# PFAS Challenges for a Small Public Water System

Photo credit: https://www.eahhousing.org/apartments/kunia-village/


Photo credit: https://www.google.com/maps/place/Kunia+Camp

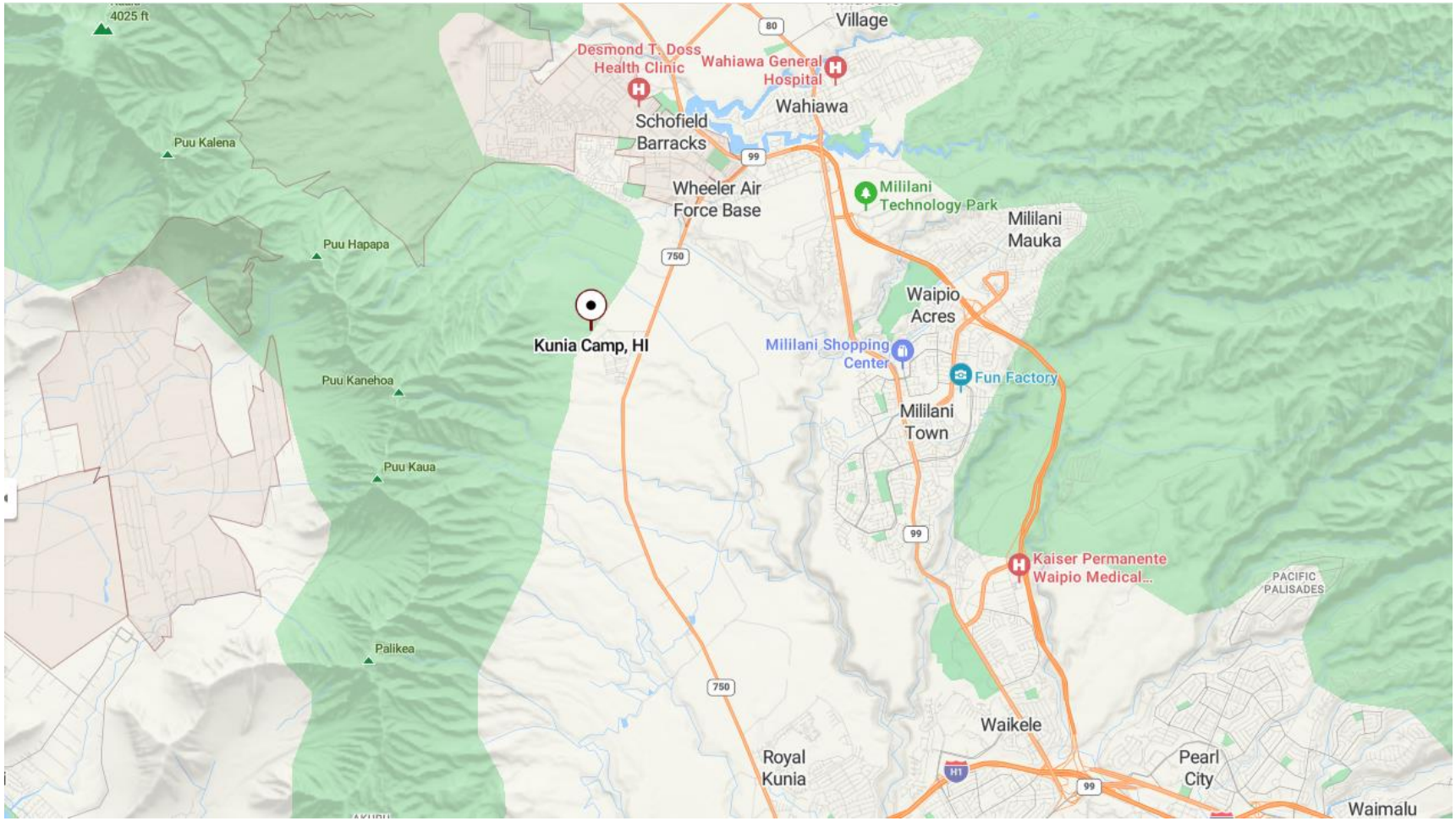



Photo credit: https://www.google.com/maps/place/Kunia+Camp


Photo credit: Ann Kam

# A Typical House in Kunia Camp

Photo credit: https://www.civilbeat.org

# Brief History of Kunia Camp


Photo credit: George Rose: https://www.gettyimages.ie/photos/del-monte-pineapple


Photo credit: https://madmenart.com/vintage-advertisement/del-monte-pineapple-1960-plantation

# Del Monte Plantation

Photo credit: https://www.projectlupad.com/world-class-del-monte-pineapple-plantation-from-above

