Executive Summary

Brown and Caldwell (BC) supported the County of Maui Department of Water Supply (MDWS) with the development of a stream restoration program in the Ha‘ikū region from Kakipi Gulch to Kailua Gulch. This report is a roadmap identifying potential stream restoration measures that may be undertaken based on current data, regulations, and community input. It summarizes available information about stream flows, stream diversions, ditch flows, and uses of stream water and identifies future data needs. Through the process of creating the program, community members were consulted about guiding principles for stream restoration and actions that can be taken to restore the streams and watersheds of the Ha‘ikū region. Their input is reflected in the proposed strategies.

The maintenance of instream flows is important to the protection of traditional and customary (T&C) Native Hawaiian rights, as they relate to the maintenance of stream resources for gathering, recreation, and the cultivation of kalo. Water has great significance to Native Hawaiians and others consulted during the study. The flow of water from mountain to ocean is integral to the health of the land. Healthy land makes for healthy people, and healthy people can sustain themselves.

In modern times, streams in the Ha‘ikū region are primarily intermittent, flowing only during rainy periods. Based on the most recent available data from 1999, flow in Waiohiwi Gulch, a tributary to Māliko Gulch, was perennial between about 2,000 feet and 4,000 feet elevation. At lower elevations in Māliko Gulch, flow was perennial at only a few spots downstream of springs and near the coast.

Figure 1. Kuiaha Bay

Credit: Starr

The Kuiaha and Kaupakulua Gulch systems were usually dry from sea level to an elevation of 350 feet and gained water from about 350 feet to about 900 feet elevation. The two main branches of the Kaupakulua Gulch system alternately gained and lost water as high as 2,400 feet elevation. Kakipi Gulch had perennial flow over much of its length but was often dry near the coast below 400 feet elevation. With climate change reducing precipitation in the Ha‘ikū region, it is anticipated that flows will be lower than measured in 1999.

Stream diversions send water from some of the Ha‘ikū region streams to individual users in the Ha‘ikū region and to the East Maui Irrigation (EMI) system for agricultural and municipal uses in Upcountry and Central Maui. During the first half of 2024 an estimated 1.55 million gallons per day (mgd) of surface water entered the EMI system between Honopou Stream and Māliko Stream (EMI, June 2024). Most of the surface water enters the ditch system only during rainy periods when streams are experiencing high flow conditions. During low flow conditions, most of the diversions do not remove water from the streams, many of which do not flow during dry times.

Restoring mauka-makai streamflow is not likely to be achieved only by modifying or abandoning stream diversions. Watershed restoration through the removal of invasive species and replanting of native forests is a key activity to improve stream flows in Ha‘ikū. Native vegetation holds rainfall on the ground surface for longer, allowing it to infiltrate and saturate the stream beds and maintain a more continuous flow. Native vegetation holds soil in place more than invasive plants, preventing sediment from running off the land and downstream into the ocean.

This program identifies strategies, lead agencies/organizations, potential funding, and timeline for stream restoration in Ha‘ikū. To initiate one aspect of a Stream Restoration Program, MDWS may file a petition to amend interim instream flow standards (IIFS) for applicable Ha‘ikū area streams. The petition may trigger further data collection by the Commission on Water Resource Management (CWRM) regarding the status of stream diversions and observations of stream flows. However, the CWRM presently has limited capacity to prioritize setting amended IIFS for streams with intermittent flow. Additional data may be collected by monitoring stations to identify whether water flows in streams over time.

Future steps may include detailed studies for each of the applicable streams in the study area. The IIFS proceedings including public hearings may be conducted for perennial reaches, and the CWRM may take action to amend the IIFS. The action to amend the IIFS may require parties presently diverting water from streams to modify or abandon diversions to reduce current withdrawals, potentially impacting individual users as well as companies.

Stream restoration can also include bank stabilization, removal of invasive species and planting of native species to reduce erosion and improve habitat for aquatic species. If stream channel modifications are proposed as part of the restoration effort, or if federal funds will be used, additional permitting requirements will apply.

Figure 2 shows potential strategies in a Ha‘ikū Stream Restoration Program.

