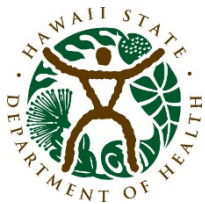


# Clean Water Act Section 319 Annual Report Federal Fiscal Year 2023



**Hawai'i State Department of Health**  
Clean Water Branch  
Polluted Runoff Control Program



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### Appendix A – Clean Water Act Section 319(h) Projects Implemented in FFY23

Clean Water Act Section 319(h) Projects Awarded, Active, and Completed in FFY23

- Keokea Gulch Riparian Corridor Rehabilitation Phase II
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- He'eia Watershed Ungulate-Exclusion Fencing and Erosion Control
- Watershed Implementation Project for the Ahupua'a of Waipā-Phase 2
- Expanding Water Quality Improvement Projects at He'eia Fishpond
- Native Forest Restoration in the Ko'olau Mountains

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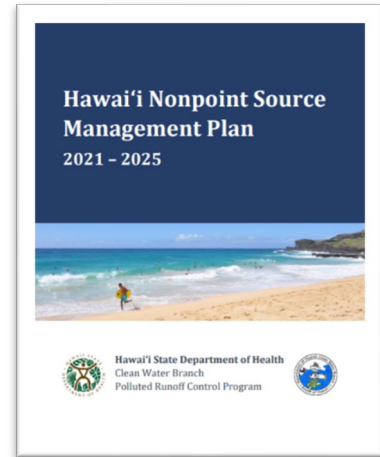
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## I. Introduction

In 1987, Congress enacted Section 319(h) of the Clean Water Act (CWA), establishing a national program to control nonpoint source (NPS) pollution, also known as polluted runoff. Administered by the U.S. Environmental Protection Agency (EPA), the CWA §319(h) program provides funding to implement state NPS programs. The State of Hawai'i Department of Health (DOH) Clean Water Branch (CWB) Polluted Runoff Control Program (PRC) administers the state's NPS program to protect and improve the quality of Hawai'i's water resources by preventing and reducing NPS pollution. The PRC and its partners implement the [Hawai'i Nonpoint Source Management Plan \(NPS Plan\)](#), which includes implementation of NPS pollution control projects and watershed planning activities.



The purpose of this report is to track the progress the State has made in achieving the *NPS Plan* objectives and milestones for the Federal Fiscal Year 2023 (FFY23; October 1, 2022 – September 30, 2023) and to fulfill the annual reporting requirements of CWA §319(h).

## II. Major Program Accomplishments & Highlights in FFY23

The PRC Program had the following major program accomplishments and highlights for FFY23:

- A. **Pollutant load reductions** – The following load reductions are estimated to be achieved by projects that were implemented (active/completed projects) in FFY23:

TSS (lb/yr)	Sediment (ton/yr)	Nitrogen (lb/yr)	Phosphorus (lb/yr)	Enterococcus (CFU)
42,342	2,882	1,861	662	2x10 <sup>15</sup>

- B. **Fourteen (14) NPS projects implemented across fifteen (15) watersheds** – A total of 14 NPS projects were implemented in FFY23 across 15 watersheds. The combined 319 grant awards and match for these projects are \$3,964,797 and \$1,519,348, respectively (Table 1). Information, including the status and current balance, on these projects can be found in Appendix A.
- C. **Five (5) projects completed** – A total of 5 NPS projects were completed in FFY23, including three stream/gulch restoration projects, one fishpond restoration project, and one water quality monitoring project. The total 319 project funds spent on these projects were \$1,100,957 and the total match provided by partners/grantees was \$307,946.
  1. The **Keokea Gulch Riparian Corridor Rehabilitation, Phase II** project was implemented through a collaboration with the Central Maui Soil and Water Conservation District (SWCD). Central Maui SWCD successfully installed approximately 750 feet of fencing to exclude feral

ungulates from the restoration area, removed non-native species along 1.6 acres of riparian corridor, installed approximately 1,000 native plants, and established 3,000 feet of dripline to deliver R-1 water from the Kihei Wastewater Reclamation Facility to the installed native plants. These efforts resulted in pollutant load reductions for both sediment (10 tons/year) and nutrients (15 pounds/year of phosphorus; 76 pounds/year of nitrogen). Additional sediment is captured by the planted vegetation that also helps to slow stormwater runoff and promote aquifer recharge. The use of R-1 reclaimed water from the nearby Kihei Wastewater Treatment Facility ensures plant survival while reducing wastewater volumes being discharged into injection wells, which also contributes to reductions in nutrients and pathogens that enter coastal waters.

2. The **Expanding Stream Gulch Restoration Actions in Wahikuli, West Maui** project was completed ahead of schedule in April 2023. The Coral Reef Alliance (CORAL) worked to install BMPs along a steep and highly erosive gulch in the Wahikuli watershed to reduce sediment. BMPs included installation of vetiver sediment traps, native grass sediment traps, coconut coirs, sandbag corridors, and a series of check dams and living check dams. Native dryland forest plant species were then installed behind the BMPs, which helped to retain about 47.9 tons of sediment for the project duration. CORAL also helped to increase community awareness about the impacts of sedimentation on our coral reefs with 739 volunteers participating in planting events and growing native plants for the restoration project.
3. The **Coastal Water Quality Monitoring in West Maui and Southwest Maui Watersheds** project was implemented by the Maui Nui Marine Resource Council in collaboration with the County of Maui to conduct coastal water quality monitoring at various locations in West Maui. The project routinely monitored nine designated sites for temperature, salinity, dissolved oxygen (DO), DO saturation, PH, turbidity, total N, total P, phosphate, silicates, NNN and NH4. Data was used to monitor the effectiveness of current runoff control projects on water quality in the watersheds. The data was also utilized in the creation of watershed management plans and to support funding requests by partner organizations to support reef restoration projects at Olowalu, Maui's "mother reef".
4. The **Watershed Implementation Project for the Ahupua'a of Waipā, Phase 2** project was implemented by The Waipā Foundation. By building upon the progress made in Phase 1, this project was able to replace existing cesspools along the Waipā, Wai'oli, and Waikoko Stream watersheds with alternative onsite wastewater systems; continue the feral ungulate removal program; restore one acre of the lower Waipā Stream riparian corridor; implement taro lo'i management practices; and maintain BMPs. As a result, bioassessment surveys conducted by the University of Hawai'i found significant improvement of habitat conditions and native fish populations that have more than doubled. Fecal indicator bacteria levels have also come down substantially, reduced by fifty percent over the course of the project. Turbidity levels have also improved significantly and it is anticipated that Waipā Stream will be de-listed for turbidity in the 2024 Integrated Report. Total estimated load reductions due

to cesspool replacement are 5.2 kg/day, 2.5 kg/day, and  $1.1 \times 10^{14}$  CFU/day for TSS, BOD, and Fecal Coliforms, respectively. The resulting reduction in TSS from the Stream Restoration BMP was calculated to be 4,012 tons/year.

5. **Expanding Water Quality Improvement Projects at He 'eia Fishpond** was implemented by the University of Hawai'i Sea Grant College Program in partnership with Paepae o He'eia and Hui Kū Maoli Ola. The project involved removing 5.25 acres of invasive red mangrove and hau from the historic He'eia Fishpond and installing rain gardens in front of two storm drain outlets to reduce nutrient and sediment concentrations in the fishpond. Final reporting is still being compiled, although it was estimated that the project would result in reductions of approximately 9 pounds of phosphorus per year, 48 pounds of nitrogen per year, and 2,342 pounds of suspended solids per year.

**D. Three projects awarded in FFY23<sup>1</sup>**

1. Two new restoration projects were awarded a portion of the FFY22 Grant. The Utilization of R-1 Wastewater to Mitigate Axis Deer Damage project was awarded \$119,900 via the RFP held in 2022 and the Kamōhio Watershed Phase I project was awarded \$366,051 via partnerships with the Kaho'olawe Island Reserve Commission (KIRC). The axis deer mitigation project will remove large amounts of recycled R-1 water from injection wells and will utilize it on the leeward slopes of Haleakala to revegetate the landscape that has been denuded by axis deer on Maui. The project on Kaho'olawe will implement a portion of the recently approved Kamōhio Watershed Plan (2022) by reducing sediment in surface runoff.
2. One watershed coordinator position in West Maui was also awarded a portion of the FFY22 Grant (\$155,840). The position is being funded in collaboration with the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) and will continue to assist in coordinating water quality improvement and monitoring efforts across several state, local, and federal agencies in West Maui.

- E. Priority watershed projects and load reductions** – Nine of the fourteen 319 projects implemented in FFY23 were implemented in priority watersheds (Table 2). The majority of these funds were invested in the five priority watersheds of West Maui to address turbidity and nutrient impairments, coordinate NPS control efforts among partners, monitor water quality, and conduct outreach. Watershed restoration and protection projects were also funded in the priority watersheds of Kawaihae in South Kohala located on Hawai'i island and in He'eia located on O'ahu. Load reductions estimated to be achieved by the priority watershed projects are summarized in Table 2.

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<sup>1</sup> One project was awarded 319 funds during DOFAW's Watershed Partnerships Program Grant (WPPG) RFP process in late September of 2021. This project is not reflected in tables or figures because they have not been finalized and will be paid for with the FY21 Grant. DOFAW will subcontract Mauna Kahalawai Watershed Partnership (\$209,951) to conduct ungulate control and planting activities to control erosion/sediment runoff in West Maui.

Table 1. Federal Fiscal Year 2023 watershed-based plan (WBP) implementation project information

319 WBP IMPLEMENTATION PROJECTS						Load Reductions				
Project Status & Type	No. Projects	No. Partner-ships	No. Water-sheds*	319 Funds Awarded	Match	TSS	Sediment	Nitro-gen	Phospho-rus	Enteroco-cus
						(ton/yr)	(ton/yr)	(lb/yr)	(lb/yr)	(CFU)
<b>IMPLEMENTED</b>	<b>14</b>	<b>8</b>	<b>28</b>	<b>\$ 3,964,797</b>	<b>\$ 1,519,348</b>					
Coordinator	1	1	5	\$ 104,000	\$ 26,000	-	-	-	-	-
Monitoring	1	1	5	\$ 38,536	\$ 10,049	-	-	-	-	-
Protection**	3	4	6	\$ 984,954	\$ 242,500	-	40	-	-	-
Restoration	9	2	12	\$ 2,837,307	\$ 1,240,799	42,342	2,842	1,860	661	2x10 <sup>15</sup>
<b>AWARDED***</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>\$ 641,791</b>	<b>\$ 173,435</b>					
Coordinator	1	1	5	\$ 155,840	\$ 51,947	-	-	-	-	-
Restoration	2	1	2	\$ 485,951	\$ 121,488	-	181	6,669	2,456	-
<b>Grand Total</b>	<b>17</b>	<b>10</b>	<b>35</b>	<b>\$4,606,588</b>	<b>\$ 1,692,783</b>	<b>42,342</b>	<b>3,063</b>	<b>8,529</b>	<b>3,117</b>	<b>2x10<sup>15</sup></b>

*\*Some watersheds are counted multiple times due to their appearance in different project type categories.  
 \*\*One project is categorized as both protection and restoration but is listed here as protection to avoid double reporting.  
 \*\*\*Does not include the Protection and Restoration of the Honokowai and Wahikuli Watersheds project that will be implemented by the University of Hawai'i. This project was awarded FFY21 funds and is currently in the contract development phase.*