# Pineapple Harvesting

Photo credit: https://tinypinapple.com/gallery/pineapple-harvesting

# Del Monte Workforce

Photo credit: https://tinypinapple.com/gallery/pineapple-harvesting

# Kunia Village - Then

Photo credit: https://www.pintrest.com/pin/279504720600295607//

# Kunia Village - Now

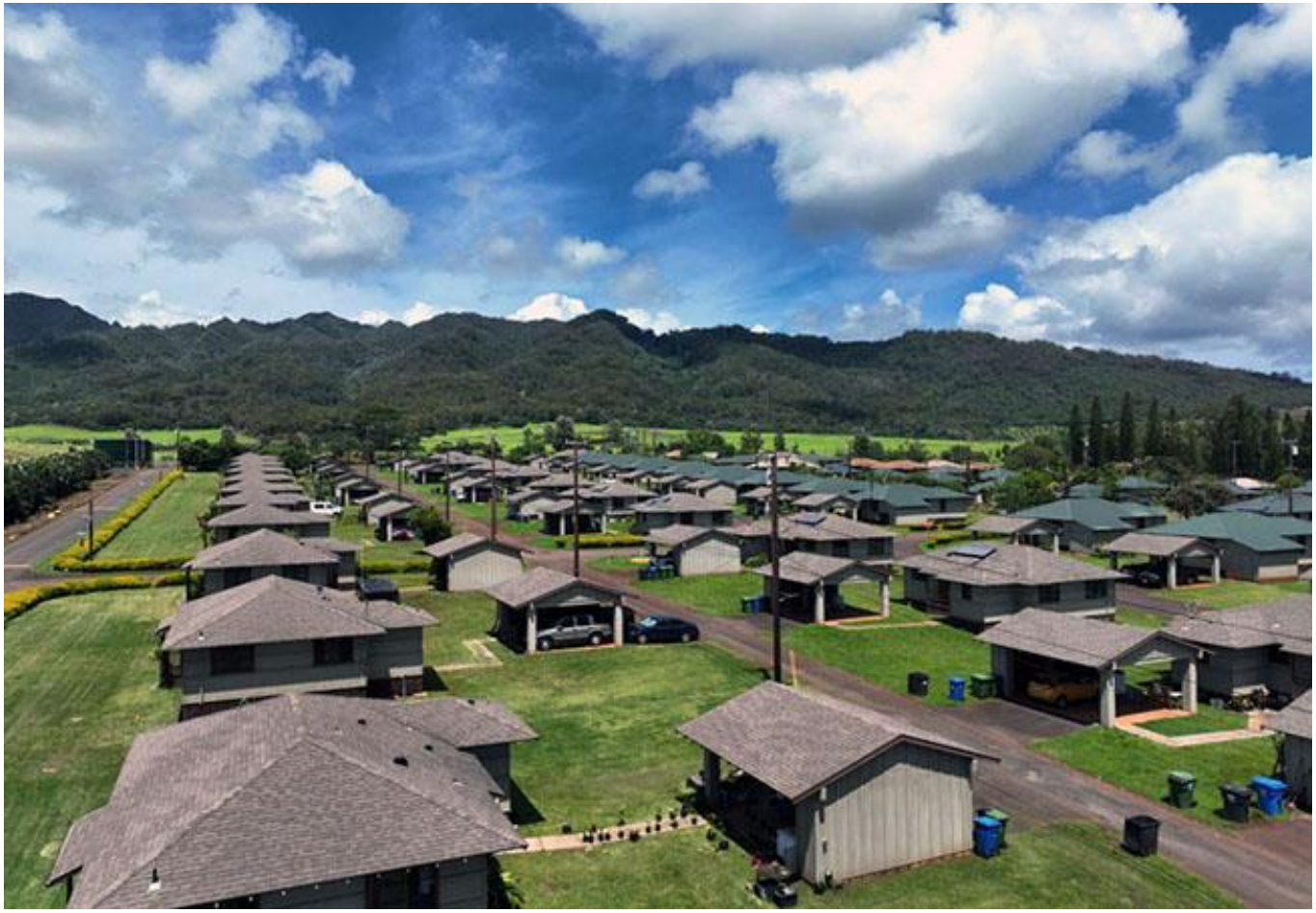


Photo credit: https://www.eahhousing.org/apartments/kunia-village/

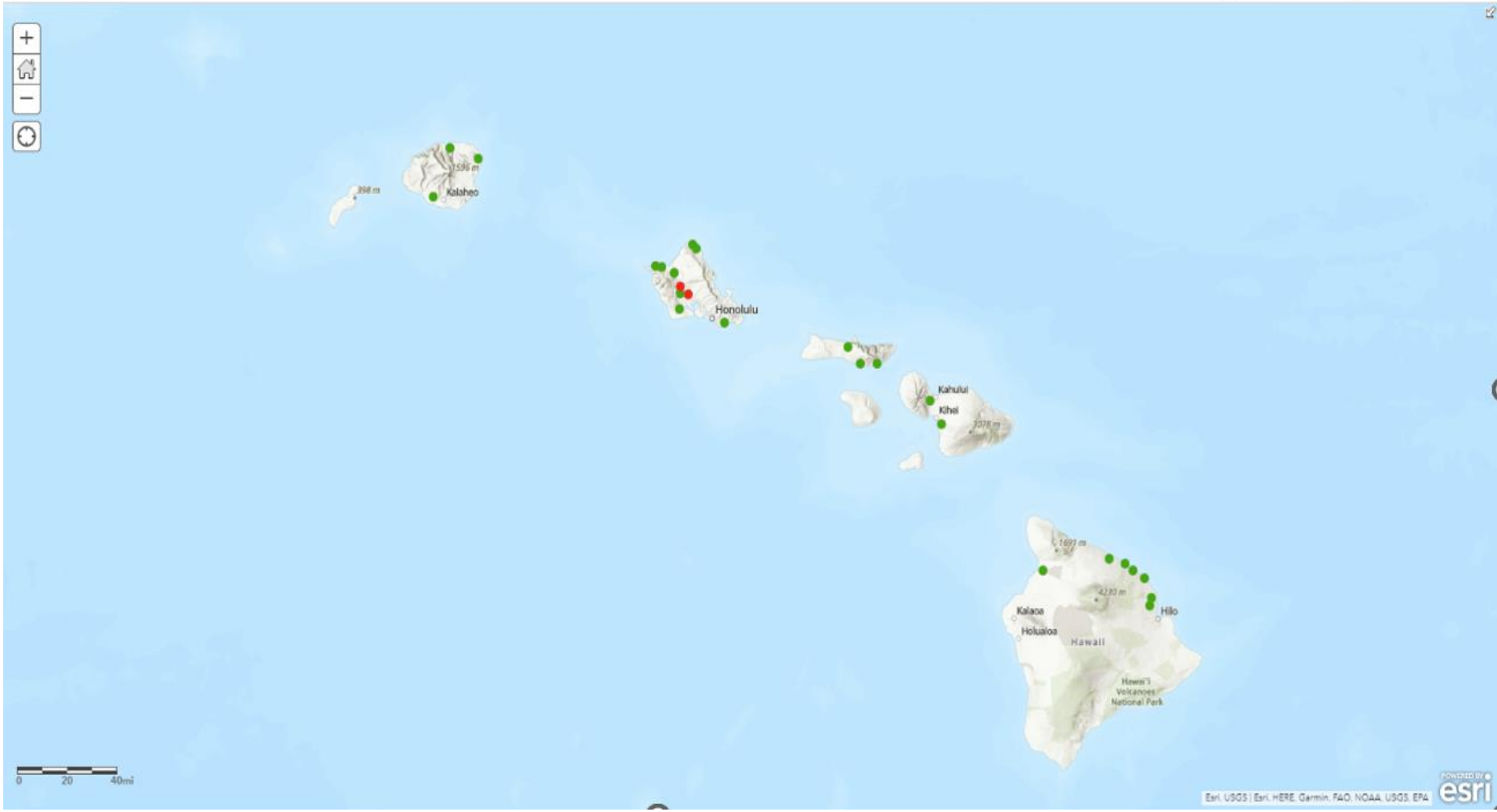
# Kunia Village

Photo credit: https://masonarch.com/kunia_village

# Various PFAS sampling Conducted by the Department of Health Safe Drinking Water Branch – Focused on Small Privately Owned water systems not included in UCMR (Unregulated Contaminant Monitoring Rule)

- **Phase I – 9/21/22 – 11/16/22 (25 sites)**
- **Phase II – 6/28/23 – 8/22/23 (35 sites)**
- **Phase III – 12/17/24 – 10/31/25 (47 sites)**

# PFAS Phase I sampling sites (25)



## EPA Analytical Methods for PFAS in Drinking Water

EPA's new validated Method 533 focuses on "short chain" per- and polyfluoroalkyl substances (PFAS) (i.e., those with carbon chain lengths of 4 to 12). Method 533 complements EPA Method 537.1 (published November 2018) and can be used to test for 11 additional PFAS. Using both methods, a total of 29 unique PFAS can be effectively measured in drinking water.

| Analyte | Abbreviation | CASRN | Method 533 | Method 537.1 |
|---|---|---|---|---|
| 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid | 11Cl-PF3OUdS | 763051-92-9 | x | x |
| 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acd | 9Cl-PF3ONS | 756426-58-1 | x | x |
| 4,8-Dioxa-3H-perfluorononanoic acid | ADONA | 919005-14-4 | x | x |