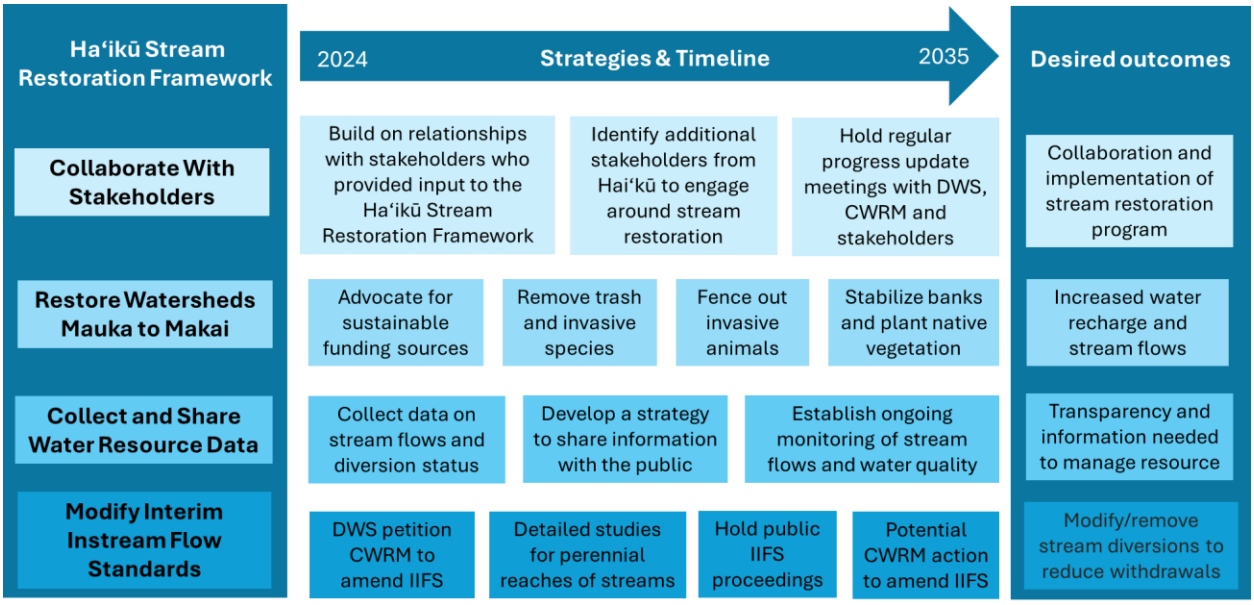

Figure 2. Ha‘ikū Stream Restoration Program Strategies

Alongside the IIFS amendment process for applicable streams/reaches, there are other important strategies to improve the health of Ha‘ikū streams. Watershed restoration is a critical component of restoring water that feeds Ha‘ikū streams. Current efforts by the State, County, and East Maui Watershed Partnership (EMWP) to install fences, remove invasive species and replant native forest should be continued and expanded.

Data on stream flows, stream diversions, and ditch flows should be collected and made available to the CWRM and to the public to provide transparency around water resources in the Ha‘ikū region and foster informed public participation in the stream restoration program.

Table 3 summarizes proposed stream restoration program strategies with potential funding sources, lead entities, and timeline.

Table 1. Ha‘ikū Stream Restoration Program Strategies

Id no.	Strategy	Funding	Lead	Timeline
1	Continue work to restore Hāmākualoa Open Space in support of healthy makai watersheds and streams.	County, State, Federal, non-profit, private	Malama Hamakua	Ongoing
2	Continue work to protect mauka watersheds and control negative impacts of erosion on streams, water supplies, and nearshore environment.	County, State, Federal, non-profit, private	EMWP	Ongoing
3	Submit a petition for amended IIFS for applicable streams that had perennial reaches in 1999.	County	DWS	2024
4	Hold regular progress meetings to share information on ditch flows, stream diversions, and status updates on the stream restoration program.	County, State, non-profit, private	DWS, CWRM, HCA, Mahi Pono	2025
5	Monitor surface water quality and quantity.	State, Federal, County, non-profit	CWRM, DWS USGS, HCA	Ongoing
6	Collect preliminary data on stream diversion status and stream flows.	State	CWRM	2025
7	Conduct hydrological studies of applicable streams as potential candidates for amended IIFS.	County, State, Federal	DWS, CWRM, USGS	2026
8	Identify streams/reaches that are candidates for physical modifications to reduce erosion and improve aquatic species habitat, and develop permitting plans and designs for channel alterations in applicable locations.	County	DWS, HCA	2027
9	Conduct public IIFS proceedings to provide more opportunities for stakeholder involvement and collect more information about T&C uses of stream water.	State	CWRM	2028
10	Consider adoption of amended IIFS for applicable streams.	State	CWRM	2030
11	Modify or abandon stream diversions as necessary to comply with amended IIFS and provide status updates to CWRM and community.	Private	EMI	2035

Abbreviations: CWRM = Commission on Water Resource Management, DWS = Department of Water Supply, EMI = East Maui Irrigation, EMWP = East Maui Watershed Partnership, HCA= Ha‘ikū Community Association, IIFS = Interim Instream Flow Standards, USGS = United States Geological Survey