Table 2. Federal Fiscal Year 2023 priority watershed project information

PRIORITY WATERSHEDS					Load Reductions				
Project Status & Type	No. Projects	No. Partnerships	319 Funds Awarded	Match	TSS	Sediment	Nitrogen	Phospho-rus	Enterococ-cus
					(ton/yr)	(ton/yr)	(lb/yr)	(lb/yr)	(CFU)
<b>IMPLEMENTED</b>	<b>9</b>	<b>5</b>	<b>\$ 2,701,228</b>	<b>\$ 1,325,909</b>	<b>2,342</b>	<b>2,422</b>	<b>724</b>	<b>216</b>	<b>-</b>
Heeia	2	1	\$ 517,396	\$ 123,839	2,342	540	208	9	-
Restoration	2	1	\$ 517,396	\$ 123,839	2,342	540	208	9	-
South Kohala	2	1	\$ 491,125	\$ 122,797	-	1,648	-	-	-
Protection	1	1	\$ 234,000	\$ 58,500	-	-	-	-	-
Restoration	1	0	\$ 257,125	\$ 64,297	-	1,648	-	-	-
West Maui	5	3	\$1,692,707	\$ 1,079,273	-	234	516	207	-
Coordinator	1	1	\$ 104,000	\$260,000	-	-	-	-	-
Monitoring	1	1	\$ 38,536	\$10,049	-	-	-	-	-
Protection	1	1	\$ 735,161	\$ 184,000	-	40	-	-	-
Restoration	2	0	\$ 815,010	\$625,224	-	194	516	207	-
<b>AWARDED*</b>	<b>1</b>	<b>1</b>	<b>\$ 155,840</b>	<b>\$ 51,947</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
West Maui	1	1	\$ 155,840	\$ 51,947	-	-	-	-	-
Coordinator	1	1	\$ 155,840	\$ 51,947	-	-	-	-	-
<b>Grand Total</b>	<b>10</b>	<b>6</b>	<b>\$ 2,857,068</b>	<b>\$ 1,377,856</b>	<b>2,342</b>	<b>2,422</b>	<b>724</b>	<b>216</b>	<b>-</b>

*\*Does not include the Protection and Restoration of the Honokowai and Wahikuli Watersheds project that will be implemented by the University of Hawai'i. This project was awarded FFY21 funds and is currently in the contract development phase.*

F. **Restoring impaired waters** – Thirteen impaired waterbodies were addressed by 9 restoration projects implemented in FFY23. These waterbodies include the nearshore waters of the priority watersheds of West Maui, Kawaihae, and He'eia. Other waterbodies addressed include Kaiaka Bay and the nearshore waters of the Hapapa and Hanalei Bay watersheds. The majority of the projects addressed waterbodies with turbidity impairments. Turbidity is the State's most common waterbody impairment (2022 Integrated Report). Honolua Bay and the nearshore waters of Honokowai were restored for total phosphorus. In addition, the recently completed Waipā project helped to make progress in restoring Waipā Stream, which is expected to be delisted for turbidity in the 2024 IR. See Section 4, Objective 2 milestones for more information on water quality improvements.

- G. **Protecting waters** – There were three (3) protection projects implemented in FFY23, including a project to exclude feral ungulates from the high conservation value areas of the Pu'u Kukui Watershed Preserve and the Kapunakea Preserve in West Maui; a project to protect the source waters of the Kawaihae watershed; and a project to restore and protect native forests in the Kahalu'u and Ala Wai watersheds on O'ahu.
- H. **A watershed coordinator (WC) active in 5 watersheds** – The PRC Program partnered with DAR to continue funding a WC to implement the West Maui Ridge to Reef Initiative (WMR2R) among federal, state, and local partners in the West Maui priority watersheds. The WC conducts outreach and assists in coordinating water quality improvement and monitoring efforts across several state, local, and federal agencies in West Maui.
- I. **Environmental and Water Quality Improvements**
1. The State set a goal to improve water quality in at least one priority watershed annually. According to the final 2022 Integrated Report published in April 2022, water quality improvements were seen in the Honokowai and Honolulu watersheds, which have met water quality standards for total phosphorus, and in the Wahikuli watershed, which has met water quality standards for *Enterococcus*. See Section 4, Objective 2 milestones for more information on water quality improvements.
  2. For projects completed in FFY23, the following environmental improvements were achieved:
    - a. 2.6 acres of riparian corridor restored to reduce sediment runoff and improve habitat;
    - b. Approximately 21,000 gallons of R-1 water re-used weekly to restore and maintain native plants as well as reduce volumes of wastewater being discharged into injection wells;
    - c. Native dryland forest species re-established to reduce erosion and sediment loads;
    - d. Twenty-nine (29) waterbody sites routinely monitored for water quality;
    - e. All cesspools within a single watershed were fully converted to alternative onsite wastewater systems;
    - f. 750 feet of feral ungulate exclusion fencing was installed, repaired, or retrofitted to reduce erosion;
    - g. 5.25 acres of invasive red mangrove and hau was removed from a historic fishpond; and
    - h. Community awareness was increased through volunteer events and transfer of knowledge workshops.
  3. For active projects implemented in FFY23, progress was made towards the following outcomes:
    - a. Ungulate control fencing installed to increase ground cover and reduce sediment loads;
    - b. Implementing BMP/conservation practices that reduce nutrient and sediment loads;
    - c. Restoring native vegetation in critical watershed areas;



- d. Implementing agricultural BMPs that minimize sediment and nutrients delivered to surface and ground waters;
- e. Conducting education and outreach activities that encourage nonpoint source pollution reduction and foster long-term community investment;
- f. Restoring 180 acres of (mostly) agricultural lands by implementing various BMPs/conservation practices that reduce nutrient and sediment loads;
- g. Installing, repairing, and retrofitting dozens of miles of feral ungulate fencing to reduce erosion, restore native forests, and protect drinking water sources.

### III. Section 319 Grant Administration

- A. **FFY22 Grant (C9-96978722-0)** – EPA awarded DOH/PRC \$1,299,382 for the FY22 Grant (to be spent in FY23). PRC spent/encumbered approximately \$1,291,173 of this grant. The total non-federal match for the FY22 Grant was \$868,371. (DOH provided approximately \$663,621 in matching funds through general-funded salaries of personnel supporting NPS management, and the remaining \$204,750 was provided by a 25% match requirement for grantees implementing WBPs.) In total, approximately \$2,167,753 was spent CWA 319-funded NPS pollution mitigation projects or to implement Hawaii's NPS program in FY23. FY22 Grant expenditures will be finalized in the financial report submitted to EPA in December 2023; see Appendices B and C for more information on grant spending.
  - 1. PRC spent/encumbered \$641,791 of its \$650,000 Project Fund allocation and spent/encumbered approximately the full amount of the \$649,382 Program Fund allocation. The Watershed Project Fund unliquidated obligation (ULO) will be spent on FFY24 projects. A portion of Program Funds were spent on developing Appendix D of the NPS Pollution rules under HAR 11-56.
- B. **Open CWA 319 Grants (FFY18 – FFY22)** – In the past year, the PRC Program managed five EPA CWA §319(h) grants (FFY18, FFY19, FFY20, FFY21, and FFY22). The FFY18 grant closed with a ULO of \$2,667. Project descriptions can be found in Appendix A.
- C. **Supplemental Environmental Projects (SEP)** – The PRC Program also managed a SEP fund (received by DOH from the City & County of Honolulu (CCH) as part of a settlement agreement for CWA violations), which was awarded to Hui Ku Maoli Ola in 2015 (Notice to Proceed (NTP) received in February 2016) to implement a restoration project in Ma'ili'ili watershed. There were significant delays in obtaining the permits to conduct the project, and the project was canceled before it was implemented because it could not be extended beyond five years per State procurement law. PRC will evaluate procurement and selection of a new SEP-funded project in FFY24.
- A. **FFY23 Grant** – DOH received the FFY23 CWA 319(h) grant of \$1,301,217 from EPA in September. PRC is planning to use all of the FFY24 Watershed Project Funds to implement approved watershed-based plans or alternative plans in the watersheds affected by the 2023 wildfires to address water quality and nonpoint source pollution concerns.

#### IV. Milestones and Progress Towards Achieving Goals & Objectives

In FFY23, the State continued to implement the 2021-2025 *NPS Plan*, whose primary objectives are listed in Table 3. This section reports on the milestones and progress achieved from 2021 to 2023 to implement this plan.

It should be noted that much of the PRC's Program resources have been focused on wildfire response in the last couple of months of FFY23. On August 8, 2023, several large wildfires broke out on the islands of Maui and Hawaii (Big Island) burning thousands of acres and causing extensive loss of life and damage to Lahaina. The State has been in the midst of ongoing response efforts to address the heartbreaking aftermath of those events. In the time that has passed, it has become evident that the State's resource requirements will be substantial, even with federal support. Some of PRC's response activities have included: participating in multi-agency and multi-stakeholder coordination meetings; staying informed and providing input on multi-agency and multi-stakeholder response efforts; identifying potential projects in the burn areas to mitigate nonpoint source pollution; providing immediate technical assistance to partners in the affected coordinating with various governmental agencies and NGOs on site assessments, water quality sampling, and data collection; responding to community concerns regarding public health and safety in the burn areas; and preparing Memoranda of Agreement (MOAs) and contracts for wildfire response related work. It is anticipated that PRC will continue these and other related activities into FFY24.

*Table 3. The State's primary NPS goal and objectives set forth in the Hawai'i NPS Management Plan (2021-2025)*

<b>Goal</b>	To achieve and maintain water quality standards and designated uses of State waters by implementing a comprehensive NPS pollution control program that conducts watershed-based restoration and protection activities.
<b>Objective 1</b>	Develop WBPs or acceptable alternatives to guide effective NPS pollution control projects.
<b>Objective 2</b>	Restore and protect water quality.
<b>Objective 3</b>	Utilize partnerships and cooperate with other agencies to leverage resources available for NPS management.
<b>Objective 4</b>	Expand the NPS management program to include regulatory activities and additional watershed planning support.
<b>Objective 5</b>	Develop and implement the Coastal Nonpoint Pollution Control Program
<b>Objective 6</b>	Conduct and Support Water Quality Monitoring

A. **Milestones for Objective 1 – Develop WBPs or acceptable alternatives to guide effective NPS pollution control projects.**

1. **Increase in the number of WBPs** – A total of three (3) WBPs have been approved since 2021:
  - a. Waikele Watershed Plan (May 2022)
  - b. Kamōhio Watershed Plan on Kaho'olawe (October 2022)
  - c. Pōhākea Watershed Plan (January 2023)

The Honokoa WBP is currently in development and is anticipated to be completed in FFY24. PRC is working with the plan preparer, The Nature Conservancy, to provide technical assistance and feedback on the draft plan. (*Update: The Maalaea Bay Watersheds Plan was recently approved in November 2023.*)

Data collection and outreach efforts have been completed related to a KWRAS update. However, the timing to release an RFP and coordinate WBP development will be dependent upon completion of the Ka'elepulu TMDL. The State will use the Ka'elepulu data and He'eia National Estuarine Research Reserve (NERR) monitoring data to inform the KWRAS update. The Forest Service's recently completed STEW MAP for Oahu (2022) will also provide additional information for the KWRAS update.

2. **Nine-element WBPs** – PRC continued to work closely with plan preparers and provided technical assistance to those developing WBPs to ensure the WBPs include the nine elements, reflect stakeholder participation, identify opportunities to leverage resources with partners, and identify ready-to-implement NPS pollution control projects.

In March 2023, PRC conducted a workshop between watershed partners to identify challenges in the watershed planning process. Approximately 25 participants representing various organizations, including NOAA, NRCS, counties, OP-CZM, non-profits, and EPA, were engaged to identify barriers to development of a WBP and discussed ways to improve the planning and development process. The outcomes of this meeting will be incorporated into an overall WBP Development Strategy. PRC also internally discussed ways in which the process of reviewing and approving WBPs can be improved programmatically. Some of the strategies discussed include conducting field visits during plan development and formalizing a plan review process.

