2026

Eligibility: Hawai‘i Resident

Course Duration: 8 Weeks

- Free Training
- $250 Course Completion Stipend
- Career Services Available
- Extra Scholarships Offered to Support On-The-Job Training (OJT)

Interested?
Sign Up Here

waicleanwater.org/work4water

WAI WASTEWATER ALTERNATIVES & INNOVATIONS