| Hexafluoropropylene oxide dimer acid | HFPO-DA | 13252-13-6 | x | x |
| Perfluorobutanesulfonic acid | PFBS | 375-73-5 | x | x |
| Perfluorodecanoic acid | PFDA | 335-76-2 | x | x |
| Perfluorododecanoic acid | PFDoA | 307-55-1 | x | x |
| Perfluoroheptanoic acid | PFHpA | 375-85-9 | x | x |
| Perfluorohexanoic acid | PFHxA | 307-24-4 | x | x |
| Perfluorohexanesulfonic acid | PFHxS | 355-46-4 | x | x |
| Perfluorononanoic acid | PFNA | 375-95-1 | x | x |
| Perfluorooctanoic acid | PFOA | 335-67-1 | x | x |
| Perfluorooctanesulfonic acid | PFOS | 1763-23-1 | x | x |
| Perfluoroundecanoic acid | PFUnA | 2058-94-8 | x | x |
| 1H,1H, 2H, 2H-Perfluorohexane sulfonic acid | 4:2FTS | 757124-72-4 | x | |
| 1H,1H, 2H, 2H-Perfluorooctane sulfonic acid | 6:2FTS | 27619-97-2 | x | |
| 1H,1H, 2H, 2H-Perfluorodecane sulfonic acid | 8:2FTS | 39108-34-4 | x | |
| Nonafluoro-3,6-dioxaheptanoic acid | NFDHA | 151772-58-6 | x | |
| Perfluorobutanoic acid | PFBA | 375-22-4 | x | |
| Perfluoro(2-ethoxyethane)sulfonic acid | PFEESA | 113507-82-7 | x | |
| Perfluoroheptanesulfonic acid | PFHpS | 375-92-8 | x | |
| Perfluoro-4-methoxybutanoic acid | PFMBA | 863090-89-5 | x | |
| Perfluoro-3-methoxypropanoic acid | PFMPA | 377-73-1 | x | |
| Perfluoropentanoic acid | PFPeA | 2706-90-3 | x | |
| Perfluoropentanesulfonic acid | PFPeS | 2706-91-4 | x | |
| N-ethyl perfluorooctanesulfonamidoacetic acid | NEtFOSAA | 2991-50-6 | | x |
| N-methyl perfluorooctanesulfonamidoacetic acid | NMeFOSAA | 2355-31-9 | | x |
| Perfluorotetradecanoic acid | PFTA | 376-06-7 | | x |
| Perfluorotridecanoic acid | PFTrDA | 72629-94-8 | | x |