3. **Expand State capacity for WBP development** – PRC will evaluate the capacity to develop WBPs in house once the DOH Surface Water Protection Branch is staffed. In the meantime, PRC continues to work with various partners to identify available resources that align with WBP development priorities.
4. **WBP data** – The GIS layer for watersheds with approved WBPs was completed and shared publicly via the PRC website. This information has also been shared directly with watershed

partners and interested stakeholders. PRC will look into requirements for submitting the layer to the State's GIS Program for wider public use in FFY24.

## **B. Milestones for Objective 2 – Restore and protect water quality.**

### **1. Restoring Waters – Projects**

- a. PRC, through its watershed partners, continued work on two (2) ongoing watershed projects that involve restoration activities in FFY23. Both projects are located in the priority watersheds of West Maui. The West Maui Ungulate Fencing (implemented by DOFAW; Figure 2) and Treatment Train (implemented by MLP Figure 3) projects in the Honolua watershed aim to reduce sediment and phosphorus loads in Honolua Stream and Honolua Bay. These projects are anticipated to be completed in FFY24.
- b. Work was completed in FFY23 on two (2) restoration projects, including a project to expand water quality improvements at He'eia Fishpond and Phase 2 of the Watershed Implementation Project for the Ahupua'a of Waipā. These two projects reduced TSS by 42,342 lb/yr, nitrogen by 209 ton/yr, and phosphorus by 90 lb/yr.
- c. Since FFY21, the PRC Program has funded implementation of eleven (11) new watershed projects. Of those projects, eight (8) projects involved restoration activities that reduced sediment by 2,664 ton/yr, nitrogen by 1,136 ton/yr, and phosphorus by 365 lb/yr.
  - i. Four (4) of the eight (8) new restoration projects have been completed with the remainder expected to be completed by FFY 2027.
  - ii. All restoration projects were awarded either through the annual CWA 319 RFP or through watershed partnerships consistent with procurement rules and objectives of the 2021-2025 *NPS Plan*.
  - iii. At least one (1) new restoration project has been implemented in each of the priority watersheds of West Maui, South Kohala, and He'eia. These projects address the pollutants causing impairments in these watersheds, particularly sediment (turbidity).
- d. Looking ahead, PRC will be funding two (2) new restoration projects that were awarded CWA Section 319(h) grant funds in FFY23. The projects include Utilization of R-1 Wastewater to Mitigate for Axis Deer Damage and implementation of the Kamōhio Watershed Plan.

**2. Restoring Waters – Water quality improves annually in at least one priority watershed**

a. Honolua Bay (Honolua watershed) attains WQS for total phosphorus (2020 Integrated Report, approved in November 2020). DOH has two projects, West Maui Ungulate Fencing (implemented by DOFAW; Figure 1) and Treatment Train (implemented by MLP; Figure 2) in Honolua watershed that aim to reduce sediment and phosphorus loads in Honolua Stream and Honolua Bay. The Treatment Train project aims to reduce phosphorus by 207 lb/yr and may have contributed to the reduction in phosphorus concentrations. The West Maui Ungulate Fencing Project has also been actively retrofitting 11,500 ft of fencing in the Honolua watershed since 2018, and may have contributed to a reduction in phosphorus concentrations by substantially reducing sediment transport (40 tons annually) to surface waters. Attainment of WQS for total phosphorus was confirmed in the 2022 Integrated Report, although Honolua Bay is no longer attaining WQS for total nitrogen. Both projects are scheduled to be completed in FFY24.

b. The nearshore waters of Honokowai watershed attain WQS for total phosphorus (2022 Integrated Report). DOH has two projects, West Maui Ungulate Fencing (implemented by DOFAW; Figure 2) and Treatment Train (implemented by MLP; Figure 3) in Honolua watershed that aim to reduce sediment and phosphorus loads in the Honokowai watershed. As previously discussed, the projects may have contributed to a reduction in

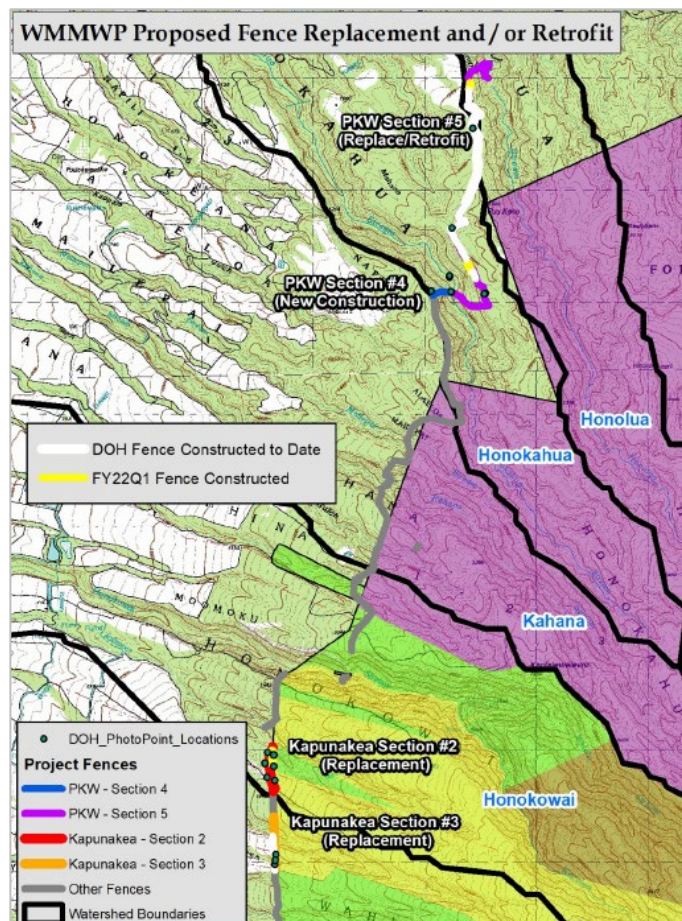


Figure 1. Map of ungulate fence installed and maintained by DOFAW in West Maui watersheds



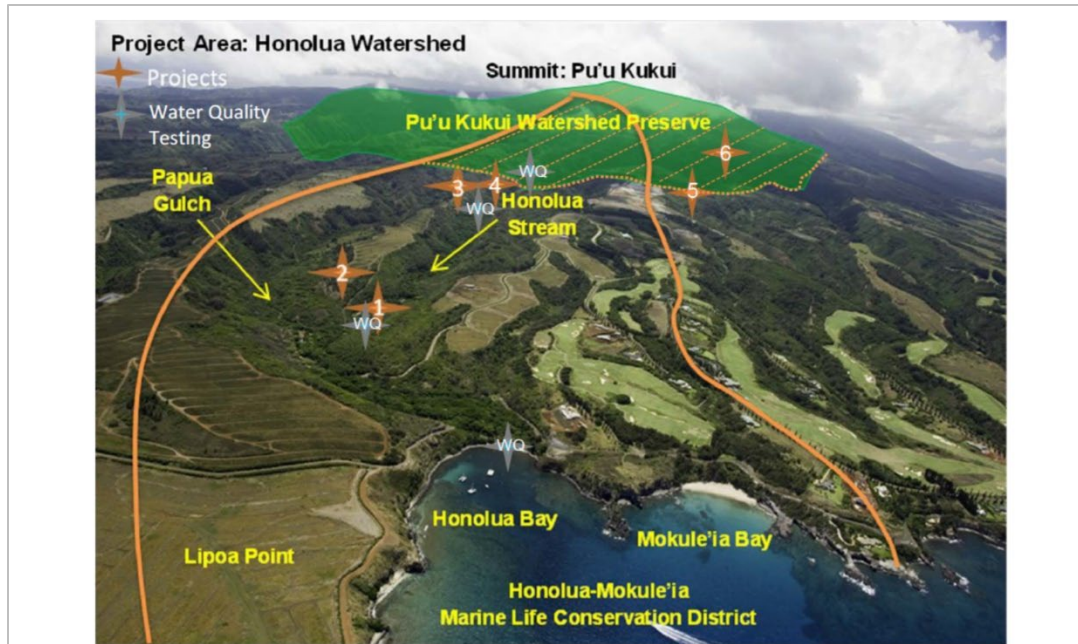


Figure 2. MLP project sites relative to receiving waters in Honolua watershed in West Maui

phosphorus concentrations by substantially reducing sediment transport to surface waters. Both projects are scheduled to be completed in FFY24.

- c. Hanaka'o'o Beach Co. Park (Wahikuli watershed) attains WQS for enterococcus (2020 Integrated Report). Hanaka'o'o Beach Co. Park, a coastal waterbody in Wahikuli watershed in West Maui, attained WQS for *Enterococcus* in the 2020 Integrated Report, but the active 319 projects in that watershed target sediment and therefore likely did not play a role in reducing *Enterococcus* CFU.
- d. While not within priority watersheds, there are two (2) potential success stories that will be considered for nomination in FFY24. These projects include the recently completed Phase 2 of the Waipā implementation project and the recently completed Phase 2 of the Keokea Gulch Corridor Rehabilitation project. Results of the Waipā project show that Waipā Stream attains WQS for turbidity, which is the impairment the stream was originally listed for. There was also success seen in the use of recycled R-1 water for restoration of the riparian corridor in the Keokea Gulch project.
- e. PRC will continue to evaluate water quality conditions in priority watersheds through the Section 319 Annual Report and through GRTS reporting.

### 3. Protecting waters

- a. Since FFY21, the PRC Program has funded implementation of three (3) new projects that involved protection activities, including Sustaining the Source Waters of Kawaihae Watershed, Native Forest Restoration in the Ko'olau Mountains, and Protection and Restoration of the Honokowai and Wahikuli Watersheds.

- i. Priority watersheds addressed by these projects include the watersheds of South Kohala and He'ēia.
- ii. All of the projects were supported via partnerships with DOFAW:
  1. DOFAW and PRC collaborated to develop a protection project (Sustaining Source Waters of Kawaihae) in South Kohala that was initiated in FFY22 and is anticipated to be completed in FFY26.
  2. DOFAW held its WPPG RFP from July through September 2021. PRC participated on the evaluation committee and selected the Protection and Restoration of the Honokowai and Wahikuli Watersheds project that will control ungulates and conduct planting activities in West Maui. This project is in the contract development phase and is anticipated to begin implementation in FFY24.
  3. DOH also provided funding for the Ko'olau Mountains Watershed Partnership to conduct planting activities in two (DLNR high priority) watershed areas. Work under this project was initiated in FFY22 and is anticipated to be completed ahead of schedule in FFY24.
- b. Looking ahead, PRC will be meeting with partners to develop a protection project to implement in the recently approved Maalaea Bay Watersheds Plan. This WBP includes the Waiakoa watershed that was affected by the August 2023 wildfires on Maui. The project is anticipated to protect surface waters from an increase in polluted runoff due to exposed sediment that resulted from the wildfires.

#### 4. Implement Priority Initiatives

- a. **Sustainable Hawaii Initiative** – Under the [Watershed Protection 30x30 goals](#), the State aims to protect 30% (approximately 253,000 acres) of priority watershed areas by 2030. A total of 173,000 acres of high priority watersheds were protected through 2023, primarily through installing and maintaining fencing. A total of 33,000 acres of high priority watersheds were protected since 2021.
  - i. DLNR continues to construct new fencing (~11 miles) and maintain fencing (~424 miles) to control ungulates and the negative impacts they have on native ecosystems and water quality. More information about ungulate control can be found in [DOFAW's Report to the Legislature for the 2021 Session](#).
  - ii. In FFY23, DOH and DLNR continued to implement its West Maui ungulate fencing project, installing 1,200 ft of new fencing and retrofitting/maintaining approximately 15,000 ft of existing boundary fences to protect the high priority watershed area of Pu'u Kukui Watershed Preserve (PKW). DOH is also funding the Treatment Train project in West Maui that includes feral ungulate management in PKW. Both of these projects are anticipated to be completed in FFY24.

