

County of Kauaʻi Water Use & Development Plan Update

**Waimea, Kauaʻi
August 15, 2023**



**Department of Water
County of Kauaʻi**

Fukunaga & Associates, Inc.

Presentation Outline

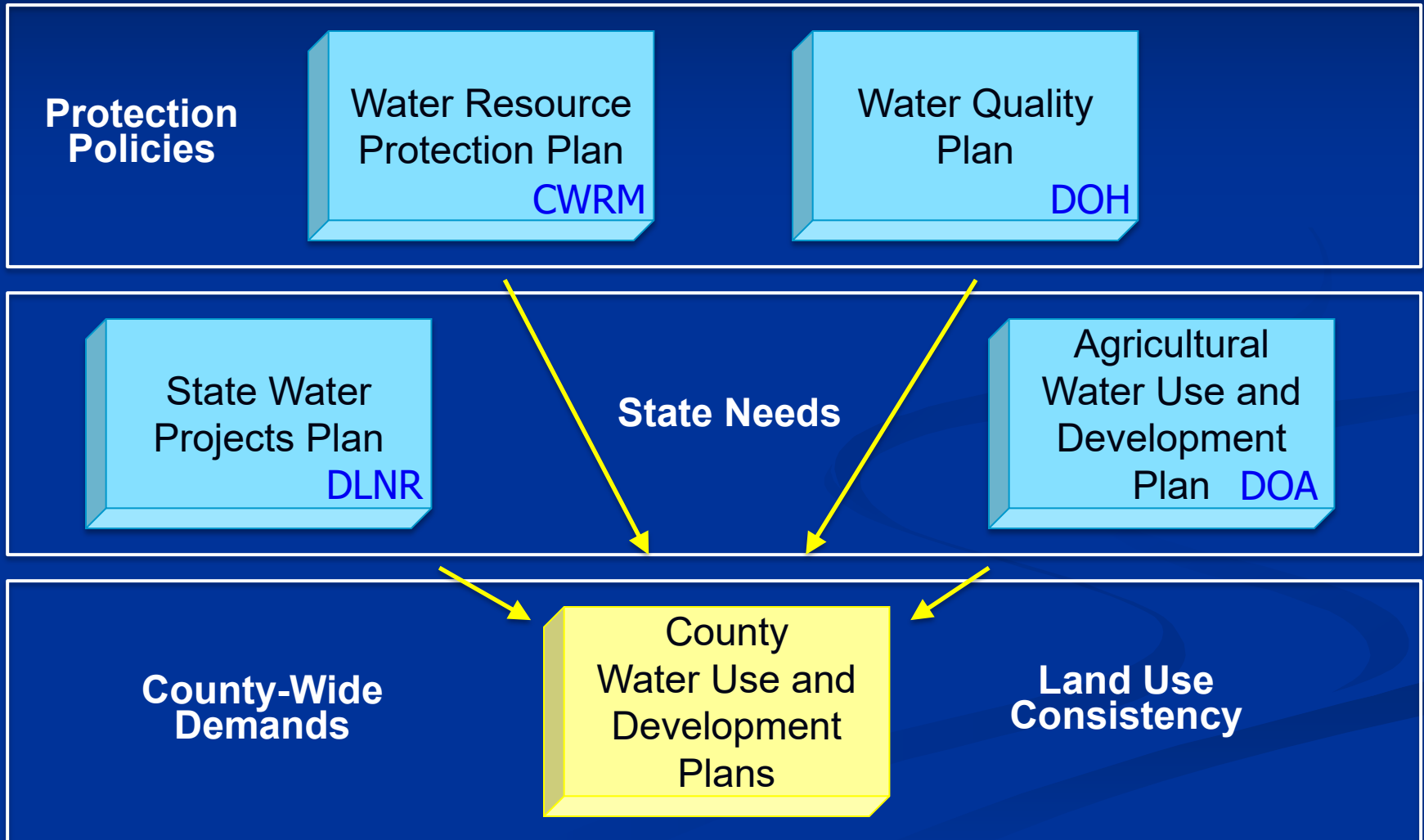
- Background – Hawai‘i Water Plan
- WUDP Objective
- Key Tasks and Findings
- Timeline/Next Steps