Office of Water (MS-140) EPA 815-B-19-021 December 2019

# Del Monte – Kunia Well 3


Photo credit: Melvin Tokuda

# Initial sampling at Kunia Well 3


Photo credit: Melvin Tokuda


Photo credit: Melvin Tokuda

| Collection Date | Sample Identification / Site | Analyte | Result | Reporting Limit (RL) | Unit | Method | Note(s) |
|---|---|---|---|---|---|---|---|
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorobutanoic acid (PFBA) | **6.1** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluoropentanoic acid (PFPeA) | **19** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorohexanoic acid (PFHxA) | **30** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluoroheptanoic acid (PFHpA) | **9.9** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorooctanoic acid (PFOA) | **22** | 2.0 | ng/L | EPA 537.1** | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorobutanesulfonic acid (PFBS) | **8.9** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluoropentanesulfonic acid (PFPeS) | **9.0** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorohexanesulfonic acid (PFHxS) | **69** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorooctanesulfonic acid (PFOS) | **47** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) | **19** | 2.0 | ng/L | EPA 533 * | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorooctanesulfonic acid (PFOS) | **49** | 1.9 | ng/L | EPA 537.1** | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorohexanoic acid (PFHxA) | **30** | 1.9 | ng/L | EPA 537.1** | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorooctanoic acid (PFOA) | **27** | 1.9 | ng/L | EPA 537.1** | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorohexanesulfonic acid (PFHxS) | **73** | 1.9 | ng/L | EPA 537.1** | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluorobutanesulfonic acid (PFBS) | **8.7** | 1.9 | ng/L | EPA 537.1** | |
| 9-21-22 | Del Monte Kunia 3 & 4 | Perfluoroheptanoic acid (PFHpA) | **11** | 1.9 | ng/L | EPA 537.1** | |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorobutanesulfonic acid (PFBS) | **9.7** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluoroheptanoic acid (PFHpA) | **10** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorohexanesulfonic acid (PFHxS) | 70 | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorohexanoic acid (PFHxA) | **33** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Pu Kunia 3 & 4 | Perfluorooctanesulfonic acid (PFOS) | **50** | 2.0 | ng/L | EPA 533 * | Confirmation |

| Collection Date | Sample Identification / Site | Analyte | Result | Reporting Limit (RL) | Unit | Method | Note(s) |
|---|---|---|---|---|---|---|---|
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorooctanoic acid (PFOA) | **23** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorobutanoic acid (PFBA) | **6.4** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) | **18** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluoropentanoic acid (PFPeA) | **21** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluoroheptanesulfonic acid (PFHpS) | **2.7** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluoropentanesulfonic acid (PFPeS) | **10** | 2.0 | ng/L | EPA 533 * | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorobutanesulfonic acid (PFBS) | **9.3** | 2.0 | ng/L | EPA 537.1** | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluoroheptanoic acid (PFHpA) | **10** | 2.0 | ng/L | EPA 537.1** | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorohexanesulfonic acid (PFHxS) | **70** | 2.0 | ng/L | EPA 537.1** | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorohexanoic acid (PFHxA) | **35** | 2.0 | ng/L | EPA 537.1** | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorooctanesulfonic acid (PFOS) | **45** | 2.0 | ng/L | EPA 537.1** | Confirmation |
| 11-16-22 | Del Monte Kunia 3 & 4 | Perfluorooctanoic acid (PFOA) | **23** | 2.0 | ng/L | EPA 537.1** | Confirmation |

* Perfluorinated & Polyfluorinated Alkyl Substances in Drinking Water
** Perfluorinated Alkyl Acids (LC/MS)

**DEPARTMENT OF HEALTH**

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GOVERNOR
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DIRECTOR
KA LUNA HO'OKELE

**FOR IMMEDIATE RELEASE**
January 20, 2023 23-004

## PFAS detected in Kunia Village water system

HONOLULU – Low levels of chemicals known as PFAS (perfluoroalkyl and polyfluoroalkyl substances) have been detected in water samples collected at the Kunia Village water system's Del Monte Kunia 3 well.

Although long-term consumption of drinking water with PFAS could be a health risk, the low levels of PFAS in the Kunia Village water system are not an acute health threat. No immediate action is necessary for the system's 650 users. However, those concerned may use a home filtration option to reduce PFAS.

Click here for an EPA article describing technologies for reducing PFAS in drinking water. Filters should be NSF certified for removing PFAS. A list of NSF certified filters can be found here.

Levels of the PFAS chemicals perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) detected at Kunia Village are very low but are above the U.S. Environmental Protection Agency's (EPA) new, interim health advisory levels thus potentially posing a health risk over a lifetime of consumption.

In June 2022, EPA proposed new interim health advisory levels for PFOS and PFOA, at 0.00002 micrograms per liter (ug/L) and 0.000004 ug/L, respectively. These levels are much lower than the prior EPA health advisory for PFOS and PFOA, which were both at 0.070 ug/L.

The new, interim advisory levels have been set to avoid human health risks based on a lifetime of consuming water containing that level of contaminant and are undergoing further evaluation. The chemical levels confirmed at Kunia Village are listed in the table below.

| PFAS Chemical | Detected Levels (ug/L) | EPA's Lifetime Health Advisory Level (ug/L)[1] | DOH's Environmental Action Level (ug/L)[1,2] |
|---|---|---|---|
| Perfluorobutanoic acid (PFBA) | 0.0061 – 0.0064 | | 7.6 |
| Perfluoropentanoic acid (PFPeA) | 0.019 – 0.021 | | 0.8 |
| Perfluorohexanoic acid (PFHxA) | 0.030 – 0.035 | | 1.0 |
| Perfluoroheptanoic acid (PFHpA) | 0.0099 – 0.011 | | 0.04 |
| Perfluorooctanoic acid (PFOA) | 0.022 – 0.027 | 0.000004 | 0.006 |
| Perfluorobutanesulfonic acid (PFBS) | 0.0087 – 0.0097 | 2.0 | 0.60 |
| Perfluoroheptanesulfonic acid (PFHpS) | 0.0027 | | 0.02 |
| Perfluoropentanesulfonic acid (PFPeS) | 0.0090 – 0.010 | | |
| Perfluorohexanesulfonic acid (PFHxS) | 0.069 – 0.073 | | 0.04 |
| Perfluorooctanesulfonic acid (PFOS) | 0.045 – 0.050 | 0.00002 | 0.004 |
| 1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2 FTS) | 0.018 – 0.019 | | 0.78 |