- iii. Two additional projects with DLNR (Sustaining Source Waters of Kawaihae Watershed, Mauna Kahalawai Watershed Partnership) that involve ungulate management within high priority fenced areas were awarded in FFY21. The Sustaining Source Waters of Kawaihae Watershed project was initiated in FFY22 while the project with the Mauna Kahalawai Watershed Partnership is still in the contract development phase.
- b. **National Water Quality Initiative (NWQI)** – There are currently two regions in the NWQI implementation phase: Hilo Bay and Pelekane/South Kohala. The West Maui region is in the readiness phase. No new NWQI watersheds were added in FFY23.
  - i. **Hilo Bay** – The Hilo Bay watershed assessment was completed and EQIP funding is available for the region. DOH plans to conduct water quality monitoring in several streams in Hilo Bay as NRCS and DOH funds allow. PRC will need to work with CWB to ensure an inland QAPP is approved, meet with potential monitoring partners on the Big Island such as UH Hilo, and work out monitoring logistics and lab analysis costs. The data will be assessed in the biennial Integrated Report produced by DOH and will be used in the development of a WBP for Hilo Bay.
  - ii. The **Pelekane/South Kohala** NWQI watershed assessment has also been completed and EQIP funding is available for the region. DOH assisted partners in the Pelekane / South Kohala watersheds by reviewing and providing feedback on the NWQI watershed assessment they prepared for NRCS. DOH has been working with partners in South Kohala to conduct water quality monitoring associated with active 319 projects.
  - iii. **West Maui** NWQI watershed assessments are still in progress.
- c. **WMR2R** – In addition to DOH-funded projects in West Maui, there are several ongoing water quality improvement / pollution control projects being implemented in the region:
  - i. Protecting Ka'opala's critical coastal infrastructure through flood management design (Kahana watershed; funded by the National Fish and Wildlife Foundation);
  - ii. Enhancing the Effectiveness of Restoration in Honokowai and Kapunakea Preserve (Honokowai Watershed; funded by NOAA and implemented by Ridge to Reefs, The Nature Conservancy (TNC), Coral Reef Alliance, and other partners); and
  - iii. Gulch Restoration to Increase Reef Resilience (Wahikuli watershed; funded by NOAA and implemented by Coral Reef Alliance).
- 5. **Annual CWA 319 Grant RFP reflects new priorities for NPS management** – The FFY21 and FFY22 RFP included climate change-related criteria, including how proposed project BMPs will mitigate climate change related impacts and/or be resilient to the effects of climate



change. Within the past few years, record-setting rainfall accompanied by flooding, as well as wildfires, have provided challenges for NPS pollution control. PRC did not conduct its annual RFP in FFY23 and instead subawarded Watershed Project Funds directly to eligible recipients meeting state procurement requirements using selection criteria consistent with the current 2021-2025 *NPS Plan*. This decision was made based on the need to obligate funds as expeditiously as possible to address water quality and nonpoint source pollution concerns related to the August 2023 wildfires in Hawai'i. Looking ahead to the FFY24 RFP, PRC will most likely include environmental justice (EJ) criteria based on EPA's EJ memo ("Near-term Actions to Support Environmental Justice in the Nonpoint Source Program"), the EPA's EJSCREEN mapping tool, and current Census data for Hawai'i.

**C. Milestones for Objective 3 – Utilize partnerships and cooperate with other agencies to leverage resources available for NPS management**

- 1. Projects** – PRC and its partners funded eight (8) of the eleven (11) new NPS projects implemented since FFY21 (Table 1). The majority of these partnership projects were in priority watersheds. PRC also participated in DOFAW's WPPG evaluation committee in September 2021 and selected two watershed protection projects to jointly fund.
- 2. Events** – PRC, CCH, UH, and Waikiki Aquarium jointly sponsored the 16th Annual Mauka to Makai Environmental Expo to celebrate Earth Day (Figure 3). The event promoted the importance of keeping Hawai'i clean and free of pollution, from the mountaintops to the ocean, through keiki activities, educational videos, and more. The event also offered native plant giveaways and free admission to the Waikiki Aquarium exhibits. The event drew 2,802 guests from the public. The Expo was featured on two TV newscasts, three print newspaper articles, and six online media publications.



Figure 3. The annual Mauka to Makai event in April was sponsored through a partnership between DOH, UH, CCH, and Waikiki Aquarium

3. **New partnerships** – DOH/PRC joined Ko'olau Mountain Watershed Partnership (KMWP) in FFY23. DOH/PRC also remained an active member in the South Kohala Coastal Partnership (SKCP) and the Ala Wai Watershed Collaboration (AWWC). Participating in these partnerships allows DOH/PRC to work with a large network of partners to protect and restore the watersheds of Hawai'i. The South Kohala watersheds are priority watersheds for DOH and is also a NWQI implementation watershed. DOH also became more active with the Office of Planning and Sustainable Development's (OPSD) Ocean Resources Management Plan (ORMP) implementation, which involves working with several partners on the ORMP Council and reporting on metrics that include annual pollutant load reductions and the number of impaired waterbodies.
4. **Cesspool Conversion Work Group (CCWG)** – The [CCWG Final Report to the 2023 Regular Session Legislature](#) was completed in November 2022. The report includes recommendations from the CCWG regarding cesspool conversions in Hawai'i. Members of the CCWG include representatives from the DOH Wastewater Branch (WWB), Safe Drinking Water Branch (SDWB), county wastewater agencies, the wastewater industry, the financial/banking industry, UH Hawai'i Institute of Marine Biology, the UH Water Resources Research Center, the Hawai'i Association of Realtors, Surfrider Foundation, the State House, and the State Senate.

In March 2023, the Hawai'i Cesspool Hazard Assessment & Prioritization Tool (HCPT) was released to the public. The HCPT shows critical areas where the State should focus resources to upgrade cesspools. It was also used as part of the statewide Cesspool Pilot Grant Program (CPGP) that was launched in 2023 to assist low- and moderate-income property owners with converting, upgrading, or connecting cesspools to a more environmentally appropriate method of managing and treating wastewater. The CPGP had an initial funding amount of \$5 million. There was an overwhelming demand to participate in the program and the full amount of the grant money was encumbered to assist 250 applicants soon after the program launched. Financial assistance programs are also being developed for the County of Hawaii, County of Maui, and County of Kauai.

5. **Coastal Zone Management Program (OPSD-CZM)** – DOH and OPSD-CZM met monthly to discuss strategies for meeting CNPCP management measure requirements. Most of the meetings were held to discuss Operating Onsite Disposal Systems (OSDS) Management Measure strategies, including a voluntary compliance approach and a potential outreach and education program.
- D. Milestones for Objective 4 – Expand the NPS management program to include regulatory activities and additional watershed planning support.**
1. **Nonpoint Source Pollution Control rules adopted** – Chapter 11-56 (Nonpoint Source Pollution Control), HAR was adopted in June 2021. The rules codify the majority the CNPCP management measures for Agriculture, Forestry, and Marinas and Recreational Boating. The rules primarily apply to publicly owned lands. Subject landowners must register with DOH

and develop water pollution protection plans to control NPS pollution from their properties/facilities. These plans must incorporate applicable NPS pollution management measures, specify BMPS that will be implemented, and provide a description of BMP monitoring and inspection methods. Annual reports from subject landowners are required to demonstrate that the water pollution protection plan is being implemented and controlling NPS pollution.

During the public notice process prior to adoption, which included a public hearing in February, Chapter 11-56 received eight public comments, which were all in support of the proposed rules. DOH is currently working to codify the CNPCP management measures for development related activities in Urban Areas. Work to amend the rules is anticipated to continue into FFY24.

2. **DOH Surface Water Protection Branch (NPS Branch) in final approval stage** – The NPS Branch/reorganization package was approved by Governor Ige in October 2021. The new branch is requesting approval from the Director to fill the vacant six new positions. Additional administrative support from within DOH has been assigned to this effort. It is anticipated that the new NPS Branch will formalize voluntary and regulatory NPS management programs and provide a more comprehensive approach to addressing polluted runoff and improving water quality statewide. The new branch will include the PRC/Section 319 Program and six new positions to implement and enforce the recently adopted NPS rules (HAR Chapter 11-56).

**E. Milestones for Objective 5 – Develop and implement the Coastal Nonpoint Pollution Control Program**

1. Management measures for New Development; Planning, Siting, and Developing Roads and Highways; and Bridges were submitted in FY21 and approved. DOH is working with OPSD-CZM to obtain approval on management measures for Operating and Maintaining Roads, Highways and Bridges; Operating OSDS; and Monitoring and Tracking by August 2024.
2. CNPCP management measures/administrative elements submitted to EPA and NOAA that have not yet been approved:
  - a. Monitoring and Tracking Techniques – Monitoring methods passed muster, but the tracking component will need to be revised. It was difficult for EPA and NOAA to determine whether the proposed tracking methods were sufficient because not all management measures have been submitted or approved. PRC will revise components that EPA and NOAA commented on as other management measures are submitted and approved, and will finalize its tracking methods after the remaining MMs are approved (by 2024).
  - b. Operation and Maintenance for Roads and Highways – EPA and NOAA require extra documentation on enforceable mechanisms and policies for O&M of local roads. This information has been submitted to EPA and NOAA for an interim decision.

3. **Operating OSDS** – DOH and OPSD-CZM have developed and discussed various strategies to meet this management measure’s inspection requirement. At one point, the proposed strategy involved amending HAR 11-62 (Wastewater Systems) to mandate septic tank pump-outs every five years for septic systems located in sensitive areas. Activities therefore included drafting a bill for septic system pump-outs, meeting with UH to discuss septic system data and develop a septic system pump-out prioritization tool, developing an outreach plan, and drafting amendments to HAR Chapter 11-62. However, DOH will no longer pursue administrative rule amendments and instead proposes to meet the inspection requirements of the management measure through voluntary compliance. DOH has initiated development of an outreach and education plan to develop the voluntary management program. DOH will summarize the proposed program and submit it to EPA and NOAA for a decision before the end of 2024.
  
4. **Approved management measures implemented** – Nine (9) new projects awarded between FFY21 and FFY23 implemented multiple CNPCP management measures (Table 4). Agriculture, conservation-related forest practices, and riparian restoration management measures were evenly implemented amongst the projects. All 9 projects were also monitored for effectiveness, including one project that conducted WQ monitoring as part of their scope of work. Regional water quality was also monitored in the priority watersheds of West Maui under a separate water quality monitoring project.

Table 4. CWA 319 projects by Coastal Nonpoint Pollution Control Program category from FFY21 to FFY23

319 PROJECTS BY CNPCP CATEGORY						Load Reductions				
Management Measure Category	No. Projects	No. Watersheds	319 Funds Awarded	Match	Total (319 Funds + Match)	TSS (ton/yr)	Sediment (ton/yr)	Nitrogen (lb/yr)	Phosphorus (lb/yr)	Enterococcus (CFU)
Agriculture	3	3	\$ 963,953	\$ 340,611	\$ 1,304,564	-	2,098	900	350	-
Forestry*	3	4	\$ 341,979	\$ 88,542	\$ 430,521	-	-	-	-	-
Riparian	3	3	\$ 475,895	\$ 144,151	\$ 620,046	-	566	236	15	-
<b>Grand Total</b>	<b>9</b>	<b>10</b>	<b>\$ 1,781,827</b>	<b>\$573,304</b>	<b>\$2,355,161</b>	<b>-</b>	<b>2,664</b>	<b>1,136</b>	<b>365</b>	<b>-</b>

*\*Includes conservation-related forest practices not tied to commercial forestry operations*

**F. Objective 6 Milestones – Water quality monitoring**

1. **Community-based water quality (WQ) monitoring** – DOH recently completed a project with the County of Maui to support local WQ monitoring efforts in West and Southwest Maui in FFY23. The subcontractor, Hui O Ka Wai Ola (HOKWO), conducted and coordinated marine sampling with DOH. (See Appendix A for more information on this project.) DOH also began discussing local monitoring in South Kohala with partners as part of the SKCP.
  