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



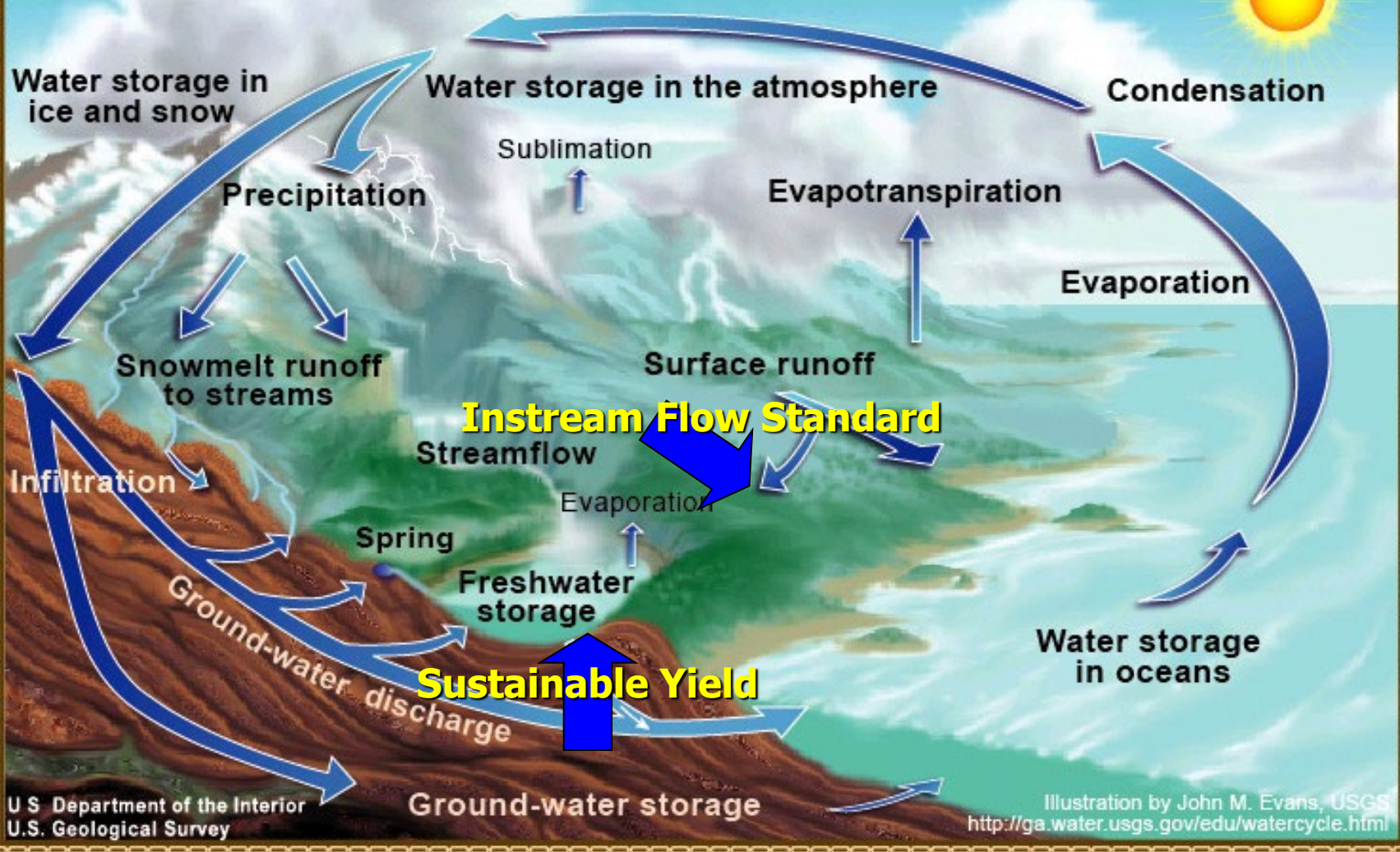
County WUDP Objective

. . . 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

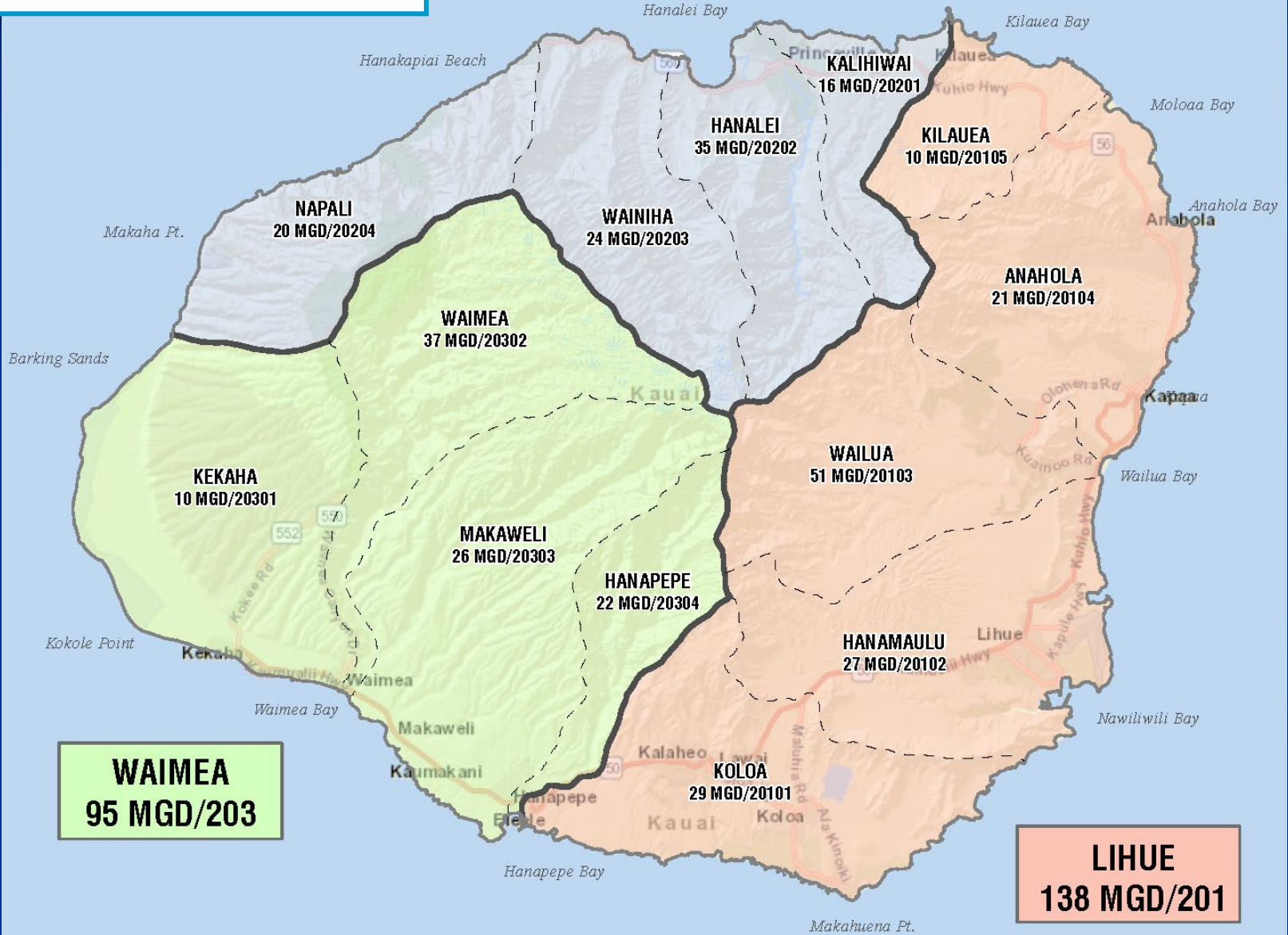
The Water Cycle



CWRM Ground Water Hydrologic Units & Sustainable Yield

HANAIEI
95 MGD/202

TOTAL = 328 MGD
GROUND WATER HYDROLOGIC UNITS
Sustainable Yield/Aquifer Code



WAIMEA
95 MGD/203

LIHUE
138 MGD/201

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 2-2 Estimated Residential Community Densities

