County of Kaua‘i
Water Use & Development Plan Update

Kapa‘a, Kaua‘i
August 22, 2023

Department of Water
County of Kaua‘i

Fukunaga & Associates, Inc.
Presentation Outline

- Background – Hawaiʻi Water Plan
- WUDP Objective
- Key Tasks and Findings
- Timeline/Next Steps
Background - Legislative Mandate

- 1987 – Hawai‘i Water Code (HRS Chapter 174C)
- Protect Hawai‘i’s surface & ground water resources
- Established the Commission on Water Resource Management (CWRM)
- Developed the Hawai‘i Water Plan – “a long range planning guide for CWRM”
Hawai‘i Water Plan

Protection Policies

- Water Resource Protection Plan: CWRM
- Water Quality Plan: DOH

State Needs

- State Water Projects Plan: DLNR
- Agricultural Water Use and Development Plan: DOA

County-Wide Demands

County Water Use and Development Plans

Land Use Consistency
County WUDP Objective

... to set forth the allocation of water to land use through the development of policies & strategies to guide the County in its planning, management and development of water resources to meet projected demands.
Key Goals

- Preserve integrity of the island’s water resources
- Direct water resources to the needs of the County
- Guide the management of the island’s water resources
- Integrate sustainable water resources into the formulation and development of land use policies by the County
AQUIFER SYSTEM AREA (ASYA) CHAPTER
ASYA Chapter

Sections:

- **System Area Profile**
- **Types of Water Resources**
- **Existing Water Use**
- **Projected Future Water Use**
- **Resource and Management Recommendations**
System Area Profile

- General background, including
  - Population and population projections
  - Land use (General Plan, Zoning)
  - Estimated community densities

<table>
<thead>
<tr>
<th>Table 2-2 Estimated Residential Community Densities</th>
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</thead>
<tbody>
<tr>
<td><strong>ASYA</strong></td>
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<tr>
<td>Kōloa</td>
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<td>Kekaha</td>
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<tr>
<td>Waimea</td>
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<td>Makaweli</td>
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<tr>
<td>Hanapēpē</td>
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</table>

<table>
<thead>
<tr>
<th>Table 2-3 Estimated Resort Densities</th>
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</thead>
<tbody>
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<td>Hanapepe</td>
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</tbody>
</table>
ASYA Chapter

Sections:

- System Area Profile
- Types of Water Resources
- Existing Water Use
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- Resource and Management Recommendations
Types of Water Resources

- Ground Water
- Surface Water
- Rainwater Catchment
- Recycled Water
Existing Water Resources

- Ground Water
  - Sustainable Yield
  - Production Wells

Sustainable yield is the maximum rate at which water may be withdrawn from a water source without impairing the utility or quality of the water source, as determined by CWRM.
Water Resource Management

- **Surface Water**
  - Streams
  - Irrigation Systems
  - Diversions
  - Interim Instream Flow Standards
Types of Water Resources

- Rainwater Catchment
- Recycled Water
ASYA Chapter

Sections:

- System Area Profile
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## Existing Water Uses

### Table 20104-5: Existing Water Use by Category – Anahola ASYA

<table>
<thead>
<tr>
<th>CWRM Category</th>
<th>Ground Water (mgd)</th>
<th>Other Sources (mgd)</th>
<th>Total (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0.01</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>Industrial</td>
<td>0.00</td>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td>Irrigation</td>
<td>0.00</td>
<td>TBD¹</td>
<td>0.00</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.14</td>
<td>TBD¹</td>
<td>0.14</td>
</tr>
<tr>
<td>Military</td>
<td>0.00</td>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td>Municipal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOW System</td>
<td>2.15</td>
<td></td>
<td>2.15</td>
</tr>
<tr>
<td>State System</td>
<td>0.00</td>
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<td>0.00</td>
</tr>
<tr>
<td>Private/Public WS</td>
<td>0.04</td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2.34</strong></td>
<td></td>
<td><strong>2.34</strong></td>
</tr>
</tbody>
</table>

¹ Surface Water – TBD from AWUDP

### Figure 20104-6: Existing Water Use by Category - Anahola ASYA

- **Potable**
  - DOW = 2.15
  - PPWS = 0.04
- **Non-Potable**
  - SW = TBD
  - GW = 0.14