2. **Water quality information remains updated and available through the DOH website and CWB System** – The CWB System is updated regularly with water quality-related notifications, including sewage spill advisories and brown water advisories. In addition, the CWB developed a GIS layer of 303(d) impaired waters.

### 3. New inland waters monitored by 2024

- a. **Ka'elepulu Stream** (Ka'elepulu watershed) – The CWB continued to collect WQ data for Ka'elepulu Stream, which was recently assessed for the first time in the Integrated Report (2022) using quantitative data that meets current CWB data acceptance requirements. (The current impairments for Ka'elepulu Stream are based on visual assessments conducted prior to 2000.)
- b. DOH explored options to expand inland WQ monitoring. In partnership with DOFAW, monitoring will begin in at least one high quality stream in South Kohala as part of a protection project, with the goal of assessing the stream(s) in the 2024 Integrated Report.
- c. NWQI monitoring – DOH and NRCS discussed stream monitoring in Hilo Bay, where the NWQI resumed implementation in FFY22, and South Kohala (Waikoloa watershed). PRC planned to sample 10 to 14 streams to collect the required number of samples (30) by October 2023 for assessment in the 2024 Integrated Report. However, due to a shift in priorities, this task is currently on hold while DOH works to find a partner to help with data collection. PRC is planning to either contract out the sampling or work with a partner in the area, such as UH Hilo. PRC and NRCS may develop its own stream QAPP for Hilo Bay and South Kohala, if the South Kohala inland waters QAPP Hawaii Wai Ola submitted to CWB cannot be applied to NWQI-related WQ monitoring.

### 4. Water quality monitoring and data coordination

- a. **Ke'ehi Lagoon** (Moanalua watershed)
  - i. Beginning in July 2021, CWB began collecting recreational water quality samples to assess Ke'ehi Lagoon. Data from a recent UH study indicate there may be a potential to delist Ke'ehi Lagoon for enterococci. Land use changes in the surrounding area may have contributed to the removal of the possible source. CWB executed a contract with UH to deploy three continuous monitoring sensors to collect WQ data in Ke'ehi Lagoon for one year (until 9/2022). The data for these monitoring efforts were used in the 2022 Integrated Report and will provide data for the Ke'ehi Lagoon TMDL. UH will make available to CWB continuous physical water quality data.
  - ii. A contract with UH and TNC is currently being negotiated for a probabilistic nearshore and offshore monitoring study of Ke'ehi Lagoon. (This study is separate from the current lagoon monitoring with UH in subsection i.)
  - iii. CWB is also actively working with CCH to establish and implement a probabilistic stream sampling strategy for Moanalua and Kalihi Streams, the main inland water sources of Ke'ehi Lagoon.

- b. **He'eia** – PRC continues to discuss and coordinate WQ monitoring with He'eia NERR partners. Due to the flashy nature of the stream during the project implementation period, the He'eia Stream sampling was modified as part of the 319-funded ungulate fencing project being carried out by TNC. TNC continued to work with NERR on downstream nutrient sampling. The results will be included in the final report for the ungulate fencing project that will be completed in November 2023.
- c. PRC has been working with the Monitoring Section to find additional WQ data and become more involved in WQ monitoring efforts by other agencies, such as UH Hilo and the National Park Service. PRC has been working with partners (e.g., the SKCP, NRCS) to find additional data that can be potentially assessed in the Integrated Report. PRC has also initiated discussions with EPA's Office of Water along with CWB Monitoring to update the Recovery Potential Screening tool to help with EPA's Healthy Watersheds Program.

## 5. TMDLs

- a. **Ka'elepulu TMDL** – The initial assessment of Ka'elepulu Stream was completed in January 2021 and presented to the Kailua Community, including representatives from the Enchanted Lake Residents Association, in February 2021 and again during a Kailua Neighborhood Board meeting in March 2021. CWB is currently collaborating with major stakeholders to utilize an existing watershed model of Ka'elepulu to potentially inform the TMDL. CWB is also currently negotiating a contract for the adaptation of an existing Hydrologic Simulation Program – FORTRAN (HSPF) model of the Ka'elepulu watershed. The model will estimate the current pollutant loads from existing sources within the watershed. The Ka'elepulu TMDL may be ready for EPA approval 5-6 months after the completion of the model.
- b. **Ke'ehi Lagoon TMDL** – The Ke'ehi Lagoon TMDL for *Enterococcus* is currently in its initial phase, in which the lagoon is being monitored to collect baseline data. Additional monitoring of the lagoon and its stream sources is currently being explored (see section 4a). No completion date for the TMDL has been set yet, but the earliest completion date would be at least two years after the deployment of the continuous monitoring sensors (section 4a) – the sensors will need to collect data for at least one year in order to account for seasonal variation, and a model will need to be built to estimate pollutant loading.

# APPENDIX A

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Clean Water Act Section 319(h) Projects Implemented in FFY23

Clean Water Act Section 319(h) Projects Awarded, Active, and Completed in FFY23

Grantee	Project Name	Status	End Date	319 Grant Award	Expended	Balance
Central Maui Soil and Water Conservation District	Keokea Gulch Riparian Corridor Rehabilitation Phase II (MOA 22-1)	Completed	3/16/2023	\$49,950	\$49,950	\$0
Central Maui Soil and Water Conservation District	Utilization of R-1 Wastewater to Mitigate for Axis Deer Damage	Awarded		\$119,900	\$0	\$119,900
Coral Reef Alliance	Expanding Stream Gulch Restoration Actions in Wahikuli, West Maui (20-166)	Completed	11/10/2023	\$215,011	\$215,011	\$0
County of Maui, County of Maui - Office of the Mayor	Coastal Water Quality Monitoring in West Maui and Southwest Maui Watersheds (MOA 21-1)	Completed	2/20/2023	\$38,536	\$38,536	\$0
Department of Land and Natural Resources/DAR	West Maui Watershed Coordinator (MOA 21-2)	Active	11/27/2023	\$104,000	\$104,000	\$0
Department of Land and Natural Resources/DAR	West Maui Watershed Coordinator	Awarded		\$155,840	\$0	\$155,840
Hawaii Department of Land and Natural Resources	Sustaining the Source Waters of Kawaihae Watershed (MOA 21-3)	Active	2/10/2026	\$234,000	\$0	\$234,000
Hawaii Department of Land and Natural Resources	DLNR, Div. of Forestry and Wildlife: Polluted Runoff Control Project for West Maui (17-195)	Active	11/29/2023	\$735,161	\$735,161	\$0
Kaho'olawe Island Reserve Commission	Kamōhio Watershed Phase I	Awarded		\$366,051	\$0	\$366,051
Maui Land & Pineapple Company, Inc.	Treatment Train: An Ahupua'a Approach to Watershed Best Management Practices in West Maui (19-156)	Active	4/30/2024	\$599,999	\$529,341	\$70,658
O'ahu Resource Conservation & Development Council	Agricultural Stewardship and Stream Restoration in Ki'iki'i and Paukauila Watersheds (22-083)	Active	9/29/2023 (NCE in progress)	\$230,034	\$132,577	\$97,457
O'ahu Resource Conservation & Development Council	Agricultural Stewardship and Stream Restoration in Kaukonahua (22-196)	Active	10/19/2025	\$476,794	\$41,711	\$435,083
Queen Emma Land Company	Mitigating Erosion in the Pelekane Watershed Using Ungulate and Wildfire Management (22-084)	Active	7/10/2027	\$257,125	\$49,015	\$208,110
The Nature Conservancy	He'eia Watershed Ungulate-Exclusion Fencing and Erosion Control (20-165)	Active	11/22/2024	\$210,934	\$19,575	\$191,359
The Waipā Foundation	Watershed Implementation Project for the Ahupua'a of Waipā - Phase 2 (19-155)	Completed	3/19/2023	\$350,998	\$350,998	\$0
University of Hawai'i Sea Grant College Program	Expanding Water Quality Improvement Projects at He'eia Fishpond (20-139)	Completed	9/29/2023	\$306,462	\$273,393	\$33,069
University of Hawai'i	Protection and Restoration of the Honokowai and Wahikuli Watersheds	Awarded		\$209,951	\$0	\$209,951
University of Hawai'i - Pacific Cooperative Studies Unit	Native Forest Restoration in the Ko'olau Mountains (MOA 22-2)	Active	7/12/2024	\$15,793	\$3,179	\$12,614
<b>TOTAL</b>				<b>\$4,676,539</b>	<b>\$2,542,447</b>	<b>\$2,134,092</b>



# KEOKEA GULCH RIPARIAN CORRIDOR REHABILITATION PHASE II

**Island:**

Maui

**Watershed(s):**

Hāpapa

**Contractor:**

Central Maui Soil and Water Conservation District (Central Maui SWCD)

**Project Type:**

Restoration

**Status:**

Completed

**START-END DATES**

3/17/22 - 3/16/23

**FUNDING AMOUNT**

\$49,950

§319(h) GRANT AWARD

\$15,750

MATCH AMOUNT

**POLLUTANT LOAD REDUCTIONS**

**SEDIMENT**

10

TONS/YEAR

**PHOSPHORUS**

15

POUNDS/YEAR

**NITROGEN**

76

POUNDS/YEAR

**% OF §319(h) GRANT AWARD DISBURSED (\$49,950)**

100%

**% OF PROJECT COMPLETED**

100%

## PROJECT DESCRIPTION

This project will build upon the restoration efforts in the Keokea Riparian Rehabilitation, Phase I project by expanding the protected corridor along Keokea Gulch by 1.6 acres. The Central Maui SWCD will install approximately 750 feet of fencing along the north and east portion of the project area enclosure to exclude feral ungulates, remove non-native species along the riparian corridor, install approximately 1,000 native plants, and establish an additional 3,000 feet of dripline to deliver R-1 water from the Kihei Wastewater Reclamation Facility to the installed native plants.



Before (left) and after (right) images of the rehabilitated riparian corridor.

## PROJECT UPDATE

The project was successfully completed in February 2023. Using STEPL, the Central Maui Soil and Water Conservation District estimates these efforts have resulted in pollutant load reductions for both sediment and nutrients. Additional sediment will be captured by the planted vegetation that will also help to slow stormwater runoff and promote aquifer recharge. The use of R-1 reclaimed water from the nearby Kihei Wastewater Treatment Facility ensures plant survival while reducing wastewater volumes being discharged into injections wells, which will likely reduce nutrients and pathogens from entering coastal waters as well. This project also provides an ideal location for cultural activities, volunteer work, fundraising, public outreach, and educational opportunities.

Overall, the project has been a success. Lessons were learned from Phase I and following heavy rain events that allowed for critical adjustments in the project design to ensure its continued success moving forward. Due to the success of the Keokea Gulch Riparian Rehabilitation Project, increasing the footprint of the protected riparian corridor would further improve water quality along Maui's south shorelines by helping to address flooding and sediment-laden runoff that occurs during heavy rainfall events. Additionally, since wetlands in South Maui have been highly impacted by development, this rehabilitation effort will ensure the stream continues to function hydrologically as well as ecologically.

# EXPANDING STREAM GULCH RESTORATION ACTIONS IN WAHIKULI, WEST MAUI

Island:  
Maui

Watershed(s):  
Wahikuli

Contractor:  
Coral Reef Alliance (CORAL)

Project Type:  
Restoration

Status:  
Completed

START-END DATES | 11/11/20 - 11/10/23

FUNDING AMOUNT | \$215,011 §319(h) GRANT AWARD | \$75,667 MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS | SEDIMENT  
**10**  
TONS/YEAR

% OF §319(h) GRANT AWARD DISBURSED (\$215,011)

100%

% OF PROJECT COMPLETED

100%

## PROJECT DESCRIPTION

The Coral Reef Alliance (CORAL) will implement a multi-phase BMP installation project along a steep and highly erosive gulch in the Wahikuli watershed to reduce sediment. The planned BMPs include vetiver sediment traps, native grass sediment traps, coconut coirs, sandbag corridors, and a series of check dams and living check dams. Native plant rows will be installed behind these BMPs. The native plant rows uses the native forest structure, including native grasses, shrubs, groundcovers, and trees.