[1]Boxes left blank indicate that a level has not been set for that chemical
[2] EALs for groundwater that is a source of drinking water

According to Deputy Director of Environmental Health Kathleen Ho, "Because PFAS chemicals are used in so many products and industries, it is not uncommon to see them contaminating drinking water at low levels. However, it is very important for the public to be aware of the presence of these contaminants. We will continue to review the science and work with federal and local partners to better understand the risks of PFAS and reduce exposure to these chemicals."

According to the EPA, PFAS are fluorinated organic chemicals that have been used extensively in consumer products such as carpets, clothing, fabrics for furniture, paper packaging for food, and other materials (e.g., cookware) designed to be waterproof, stain-resistant, or non-stick. They are also a component of fire-fighting foam and have many industrial uses. For general information on PFAS, please see https://www.epa.gov/pfas or https://health.hawaii.gov/pfas.

Concentrations of PFOS, PFOA, and Perfluorohexane sulfonate (PFHxS) also exceeded the DOH Hazard Evaluation and Emergency Response Office's (HEER) Environmental Action Levels and the EPA Regional Screening Levels, which are conservative, risk-based screening levels calculated based on long-term exposure. The HEER Office is reviewing the PFAS findings to evaluate compliance with other environmental regulations and any required remediation.

The Kunia Village system continues to be in full compliance with all federal and state standards for drinking water.

# Well is contaminated, now what?

- ✓Provided bottled water to users
- ✓Connected to nearby water system for emergency connection while exploring options
- ✓Test alternative source

