

Preliminary Draft Outline

5.31.25

**ADAPTIVE MANAGEMENT PLAN
FOR THE KEAUKOU AQUIFER'S GDEs**

A 1st Generation Plan for Keauhou's
Groundwater Dependent Ecosystems

Executive Summary

I. Introduction

- What is an AMP, why is it needed
- AMP good practices
- Keauhou focus: Coastal GDEs and 1st and future generation AMPs
- How this plan was developed
 - Alignment, Phases, and Meetings with CWRM Staff
 - Advisory Panel
 - Working Groups
 - Stakeholder Consultations
 - Outside Reviewer
 - Updates and public briefings to CWRM

II. The Setting

- The KASA described and Keauhou Aquifer “By the Numbers”
- Key GDE features and indigenous aquaculture sites
 - Anchialine pools
 - Fish Ponds
 - Estuarine sites and near shore fisheries
 - Other
- Foundational documents (initial list)

III. The Problem

- Starting assumptions
 - Fresh water as the foundation for both economic and environmental sustainability in West Hawai'i
 - All parts of a watershed “mauka to makai”, are interconnected

- Decisions regarding Keauhou GDEs will affect other decisions about fresh water withdrawals which have implications for regional development
- Short and Long Term Threats
 - Over development
 - Contamination and pollution
 - Flooding, runoff and erosion
 - Sea level rise, saltwater intrusion, and altered precipitation pattern, drought,

IV. AMP Goals

- (1) Perpetuate a flow of fresh groundwater to GDEs sufficient that native biota and public trust obligations to Native Hawaiians can be sustained using the Hawai'i Supreme Court's Ka Pa 'akai o ka 'Āina decision and method of analysis;
- (2) Help directly decide or indirectly inform management decisions regarding requests for future ground water withdrawals, including special conditions that will be attached to CWRM's pump installation permits and inform county water use and development planning for the Keauhou region;
- (3) Establish monitoring indicators, and potential triggers for permitting and management actions related to ecological and cultural thresholds;
- (4) Set in place a plan that will be continually updated by CWRM into second and third-generation plans as technical knowledge from both Western and Hawaiian perspectives emerges.

V. Methodology (to be more fully determined and updated in successive drafts)

(Establish key quantitative indicators, choose initial sentinel sites, gather existing data and knowledge, establish monitoring procedures and monitoring tools, hypothetical triggers/thresholds)

VI. Caveats and Uncertainties

- No fully complete inventory of GDE features
- The precise sources and flow patterns of fresh water coming to the GDEs
- GDE biota inventories
- Insufficient or contradictory current monitoring knowledge
- Black Swan events

VII. Expert Group Recommendations

- Native Hawaiian and 'Ohana Traditional and Customary Practices / Kilo
 - Participating Experts
 - Recommended Baseline Indicators
 - Assumptions behind the indicators
 - Specific research for a 2nd generation AMP
- Hydrology
 - Participating Experts
 - Recommended Baseline Indicators
 - Assumptions behind the indicators
 - Specific research for a 2nd generation AMP
- Indicator Species
 - Participating Experts
 - Recommended Baseline Indicators
 - Assumptions behind the indicators
 - Specific research for a 2nd generation AMP
- Contamination and Pollution
 - Participating Experts
 - Recommended Baseline Indicators
 - Assumptions behind the indicators
 - Specific research for a 2nd generation AMP

VIII. Recommendations for Implementation

- Short Term
- Long Term

IX. Next Steps and Appreciations

Appendices

1. Participants and Persons Consulted and Meeting Notes
2. Literature consulted