## PROJECT UPDATE

The project was successfully completed ahead of schedule in April 2023. As a result of CORAL's efforts, the project achieved the following:

- Piloted and established nature-based methods for sediment stabilization using native dryland forests species in degraded agricultural lands.
- Engaged the county and community resulting in the West Maui Community Plan including Special Management areas designated within 100 feet along all stream gulches.
- Reestablished native dryland forest species, which retained a range of 11.6 tons of sediment on the land (measured) to 47.9 tons (extrapolated) throughout the project duration.
- Increased community awareness about the impacts of sedimentation on our coral reefs with 739 volunteers participating in planting events and growing native plants for our restoration project.



Restoration location before restoration began (on the left). Note the steep slopes and heavily gullied road. Photo on the right shows the road after it was cleared, prepped and BMPs were installed.

# COASTAL WATER QUALITY MONITORING IN WEST MAUI AND SOUTHWEST MAUI WATERSHEDS

Island:  
Maui

Watershed(s):  
Honokahua, Kahana, Honokowai, Wahikuli

Contractor:  
County of Maui (CoM)

Project Type:  
N/A

Status:  
Completed

START-END DATES | 6/21/21 - 2/20/23\*  
*\*Extended from original end date of 1/29/21*

FUNDING AMOUNT | \$38,536 \$10,049  
\$319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS | N/A

% OF \$319(h) GRANT AWARD DISBURSED (\$38,536)\*\*

100%

*\*\*For state and local government projects, the full amount of the award is typically disbursed upfront and administered by the responsible agency.*

% OF PROJECT COMPLETED

100%

## PROJECT DESCRIPTION

The Maui Nui Marine Resource Council, Inc. (MNMRC) through the County of Maui will provide coastal water quality monitoring at various locations in support of watershed management activities in four watersheds in West Maui and Southwest Maui. MNMRC will regularly collect and analyze water samples to collect data, assess trends, and monitor the effectiveness of current runoff control projects on water quality in the watersheds. All waterbodies being monitored are on the 303(d) list for nitrate + nitrite and turbidity, with eight (8) of the waters listed for additional nutrient and chlorophyll a impairments.



Map of the watersheds included in the West Maui sampling area.

## PROJECT UPDATE

This coastal water quality monitoring project was completed in February 2023. The project routinely monitored nine (9) designated sites, along with 20 other sites on leeward Maui, every 3 weeks for the approved parameters: temperature, salinity, dissolved oxygen (DO), DO saturation, pH, turbidity, total N, total P, phosphate, silicates, NNN and NH4. Data was uploaded to the public website and data analysis, review, and trend identification was performed. This data was utilized in the creation of watershed management plans for Maui, including the Pohakea Watershed Management Plan and the Maalaea Bay Watersheds Management Plan. It has also been used to support funding request by partner organizations to support reef restoration projects at Olowalu, Maui’s “mother reef”.

A variety of outreach efforts were performed, including conference presentations, newspaper interviews, live webinars, report publication, event tabling, and field trip hosting. It was observed that most interest from the public comes immediately after a storm event when flooding and brownwater is most visible and impacting everyday life on the island. Looking forward, the HOKWO Steering Committee is always looking for ways to better convey the places where data is being used in Maui Nui to inform actions.



# WEST MAUI WATERSHED COORDINATOR

**Island:**  
Maui

**Watershed(s):**  
Honolua, Honokahua, Kahana, Honokowai, Wahikuli

**Contractor:**  
Department of Land and Natural Resources (DLNR)  
Division of Aquatic Resources (DAR)

**Project Type:**  
N/A

**Status:**  
Active

**START-END DATES** | 6/28/21 - 6/27/23

**FUNDING AMOUNT** | \$104,000 \$26,000  
\$319(h) GRANT AWARD MATCH AMOUNT

**POLLUTANT LOAD REDUCTIONS** | N/A

**% OF \$319(h) GRANT AWARD DISBURSED (\$104,000)\*\***

100%

*\*\*For state and local government projects, the full amount of the award is typically disbursed upfront and administered by the responsible agency.*

**% OF PROJECT COMPLETED**

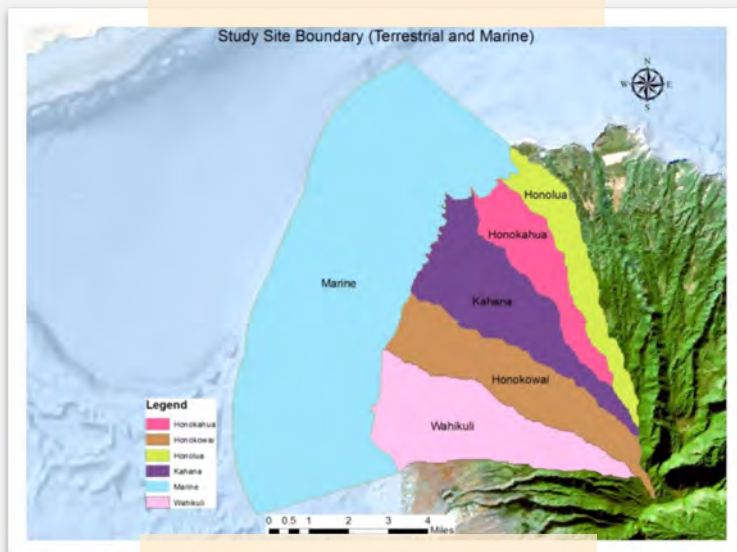
99%

## PROJECT DESCRIPTION

The Watershed Coordinator will conduct education and outreach and coordinate various water quality improvement projects among partners in the West Maui watersheds, particularly those that are part of the West Maui Ridge 2 Reef Initiative. This project is essentially an extension of the existing Watershed Coordinator position funded through December 2020; due to State procurement laws, the existing contract could not be extended and a new contract was developed.

## PROJECT UPDATE

The August 8th wildfires in Lahaina has resulted in a quick pivot to support coordination of the environmental science and monitoring response mounted by partner agencies and NGOs. Resource requirements for this effort has led to delays in other tasks such as documentation of Task Force progress, launching of the South Side ridge to reef working group, and planning for the October 6th Floating Workshop to give local decision makers an experiential learning opportunity. The Floating Workshop had to be cancelled without an understanding of when it might be appropriate to re-schedule.



← Map of five priority watersheds in the West Maui Ridge to Reef Initiative (R2R)

Prior to the shift in resources, the Watershed Coordinator worked to conduct education and outreach activities and coordinate various water quality improvement projects among partners in the West Maui watersheds. While work is primarily focused in West Maui, recent findings pertain to watershed and stormwater management issues in South Maui where drought combined with extreme deer pressure has been identified as the driver of the biggest episodic water quality concerns in leeward Maui. This finding has led to enhancing planning in the area to focus management practices where it is needed the most. Work was also completed to launch new water quality monitoring sites on Lanai.

# SUSTAINING THE SOURCE WATERS OF KAWAIHAE WATERSHED

**Island:**  
Hawai'i

**Watershed(s):**  
Kawaihae

**Contractor:**  
Department of Land and Natural Resources  
(DLNR)

The Kohala Center (TKC)

**Project Type:**  
Protection

**Status:**  
Active

**START-END DATES** | 2/11/22 - 2/10/26

**FUNDING AMOUNT** | \$234,000 §319(h) GRANT AWARD | \$58,500 MATCH AMOUNT

**POLLUTANT LOAD REDUCTIONS** | **TBD**

**% OF §319(h) GRANT AWARD DISBURSED (\$0)**

0%

**% OF PROJECT COMPLETED**

16%

## PROJECT DESCRIPTION

DLNR will work with TKC to institute an ungulate removal program and vegetation and water quality monitoring in the 'Eke Unit (an area located in the upper region of the Kawaihae Watershed) to determine the impacts of ungulate fencing and feral pig removal on vegetation ground cover and sediment load reduction in streams that feed into Pelekane Bay.

## PROJECT UPDATE

TKC has completed initial outreach activities, establishing potential project partnerships, conducting site visits with project partners to assess the project area, planning project effectiveness monitoring activities, and drafting and releasing project press releases. More recent work completed has included conducting meetings and site visits with project staff and partners to reorient and begin developing pilina (*relationship, connection*) with 'āina, and preparing a draft project effectiveness monitoring plan and a draft quality assurance project plan.

### Press Releases:

<https://www.hawaiinewsnow.com/2022/11/01/hawaii-island-major-effort-is-underway-save-critical-watershed/>

<https://kauainownews.com/2022/10/30/project-on-kohala-mountain-will-protect-cloud-forest-and-source-of-fresh-water-for-big-island/>

<https://www.bigislandvideonews.com/2022/10/27/project-aims-to-protect-kohala-mountain-native-cloud-forest/>

<https://www.khon2.com/local-news/234k-to-protect-native-cloud-forest-on-kohala-mountain/>



Fenced in 2004, Kilohana stream unit (left) neighboring 'Eke has thrived under pig-free conditions as indicated by the abundance of native plants covering the ground like 'ama'u, maile, and hāpu'u. (Photo credit: Mabina Patterson)

# DLNR, DIVISION OF FORESTRY AND WILDLIFE: POLLUTED RUNOFF CONTROL PROJECT FOR WEST MAUI

Island:  
Maui

Watershed(s):  
Honokahua, Honokowai, Honolua, Kahana, Wahikuli

Contractor:  
Department of Land and Natural Resources (DLNR)

Project Type:  
Restoration

Status: Active

START-END DATES | 1/30/18 - 11/29/23\*  
*\*Extended from original end date of 1/29/21*

FUNDING AMOUNT | \$735,161 \$184,000  
\$319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS | SEDIMENT  
**40**  
TONS/YEAR

% OF \$319(h) GRANT AWARD DISBURSED (\$735,161)\*\*

100%

*\*\*For state and local government projects, the full amount of the award may be disbursed at the start of the project and administered by the responsible agency.*

% OF PROJECT COMPLETED

84%

## PROJECT DESCRIPTION

DLNR will install a new ungulate control fence and retrofit an existing fence to exclude feral ungulates in the Pu'u Kukui Watershed (PKW) Preserve in the Honolua, Honokahua, and Kahana watersheds. DLNR will also retrofit an existing ungulate control fence to exclude feral ungulates from the Kapunakea Preserve in the Wahikuli and Honokowai watersheds.

## PROJECT UPDATE

The fence along the north slope from Honokahua to Honolua (PKW Section #5) was completed. Fencing was also installed along the Kapunakea North and South areas (TNC Section #2 and 3) and are about sixty percent complete. Along the south slope of Honokahua (PKW Section #4), approximately 200 meters of line was brushed and drop zones were opened up for the fence material. The contractor is currently working on installing and retrofitting the fence in the remaining areas.



Waterfall in Honokahua that is the natural barrier to which the fence will be built.



Crews use ropes to unroll and attach black mesh on the side slopes of Hanakao'o Valley.



# TREATMENT TRAIN: AN AHUPUA'A APPROACH TO WATERSHED BEST MANAGEMENT PRACTICES IN WEST MAUI

Island:  
Maui

Watershed(s):  
Honokahua, Honokowai, Honolua, Kahana,

Contractor:  
Maui Land & Pineapple Company, Inc. (ML&P)

Project Type:  
Restoration

Status:  
Active

START-END DATES | 5/1/19 - 4/30/24\*  
\*Extended from original end date of 4/30/22

FUNDING AMOUNT | \$599,999 \$549,557  
§319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS	SEDIMENT 178 TONS/YEAR	PHOSPHORUS 206 POUNDS/YEAR	NITROGEN 516 POUNDS/YEAR
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% OF §319(h) GRANT AWARD DISBURSED (\$529,341)



% OF PROJECT COMPLETED



## PROJECT DESCRIPTION

ML&P will implement a series of treatment measures and BMPs strategically placed for a sequential, multi-layered approach (Treatment Train) to reduce nonpoint source pollution in the Pu'u Kukui Watershed (PKW) Preserve located in the watersheds of West Maui. The Treatment Train will include the following BMPs: push pile stabilization, establishment of a native plant nursery and seed bank, landscape restoration, stream and gulch bank restoration, lo'i restoration, conservation fence maintenance, feral ungulate management, and invasive plant management.