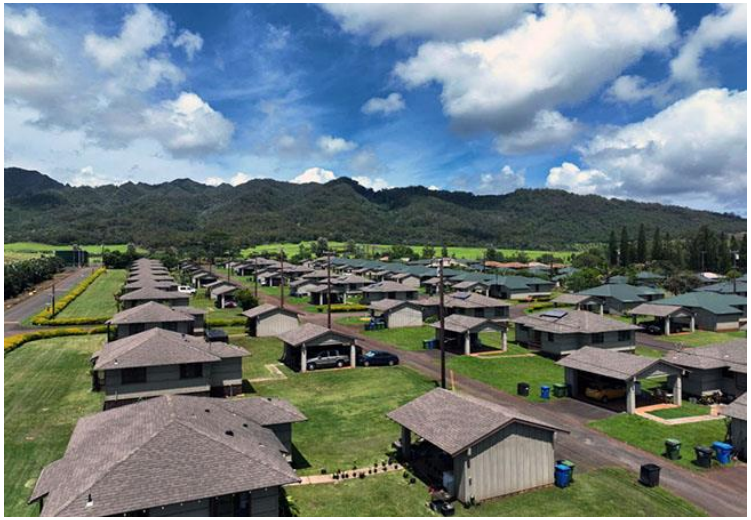

Photo credit: https://www.eahhousing.org/apartments/kunia-village/

# Kunia Well 4

Photo credit: Ann Kam

# Kunia Well 4 Sampling location


Photo credit: Melvin Tokuda

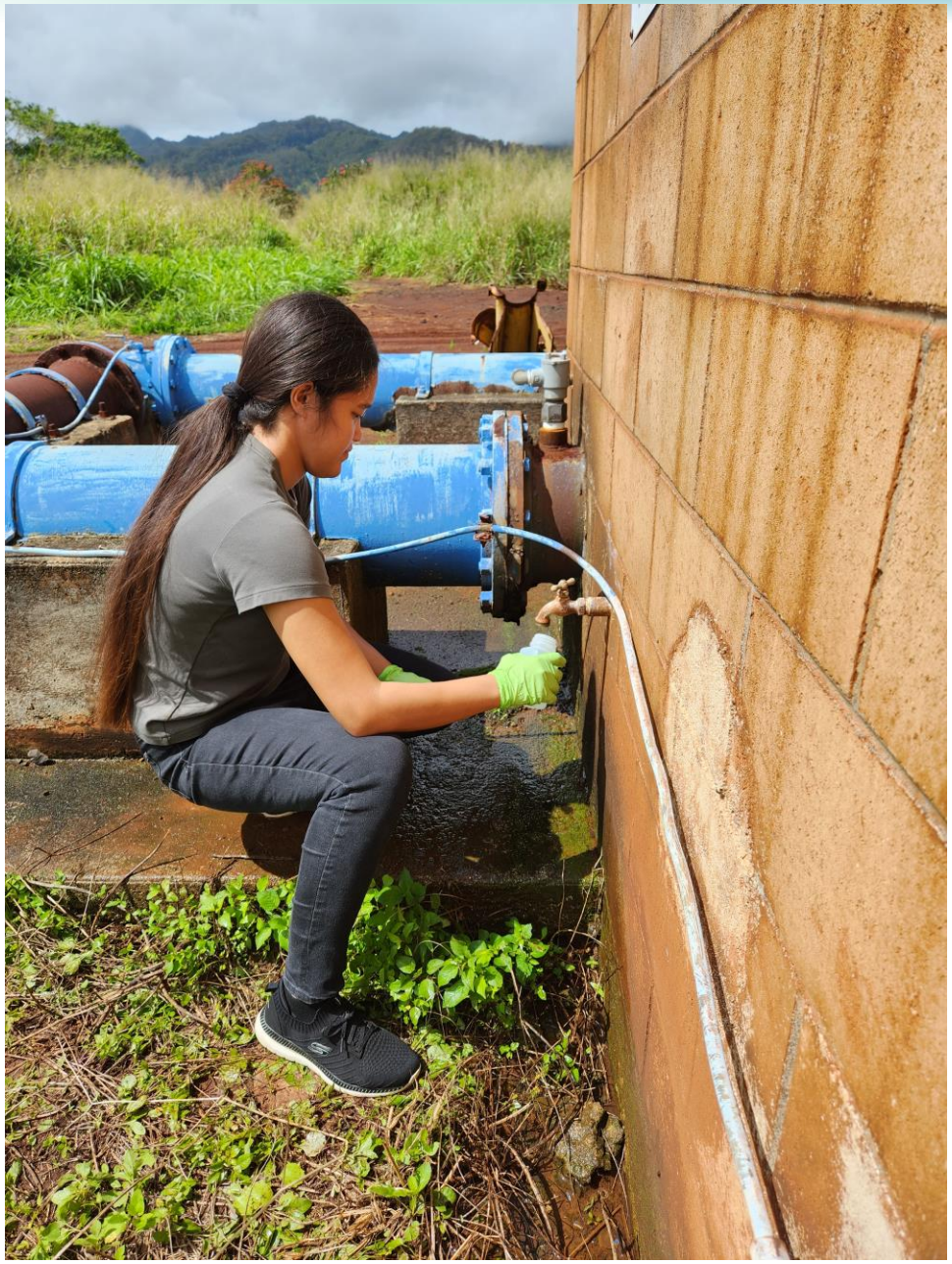

Photo credit: Melvin Tokuda

**DEPARTMENT OF HEALTH**

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**FOR IMMEDIATE RELEASE**
April 26, 2023 23-043

# PFAS Detected in Kunia Well 4

*Levels exceed DOH and proposed U.S. EPA standards*

HONOLULU – Chemicals known as PFAS (perfluoroalkyl and polyfluoroalkyl substances) have been detected for the first time in water samples collected at the Kunia Village Well 4, which is part of the Kunia Village water system (Public Water System HI0000303) and serves approximately 650 individuals on the leeward side of the island of O'ahu.

As PFAS compounds were previously detected in Kunia Village Well 3, the Kunia Village water system has switched to be served through an emergency connection to another water system until a permanent solution is determined. Residents continue to be provided bottled water until water from the emergency source has a chance to fully disperse throughout the water system. Testing will be used to confirm that PFAS levels throughout the distribution system are below the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs).

The detections of PFAS in Kunia Well 4 exceeded the following:

- Hawai'i State Department of Health Environmental Action Levels (EAL) for PFOS
- EPA-proposed MCL for PFOS and PFOA in drinking water
- EPA-proposed Hazard Index of 1.0 for the combined toxicity ratios of PFNA, PFHxS, PFBS and Gen X

The detected levels of PFAS at the Kunia Well 4 in March 2023 are listed in the table below.

| PFAS Chemical | PFAS Chemical Abbreviation | Kunia Well 4 detected levels (ng/L) [1, 2, 3] | EPA Proposed MCL (ng/L) [1, 2] | DOH [4] EAL [5] (ng/L) [1, 2] |
|---|---|---|---|---|
| Perfluorobutanoic acid | PFBA | 2.3 | | 15,000 |
| Perfluorobutanesulfonic acid [6] | PFBS | 2.21 – 2.7 | | 11,700 |
| Perfluoroheptanoic acid | PFHpA | 2.54 – 3.4 | | 77 |
| Perfluorohexanoic acid | PFHxA | 7.88 – 8.9 | | 1,900 |
| Perfluorohexanesulfonic acid [6] | PFHxS | 19.8 – 23 | | 77 |
| Perfluorooctanoic acid | PFOA | 5.57 – 7.8 | 4.0 | 12 |
| Perfluorooctanesulfonic acid | PFOS | 11.7 – 14 | 4.0 | 7.7 |
| Perfluoropentanoic acid | PFPeA | 5.49 – 6.4 | | 1,500 |
| Perfluoropentanesulfonic acid | PFPeS | 2.1 – 2.2 | | |

[1] ng/L = nanogram per liter = parts per trillion (ppt)
[2] Boxes left blank indicate that a level has not been set for that chemical.
[3] These PFAS chemical were also originally observed in the Kunia Village water system's Kunia Well 3 and news release issued on January 20, 2023 (article may be viewed here https://health.hawaii.gov/news/files/2023/01/23-004-PFAS-detected-in-Kunia-Village-water-system.pdf).
[4] DOH = Hawai'i Department of Health
[5] EAL = Environmental Action Level
[6] This contaminant is considered in the proposed Hazard Index calculation.

According to the EPA, PFAS, which have been used since the 1940s, are fluorinated organic chemicals that have been used extensively in consumer products such as carpets, clothing, fabrics for furniture, paper packaging for food, and other materials (e.g., cookware) designed to be waterproof, stain-resistant, or non-stick. They are also a component of fire-fighting foam and have many industrial uses.

For more information on PFAS, please see https://www.epa.gov/pfas or https://health.hawaii.gov/pfas. Users may also contact their water purveyor.

This news release is issued in accordance with Hawai'i Revised Statutes (HRS) Section 340E-24(b).

Acronyms and Definitions

**DOH** – Hawai'i Department of Health, responsible for regulation and oversight of impacts to the environment and health of the people in Hawai'i. This includes regulated drinking water systems.

