

Project Description

3.12.25

**BUILDING AN ADAPTIVE MANAGEMENT PLAN
FOR THE KEAUHOU AQUIFER SYSTEM AREA**

The Commission on Water Resource Management (CWRM) is reconsidering its approach to adaptive groundwater management in the Keauhou Aquifer System Area. Because current and planned groundwater withdrawals from the Keauhou aquifer area have possible wider implications across the entire aquifer area, CWRM intends to expand the study zone originally requested by the National Historic Park to include the entire ahupua'a in the Keauhou Aquifer System Area. We will be assisted in this effort by Peter S. Adler, PhD and Isabella Roberson, Project Assistant.¹

Objectives

Between March and September of 2025, the Commission on Water Resource Management (CWRM) will be developing a robust model for an Adaptive Management Plan (AMP) for the Keauhou Aquifer System Area on the Island of Hawai'i. The goal is to move the topic of Keauhou GDEs from dialogue to applied, actionable science. Further, it is hoped that this plan will serve as a useful framework for AMPs in other areas of CWRM's jurisdiction.

Specifically for Keauhou, the plan will be used to:

- (1) inform what conditions may need to be attached to withdrawal permits;
- (2) establish monitoring indicators and potential mitigative strategies, and
- (3) set in place a framework and timeline for AMP updates that will respond to gaps in information.

Starting Points

¹ Peter S. Adler, PhD - Partner, GUILD Consultants (<https://guild.consulting>). Adler organized the 2017 symposium and has worked on other state water issues. Isabella Roberson, MA, is a graduate of the UH Department of Urban and Regional Planning and worked with Institute for Sustainability and Resilience.

This project will build on the 2017 symposium on Groundwater Dependent Ecosystems²; the proposal for an AMP submitted by the Kaloko-Honokōhau National Historical Park³; the peer reviewed research conducted by Gibson, Bremmer, Burnett, Lui, and Smith⁴; and other research conducted by relevant experts.

Other research to be gathered will include updates and the current status of (1) Water Quantity and Quality; (2) Native and Invasive Species; and (3) Contaminants and Pollutants. Additional updated information will include (4) Current Native Hawaiian practices; and (5) current climate change and sea level rise projections. Each of these updates will be undertaken by a Working Group of 3-to-5 experts organized by Dr. Adler.

What Will be Produced and How

Groundwater Dependent Ecosystems (“GDEs”) are unique communities of endemic plants, animals, and human users that rely on a flow of fresh water. In Hawai‘i, GDEs are most prominently found along the Kona coast. Ground water moves down gradient from different sources and through complex basaltic rock channels and is then found in anchialine pools, fish ponds, and near shore estuaries. GDE features are important cultural sites for biodiversity and Native Hawaiian food and water gathering.

While Keauhou’s coast has been studied, the normal precursor to a complete AMP is a specific map of all GDE features to be managed. While that will remain a task to be done, a robust AMP will still capture what is known now, state current assumptions, and identify areas of further investigation. However imperfect, a Keauhou AMP may turn out, it is expected to be robust enough to help inform permitting and pumpage decisions, create monitoring indicators, and be fully adaptive to changes as new information emerges and the plan is updated.

The project will take place in 4 phases:

Phase I - Alignment with CWRM and Project Planning and Coordination. Anticipated completion by April 30, 2025

² https://files.hawaii.gov/dlnr/cwrp/activity/keauhou/20181108-GDE_Symposium_Final.pdf

³ “Pilot Adaptive Management Plan For (1) Protecting Groundwater Dependent Ecosystems In Kaloko-Honokōhau National Historical Park and (2) Providing Water Security and Sustainability in the Keauhou Aquifer System Area, Hawai‘i County, Hawai‘i” December, 2022

⁴ “Biocultural Values of Groundwater Dependent Ecosystems in Kona, Hawai‘i” by Veronica L. Gibson, Leah L. Bremer, Kimberly M. Burnet, Nicole Keaka Lui, and Celia M. Smith. Resilience Alliance, 2022.

Phase II - Working Group Meetings. Anticipated completion by June 15, 2025

Phase III - Briefings for CWRM and the Public. Anticipated completion by August 31, 2025

Phase IV - Adaptive Plan Development. Anticipated completion by September 30, 2025

The effort will also have the following features:

- Ongoing reference to Keauhou Aquifer's sustainable yield
- Regular interaction with and participation of CWRM staff
- The advice of a small advisory committee
- Starting and ending consultation by a mainland AMP expert
- A summary of current "known knowns" and "known unknowns"
- The development of monitoring indicators
- Further questions for practical research that will make the plan adaptive

Barring unexpected delays, the project should be completed by September 2025.

Contacts:

Peter S. Adler, PhD – Project Director

padleraccord@gmail.com

(808) 683-2849

Isabella M. Roberson, MA – Project Assistant

irobe@hawaii.edu

(916) 212-2754