## PROJECT UPDATE

The PKW Preserve staff continued successful efforts to fulfill and execute the proposed PKW BMPs. Work this year included removal of targeted invasive species; replanting with native plants; stocking PKW's native plant seed bank inventory with over one million native plant seeds collected from Wao kele o Honolua and within the preserve; reforestation; stream bank restoration; lo'i restoration; feral ungulate control; and education and outreach events. Implementation of the PKW BMPs will continue into the next fiscal year to achieve the intended outcome of improving water quality.



Uala growing abundantly in Honolua Valley after restoring a few of the lo'i terraces as well as a partial view of the rebuilt 'auwai at Pilikāman.

PKW staff introduces Wao kele o Honolua (left picture), and post-bike 'a'ali'i seed collection (right picture).



# AGRICULTURAL STEWARDSHIP AND STREAM RESTORATION IN KI'IKI'I AND PAUKAUILA WATERSHEDS

Island:  
O'ahu

Watershed(s):  
Ki'iki'i, Paukaula

Contractor:  
O'ahu Resource Conservation & Dev. Council (ORC&D)

Project Type:  
Restoration

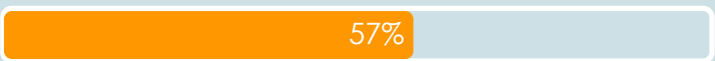
Status:  
Active

START-END DATES | 9/30/21 - 9/29/23

FUNDING AMOUNT | \$230,034 \$77,220  
§319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS	SEDIMENT TONS/YEAR	NITROGEN POUNDS/YEAR	PHOSPHORUS POUNDS/YEAR
	150	300	150

% OF §319(h) GRANT AWARD DISBURSED (\$132,577)



% OF PROJECT COMPLETED



## PROJECT DESCRIPTION

ORC&D will restore 300 linear feet of native vegetation in critical watershed areas (riparian buffers), develop five new conservation plans, implement agricultural BMPs that minimize sediment and nutrients delivered to surface and ground waters, and conduct education and outreach activities (with the goal of engaging approximately 200 stakeholders at 2 on-farm field days and 1 community forum) that encourages NPS pollution reduction and foster long-term community engagement.

*Trees and micro-irrigation have been established for the windbreak along the south border of the Kokua Hawaii'i Foundation property from the SE corner (pictured left) and the road intersection (pictured right) looking west.*



## PROJECT UPDATE

ORC&D worked to develop and execute five (5) conservation plans with Matsugoro Farms, Waialua Estates (Dole Food Company Hawaii), Na Mea Kuponon Learning Center, Kokua Hawaii Foundation, and Thrive Farms. Ironwood Estates, LLC was also granted Cooperator status although the conservation practices there did not warrant a conservation plan. Additional applicants have been identified to participate in the program and expend the remaining funds. ORC&D plans to conduct initial site visits to the properties and will continue to monitor conservation plan progress on those with approved conservation plans. ORC&D is working with the Department of Health (DOH) to extend the contract to continue work on the project.



# AGRICULTURAL STEWARDSHIP AND STREAM RESTORATION IN KAUKONAHUA

Island:  
O'ahu

Watershed(s):  
Ki'iki'i

Contractor:  
O'ahu Resource Conservation & Development Council (ORC&D)

Project Type:  
Restoration

Status:  
Active

START-END DATES | 10/20/22 - 10/19/25

FUNDING AMOUNT | \$476,794 \$199,094  
§319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS	SEDIMENT 300 TONS/YEAR	NITROGEN 600 POUNDS/YEAR	PHOSPHORUS 200 POUNDS/YEAR
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% OF §319(h) GRANT AWARD DISBURSED (\$5,565)

9%

% OF PROJECT COMPLETED

26%

## PROJECT DESCRIPTION

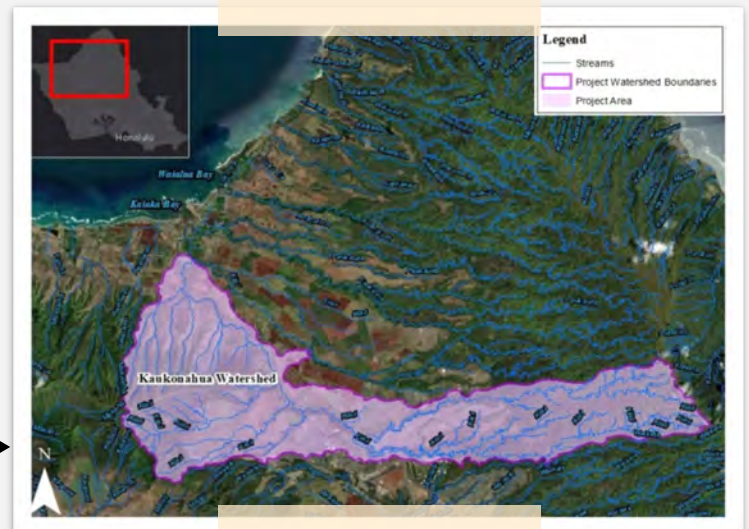
ORC&D will expand opportunities to reduce nonpoint source pollution contributions on agricultural lands and riparian areas in the Kaukonahua drainage area (a subunit of the Ki'iki'i watershed). The primary pollutants identified for the entire Ki'iki'i watershed, including Kaukonahua, are nutrients and turbidity. Erosion and sediment control on actively farmed lands is identified as a top priority by the Kaiaka Bay Watershed-based Plan, along with community education to engage and educate farmers and landowners on BMPs. Funds will be used to:

- 1) Implement agricultural Best Management Practices (BMPs) that minimize sediment and nutrients delivered to surface and ground waters; and
- 2) Conduct education and outreach activities that encourage nonpoint source pollution reduction and foster long-term community investment by engaging around 200 local stakeholders and community groups.

## PROJECT UPDATE

The BMP Investment Fund was established to provide cost-share funding for implementation of agricultural BMPs. The fund allocates \$144,488 into the cost-share program for participating farmers to implement BMPs on their lands. Nine (9) applicants were approved by the ORC&D internal team and board to participate in the project based on which BMPs would have the greatest value and impact to reduce nonpoint source pollution in the watershed. In addition, two (2) cooperator conservation plans were approved and six (6) new conservation plans are underway and expected to be completed in the coming months.

Kaukonahua Project Area Map →



# MITIGATING EROSION IN THE PELEKANE WATERSHED USING UNGULATE AND WILDFIRE MANAGEMENT

Island:  
Hawai'i

Watershed(s):  
Kawaihae

Contractor:  
Queen Emma Land Company

Project Type:  
Restoration

Status:  
Active

START-END DATES | 7/11/22 - 7/10/27

FUNDING AMOUNT | \$257,125 \$64,297  
\$319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS | SEDIMENT  
**1,648**  
TONS/YEAR

% OF \$319(h) GRANT AWARD DISBURSED (\$49,015)

19%

% OF PROJECT COMPLETED

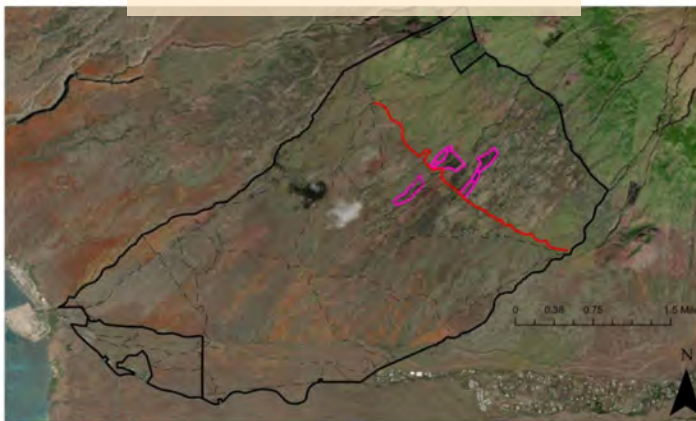
19%

## PROJECT DESCRIPTION

This project seeks to implement landscape-scale strategies to: 1) restore groundcover by excluding ungulates from an existing 180-acre denuded, erosion hot spot; 2) minimize wildfires within the watershed's dry lowlands through managed grazing to reduce fuel loads, improved fire infrastructure, a network of fuel breaks established during 4.5 miles of road improvements, and increased fire-fighting access and water availability for fire suppression; and 3) maintain 6,500 goat-free acres thru monitoring and fence repairs.

## PROJECT UPDATE

Ongoing project activities includes improving 2.09 miles of existing ranch roads for fire response access, maintaining 3.01 miles of fire and fuel breaks, and continued monitoring and maintenance of the perimeter fence. Support is also provided to Parker Ranch who practices rotational grazing to manage fuel loads to mitigate wildfires. Planning for goat removal activities is also ongoing. The contractor is in the process of modifying their contract to address the substantial increase in material and labor pricing for fence construction and modification of the fence location. Once the contract is modified and the 180-acre enclosure fence is installed, the contractor expects to proceed with vegetation cover monitoring, sediment monitoring, and road improvement monitoring.



**Road and Firebreak Improvements**

— QE\_Road\_Improvement  
— QE\_Infrastruct\_Roads  
— QE\_DOH\_Project\_Area  
— Firebreaks Maintained

Created by Robbie Justice:

Fuel break along Kawaihae Road before and after cut of grass. This was done independent of 319 funding.



Locations of the 2.09 miles of road improvements (red) and 3.01 miles of firebreak maintenance (pink) completed between 12/7/22 and 12/11/22.



# HE'EIA WATERSHED UNGULATE-EXCLUSION FENCING AND EROSION CONTROL

Island:  
O'ahu

Watershed(s):  
He'eia

Contractor:  
The Nature Conservancy

Project Type:  
Restoration

Status:  
Active

START-END DATES | 11/23/20 - 11/22/24\*  
\*Extended from original end date of 11/23/23

FUNDING AMOUNT | \$210,934 \$52,734  
\$319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS | SEDIMENT 540 TONS/YEAR | NITROGEN 160 POUNDS/YEAR

% OF \$319(h) GRANT AWARD DISBURSED (\$19,575)

9%

% OF PROJECT COMPLETED

35%

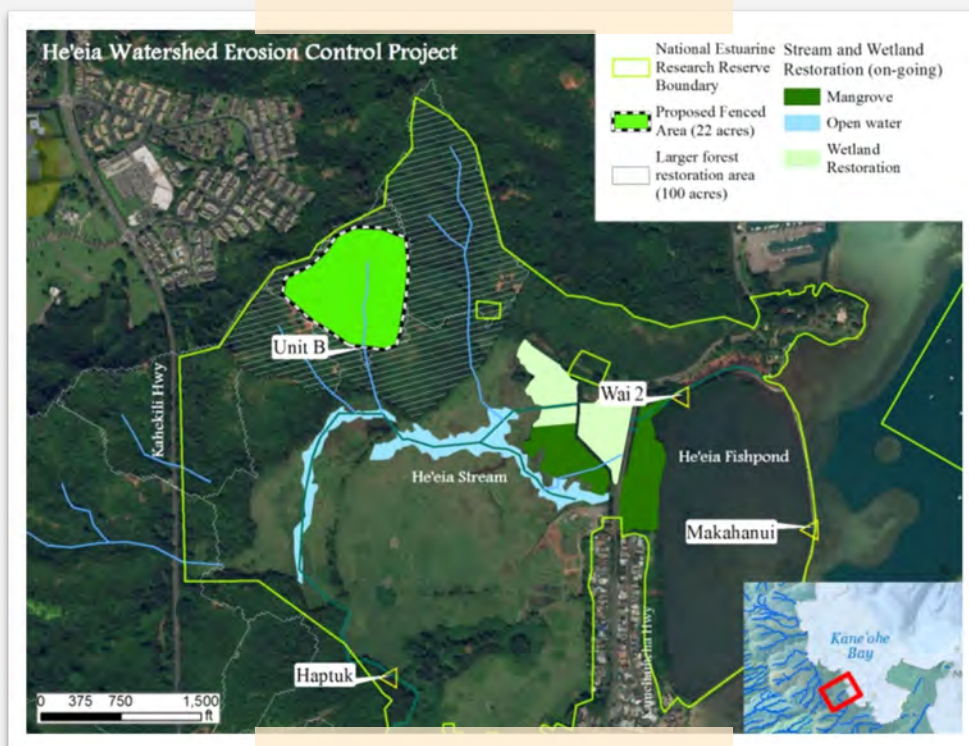
## PROJECT DESCRIPTION

This project will focus on reducing sediment, total nitrogen, and total suspended solids in the He'eia watershed by installing an ungulate fence in the 22-acre sub-watershed above the He'eia estuary and coordinating with community partners/groups to remove feral ungulates in the fenced area and restore native vegetation.