**EAL** – Environmental Action Levels set by DOH. EALs are concentrations of contaminants in soil, soil gas, and groundwater that are used in decision making throughout the Environmental Hazard Evaluation process. The EALs for 20 PFAS chemicals were last updated in April 2023. Exceeding DOH EALs require additional investigation and action under the DOH Hazard Evaluation and Emergency Response Regulations (HRS 128D). EAL guidance may be found online at https://health.hawaii.gov/heer/guidance/ehe-and-eals/

**EPA** – United States Environmental Protection Agency, responsible for the protection of human health and the environment on a national level.

**HRS** – Hawai'i Revised Statutes are laws enacted by the Hawai'i State legislature.

**Hazard Index** – A cumulative health risk to be considered when multiple compounds are present even if individual MCLs or EALs are met. The Health Index is the sum of the ratios of the respective contaminants. The proposed EPA requirement is to be less than 1.0 (unitless) to be in compliance.

# Both wells are contaminated, now what?

- ✓Connected to nearby water system for emergency connection while exploring options
- ✓Reach out to SDWB DWSRF team for financial assistance
- ✓Agree to work with EPA's Office of Research and Development (ORD) on treatment of the source water for PFAS removal.

# EPA assistance for small systems with PFAS contamination

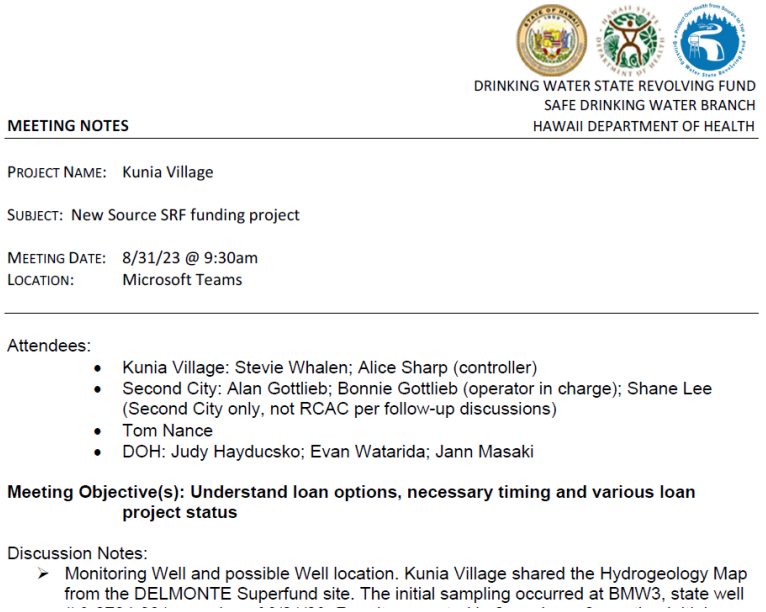
- ✓EPA Office of Research and Development (ORD) working with small systems on determining best removal technics for PFAS
- ✓EPA staff confirmed treatment plan was reasonable and would remove the contaminants found.
- ✓EPA continues to be involved in determining capture and various breakthrough timing for the O&M manual
- ✓EPA is sampling monthly to see how the various PFAS compounds are being removed within the Kunia GAC.

# DWSRF – the loan folks at SDWB

## DRINKING WATER STATE REVOLVING FUND

- Village representatives started the loan process in August 2023, focusing on a replacement well.
- Funding for PFAS projects was made available in 2022 through new federal program, at 100% principal forgiveness. BIL-EC, IIJA-Emerging Contaminants

Regular team meetings to track status, eliminate roadblocks and continue to move the projects forward.



DRINKING WATER STATE REVOLVING FUND
SAFE DRINKING WATER BRANCH
HAWAII DEPARTMENT OF HEALTH

**MEETING NOTES**

PROJECT NAME: Kunia Village

SUBJECT: New Source SRF funding project

MEETING DATE: 8/31/23 @ 9:30am
LOCATION: Microsoft Teams

Attendees:

- Kunia Village: Stevie Whalen; Alice Sharp (controller)
- Second City: Alan Gottlieb; Bonnie Gottlieb (operator in charge); Shane Lee (Second City only, not RCAC per follow-up discussions)
- Tom Nance
- DOH: Judy Hayducsko; Evan Watarida; Jann Masaki

**Meeting Objective(s): Understand loan options, necessary timing and various loan project status**

Discussion Notes:

- Monitoring Well and possible Well location. Kunia Village shared the Hydrogeology Map from the DELMONTE Superfund site. The initial sampling occurred at BMW3, state well

# Projects evolve, as limitations are discovered

- New source well challenges
  - Where?
  - Will new location have same contamination?
  - Will community own the land?
  - Will EPA Superfund allow construction of a source well within a Superfund Remediation site?
  - CWRM Approval
  - Ka Pa‘akai

# Projects evolve, maybe Kunia can install treatment on existing well while working through new source (well) approval process

- Kunia had 2 wells, one military well is no longer allowed to be used for potable or irrigation
- Kunia's Well #4, only well available now, already had TCE contamination, from military, and had an air stripper (paid and maintained by military)
- Finding the best well site may take a while.