* Values to be determined by other components of the Hawai‘i Water Plan
20103 Wailua – Existing Water Use by Category

WATER USE (mgd)

Potable

Non-Potable

Municipal  Domestic  Industrial  Military

CWRM WATER USE CATEGORY

DOW (SW) = 0.72
DOW (GW) = 0.26

SW = TBD*

RW = 0.00
GW = 0.00

SW = TBD*

GW = 0.00

*Values to be determined by other components of the Hawai‘i Water Plan
20104 Anahola – Existing Water Use by Category

DOW = 2.15

*Values to be determined by other components of the Hawai‘i Water Plan
ASYA Chapter

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Assess land use plans and policies and future projected water demands
Projected Future Water Use

- Based on Full Build-Out Water Demands
  - Reviewed existing land use plans and policies
  - Conservative approach – assumes ALL land area developed to its theoretical maximum extent
  - Based on existing water system standards and allowable density
  - Focused on domestic, commercial and industrial demands and groundwater source availability
SUSTAINABILITY OF LAND USE POLICIES

Less sensitive area

DEMAND/SUSTAINABLE YIELD (MGD)

SUSTAINABLE YIELD (WRPP)

GENERAL PLAN FULL BUILD-OUT SCENARIO

ZONING FULL BUILD-OUT SCENARIO
EXISTING DEMAND

EXISTING POPULATION

PROJECTED DEMAND

PROJECTED WATER DEMAND

PROJECTED POPULATION GROWTH

HIGH GROWTH

MEDIUM GROWTH

LOW GROWTH

DEMAND (MGD)

TIME

GENERAL PLAN FULL BUILD-OUT SCENARIO

ZONING FULL BUILD-OUT SCENARIO

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20103 Wailua – Water Demand Projections and Full Build-Out

Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20103-4.1.1 County of Kaua‘i Important Agricultural Lands Study.
20104 Anahola – Water Demand Projections and Full Build-Out

![Graph showing water demand projections for SY, General Plan Full Build-Out, Zoning Full Build-Out, and Total Existing Demand from 2015 to 2035.](image)

- **SY = 21**
- **General Plan Full Build-Out Scenario = 10.29**
- **Zoning Full Build-Out Scenario = 7.31**
- **Total Existing Demand = 2.20**

**Note:** Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20104-4.1.1 County of Kaua‘i Important Agricultural Lands Study.
Projected Future Water Use

- Projected Agricultural Water Use

### 20103 Wailua – Irrigation of Agricultural Lands

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Surface Water Supply*</td>
<td>7.56 mgd</td>
</tr>
<tr>
<td>Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study</td>
<td>5,301 acres</td>
</tr>
<tr>
<td>% IAL that can be irrigated @ 3,400 gal/ac/day</td>
<td>42%</td>
</tr>
</tbody>
</table>

*Declared surface water use from diversions
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Resource and Management Recommendations

- Water Resource Availability
  - Full Build-Out vs. SY
  - 20-Year Population Projection vs. SY

- Water Resource Management
  - Conventional Water Resource Measures
  - Water Conservation
  - Alternative Water Resource Measures
  - Development Density Control
Resource Planning Objectives

- Public Trust Doctrine – waters of the State are held for the benefit of all citizens of the State
- Quality of water source should be matched to the quality of water required. Utilize the highest quality of water for the most valuable end use
- Promote water conservation – water is a most precious resource and shall be used wisely
- Meet future demands at a reasonable cost
Recommended Alternatives

- Alternative Water Resources
- Conservation
- Ground Water
- Surface Water
- Demand-Side Management
NEXT STEPS
Summary

- KWUDP is a living document that integrates information from the other 4 components of the Hawaii Water Plan
- Based on the best available information
Opportunity to Focus Future Efforts

- Coordination of data needs from the other 4 components of the Hawaii Water Plan
- Coordination of land planning policies with infrastructure & resource availability
Next Steps

- Pre-Final WUDP Update
- Present Pre-Final WUDP Update to Kauai BWS
- Present Pre-Final WUDP Update to CWRM for adoption

- May 2023 Stakeholder meeting
- August 2023 Public Meetings
- Summer/Fall 2023 Brief CWRM
Email comments to wrp@kauaiwater.org
Subject line: KWUDP

http://kauaiwater.org/kwudp.asp

Mount Waiʻaleʻale