## PROJECT UPDATE

The Nature Conservancy (TNC) is in the process of soliciting proposals for a contract to build the fence. Recent activities have included data entry and preliminary analysis of the erosion and vegetation baseline data and presentation of the results at the Hawaii Conservation Conference. Water quality sampling was conducted at nine sites established for longterm monitoring in the He'eia watershed, including four sites downstream of the ungulate removal site. These sites monitor for nutrients and suspended sediment, in addition to physical parameters. Work was also done to sample the groundwater springs throughout the watershed, including the wetland and the area downstream of the project site.

Upcoming work will include moving forward with the fencing contract, completing vegetation plots and feral pig density estimates, and initiating fence construction. TNC was granted a no-cost extension for this award to ensure sufficient time to accomplish all of the grant objectives and deliverables.



Map of the proposed fenced area within the He'eia watershed.



# WATERSHED IMPLEMENTATION PROJECT FOR THE AHUPUA‘A OF WAIPĀ—PHASE 2

**Island:**  
Kaua‘i

**Watershed(s):**  
Waikoko, Wai‘oli, Waipā

**Contractor:**  
The Waipā Foundation

**Project Type:**  
Restoration

**Status:**  
Completed

**START-END DATES** | 3/20/19 - 3/19/23\*  
*\*Extended from original end date of 3/19/21*

**FUNDING AMOUNT** | \$350,998    \$135,375  
\$319(h) GRANT AWARD    MATCH AMOUNT

**POLLUTANT LOAD REDUCTIONS** | **SUSPENDED SOLIDS** | **FECAL COLIFORM**  
**>40,000**    **~2x10<sup>15</sup>**  
POUNDS/YEAR    CFU/YEAR

**% OF \$319(h) GRANT AWARD DISBURSED (\$350,998)**

100%

**% OF PROJECT COMPLETED**

100%

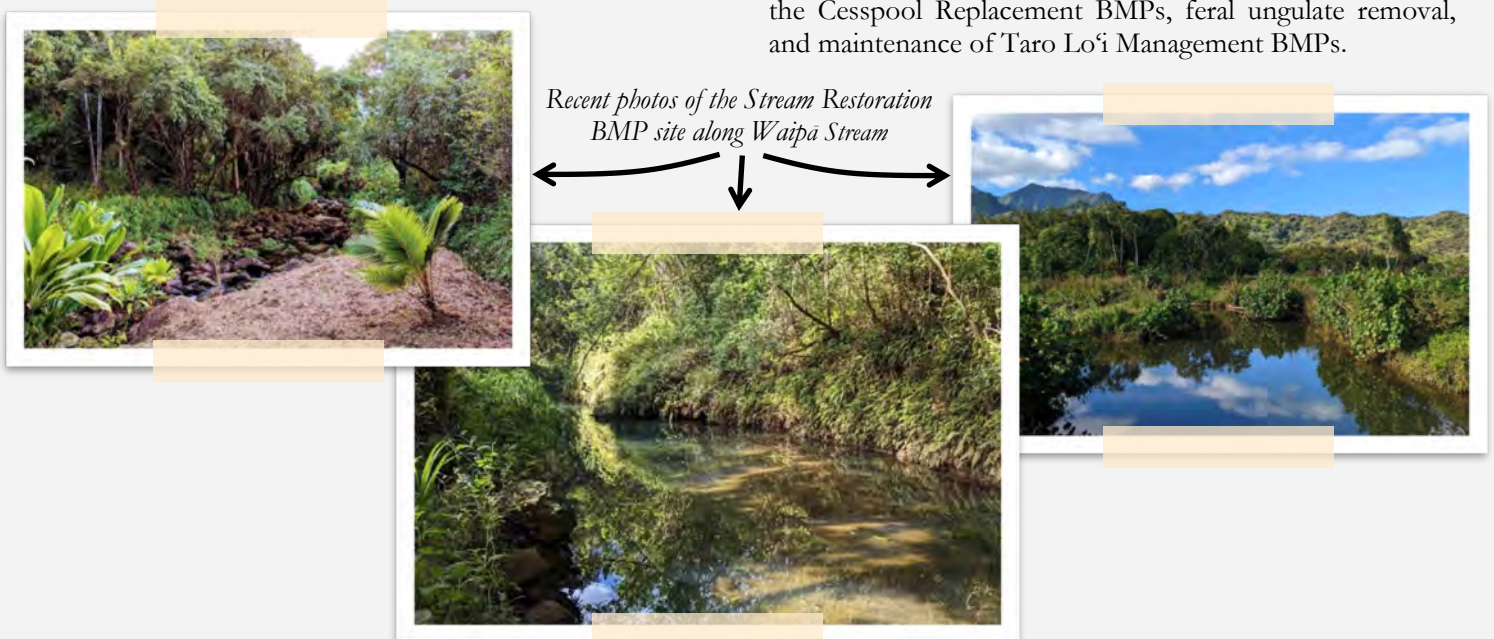
## PROJECT DESCRIPTION

The Waipā Foundation will build upon the progress made in the Waipā Phase 1 project by: 1) replacing 5 existing cesspools along the Waipā, Wai‘oli, and Waikoko Stream watersheds with alternative Individual Wastewater Systems (IWS); 2) continuing the feral ungulate removal program implemented in the Waipā Phase 1; 3) restoring 1 acre of the lower Waipā Stream riparian corridor and retreating the areas of the Waipā Stream that were damaged by the April 2018 floods; 4) implementing taro lo‘i management practices; and 5) maintaining BMPs installed in Waipā Phase 1.

## PROJECT UPDATE

The Stream Restoration BMP for Waipā Stream was recently completed. Both banks of the Waipā Stream were cleared and temporary erosion control BMPs (mulching, grass seeding, irrigation, perimeter sediment control, and silt curtains) were installed in 2022. The work area received intense maintenance, and cut tree material was chipped and shredded into mulch for use in upland areas. Propagated plants from the Waipā Native Plant Nursery were also out-planted along the stream and within the stream corridor. Other recent work accomplished include targeting invasive Albizia trees for bark-stripping treatment, coordination for the Cesspool Replacement BMPs, feral ungulate removal, and maintenance of Taro Lo‘i Management BMPs.

*Recent photos of the Stream Restoration BMP site along Waipā Stream*



# EXPANDING WATER QUALITY IMPROVEMENT PROJECTS AT HE'EIA FISHPOND

**Island:**  
O'ahu

**Watershed(s):**  
He'eia

**Contractor:**  
University of Hawai'i Sea Grant College Program  
(UH Sea Grant)

**Project Type:**  
Restoration

**Status:**  
Completed

**START-END DATES** | 3/31/20 - 9/29/23\*  
*\*Extended from original end date of 3/30/22*

**FUNDING AMOUNT** | \$306,462 \$71,105  
\$319(h) GRANT AWARD MATCH AMOUNT

POLLUTANT LOAD REDUCTIONS	PHOSPHORUS	NITROGEN	SUSPENDED SOLIDS
	9 POUNDS/YEAR	48 POUNDS/YEAR	2,342 POUNDS/YEAR

**% OF \$319(h) GRANT AWARD DISBURSED (\$273,393)**

89%

**% OF PROJECT COMPLETED**

100%

## PROJECT DESCRIPTION

UH Sea Grant, in partnership with Paepae o He'eia and Hui Kū Maoli Ola, will remove 5.25 acres of invasive red mangrove and hau from He'eia Fishpond and install rain gardens in front of two storm drain outlets to reduce nutrient and sediment concentrations in He'eia fishpond. In addition, UH Sea Grant will monitor water quality and circulation to determine the project's impact on pollution reduction in He'eia's waterways. Outreach efforts will educate local stakeholders and community members on the connection between a healthy invasive-free ahupua'a system and improved water quality.

## PROJECT UPDATE

UH Sea Grant and its partners delivered a public education event focused on He'eia ahupua'a water quality from mauka to makai. The event was attended by about 60 people and provided an opportunity to share information on non-point source pollution and the role of storm drains in water quality across the ahupua'a. Removal of the invasive red mangrove and hau also continued although there were delays and increased costs due to unexpected site conditions, which required the project be adapted to include more hand removal, and a lower number of volunteers due to COVID. Although a contract extension was requested, one was not granted and DOH worked with UH Sea Grant to ensure that project objectives were still met.

*Photos from the public education event. The stations covered topics on water quality science and mo'olelo (stories, myths, legends).*





# NATIVE FOREST RESTORATION IN THE KO'OLAU MOUNTAINS

**Island:**  
O'ahu

**Watershed(s):**  
Ala Wai, Kahalu'u

**Contractor:**  
University of Hawai'i (UH)

**Project Type:**  
Restoration

**Status:**  
Active

**START-END DATES** | 7/13/22 - 7/12/24

**FUNDING AMOUNT** | \$15,793 \$0  
\$319(h) GRANT AWARD MATCH AMOUNT

**POLLUTANT LOAD REDUCTIONS** | REDUCED TURBIDITY

% OF \$319(h) GRANT AWARD DISBURSED (\$5,272)

20%

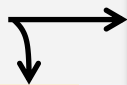
% OF PROJECT COMPLETED

63%

## PROJECT DESCRIPTION

The purpose of this project is to restore native forests in the Kahalu'u watershed (Waihe'e subwatershed) and Ala Wai watershed (Mānoa subwatershed) through establishing robust native plant communities that reduce erosion, capture stormwater and increase recharge, sustain habitat for native biota, and provide educational and stewardship opportunities. The Ko'olau Mountains Watershed Partnership (KMWP) will conduct site preparation (invasive species removal) in fenced areas and plant 125 native species per year at each site (500 plants total).

*HPU volunteers clearing invasive weeds in Waihe'e and outplanting native plants.*



## PROJECT UPDATE

KMWP reached and exceeded their goal to install the first batch of native plants at both the Waihe'e and Mānoa restoration sites. Site preparation and installation of the second batch of native plants was also completed at the Waihe'e restoration site and initiated at the Mānoa Cliff restoration site. A total of 660 native plants were installed as of June 2023. Efforts involved three volunteer work days that included members from Kupu's Hawai'i Youth Conservation Corps (HYCC) and the Hawai'i Pacific University (HPU) Natural Resources & Environmental Management undergraduate program. KMWP is ahead of schedule to complete installation of additional native plants and will continue conducting education and outreach activities during the project timeframe.



*HYCC Kupu Members carrying native plants (a'ali'i pictured) into the Mānoa Cliffs restoration site.*