# Projects evolve, what treatment should Kunia install to remove PFAS?

- Kunia hired a second consultant to design-build a GAC treatment.
- Kunia decided to use granular activated carbon (GAC). GAC is a proven option to remove certain chemicals, particularly organic chemicals, from water.
- EPA ORD staff reviewed and confirmed proposed system would work
- SDWB approved full scale installation, based on proven technology

# Current Process for Existing Well

- Chlorination
- Air stripping tower
- Booster pump
- GAC treatment
- Re-Chlorination
- Storage & distribution

Sanitary Survey photo

# DWSRF Process – GAC & New Source Well

- SDWB provided commitment letter 2/21/24
- Additional contracts signed, budget revised in March and June
- SDWB approved GAC treatment for this Substantial Modification per HAR 11.20.30
- Loan Executed 11/15/2024 for $2,248,405.07
- Although on fast-track, GAC units still took 12 months from ordering to activation due to lead time for manufacturing and shipping

# GAC Installation

- Deposit paid 6/26/24
- Manufacturing completed 1/2025
- Contactors and piping arrived on island March 2025
- Installation April-June 2025

Photo credit: ITC Consultants and Kunia Village Bonnie Gottlieb

# Kunia was able to disconnect Emergency Connection and resume use of their Well #4 in June 2025

Photo credit: wrapped contactors Bonnie Gottlieb, others by Judy Hayducsko

# What about that well?

- Still working through a process to get CWRM approval to drill the new well and test.
- Next loan expected to include a Preliminary Design Report, Preliminary Engineering Report, Source Water Contamination Evaluation, Pump House Plans & Specs, CWRM Water Use Permit, etc.
- Budget for Phase 2 is currently just under $3,000,000
- Budget for Phase 3, getting the well to production is in the $2-3,000,000 range.

# Budget Projections

- Phase 1: GAC and Well; $ 2,248,405.07
- Phase 2: Well Installation and testing; $3,000,000
- Phase 3: Design, installation of pump motor, controls; $2-3,000,000
- **Total costs ~ $7,750,000 - $8M**

# Lessons learned?

- Ask for help – maybe there are funds available
- Continue to learn about your system. If Kunia had not voluntarily allowed early sampling, they may still not know their wells contained PFAS
- Be flexible. Well first or treatment first?

# Questions?

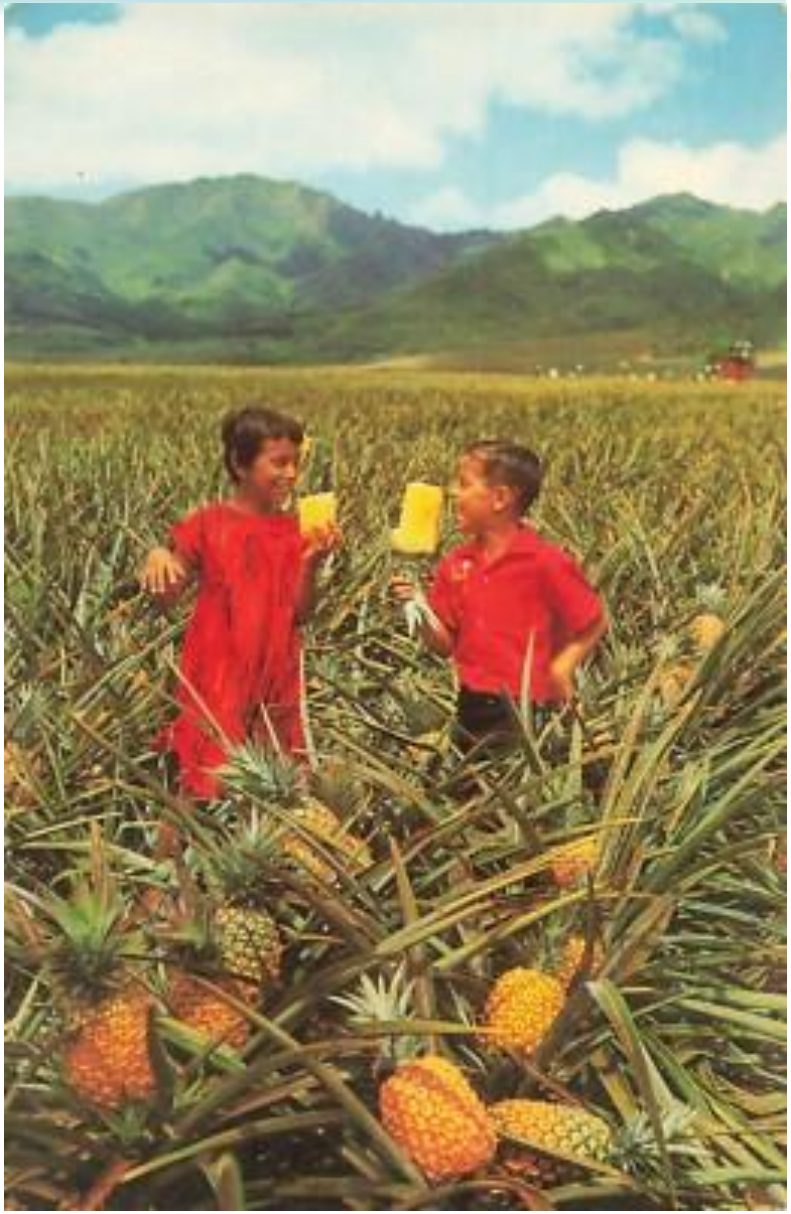


Photo credit: https://www.ebay.com/itm/296251000826

# Contact information

- Safe Drinking Water Branch (SDWB)
- https://health.hawaii.gov/sdwb/
- Email: sdwb@doh.hawaii.gov
- Call: 808-586-4258

- Drinking Water State Revolving Fund (DWSRF)
- https://health.hawaii.gov/sdwb/drinking-water-state-revolving-fund/
- E-Mail: doh.dwsrf@doh.hawaii.gov

# Contact information

| | |
|---|---|
| Judy Hayducscko | DWSRF Program/Engineering |
| vacant | DWSRF Program/Engineering |
| Kevin Yoshioka | DWSRF Business Loan Officer |
| Evan Watarida | DWSRF Business Loan Officer |
| Jann Masaki | DWSRF Business Loan Officer |
| Andrea Chagami | DWSRF Accountant |
| Daisy Chuck-Smith | DWSRF Accountant |