ASYA	ASYA Code	Density (Unit/Acre)
Kōloa	20101	5.40
Hanamā'ulu	20102	7.41
Wailua	20103	3.08
Anahola	20104	4.83
Kīlauea	20105	5.42
Kalihiwai	20201	6.84
Hanalei	20202	5.92
Wainiha	20203	2.49
Nāpali	20204	N/A
Kekaha	20301	4.66
Waimea	20302	3.24
Makaweli	20303	5.74
Hanapēpē	20304	3.58

Table 2-3 Estimated Resort Densities

ASYA	ASYA Code	Density (Unit/Acre)
Kōloa	20101	13.72
Hanamā'ulu	20102	18.97
Wailua	20103	N/A
Anahola	20104	20.00
Kīlauea	20105	N/A
Kalihiwai	20201	7.46
Hanalei	20202	12.37
Wainiha	20203	8.00
Nāpali	20204	N/A
Kekaha	20301	4.00
Waimea	20302	N/A
Makaweli	20303	1.00
Hanapēpē	20304	N/A

ASYA Chapter

Sections:

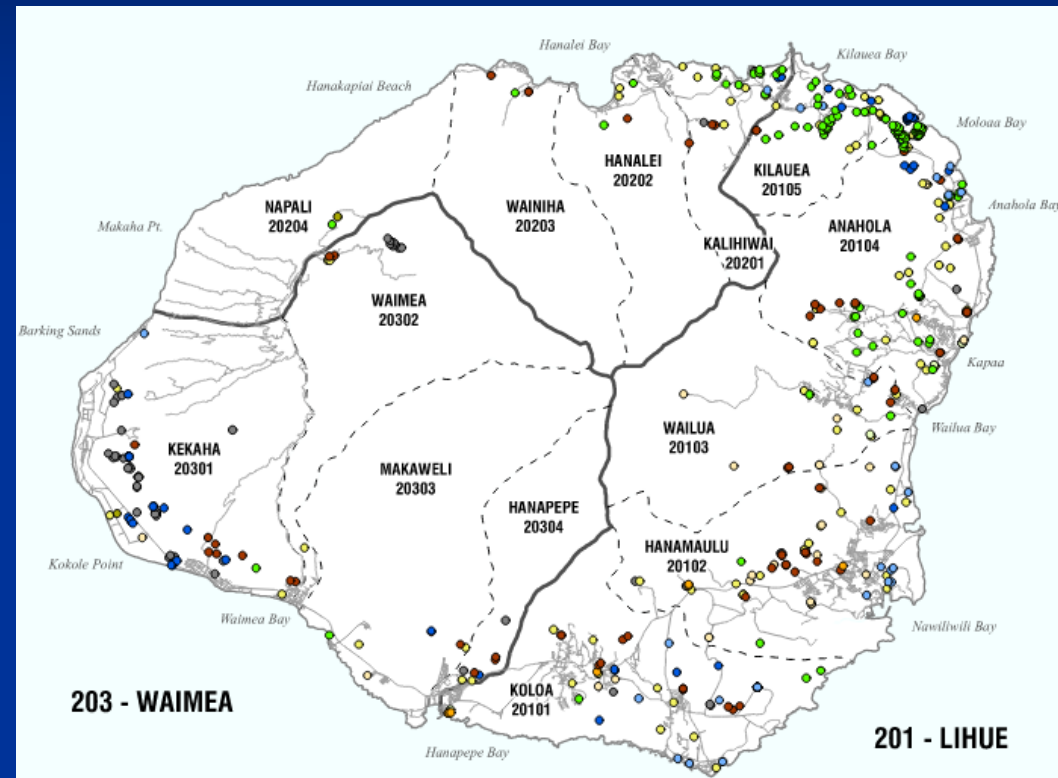
- System Area Profile
- Types of Water Resources
- Existing Water Use
- Projected Future Water Use
- Resource and Management Recommendations

Types of Water Resources

- Ground Water
- Surface Water
- Rainwater Catchment
- Recycled Water

Existing Water Resources

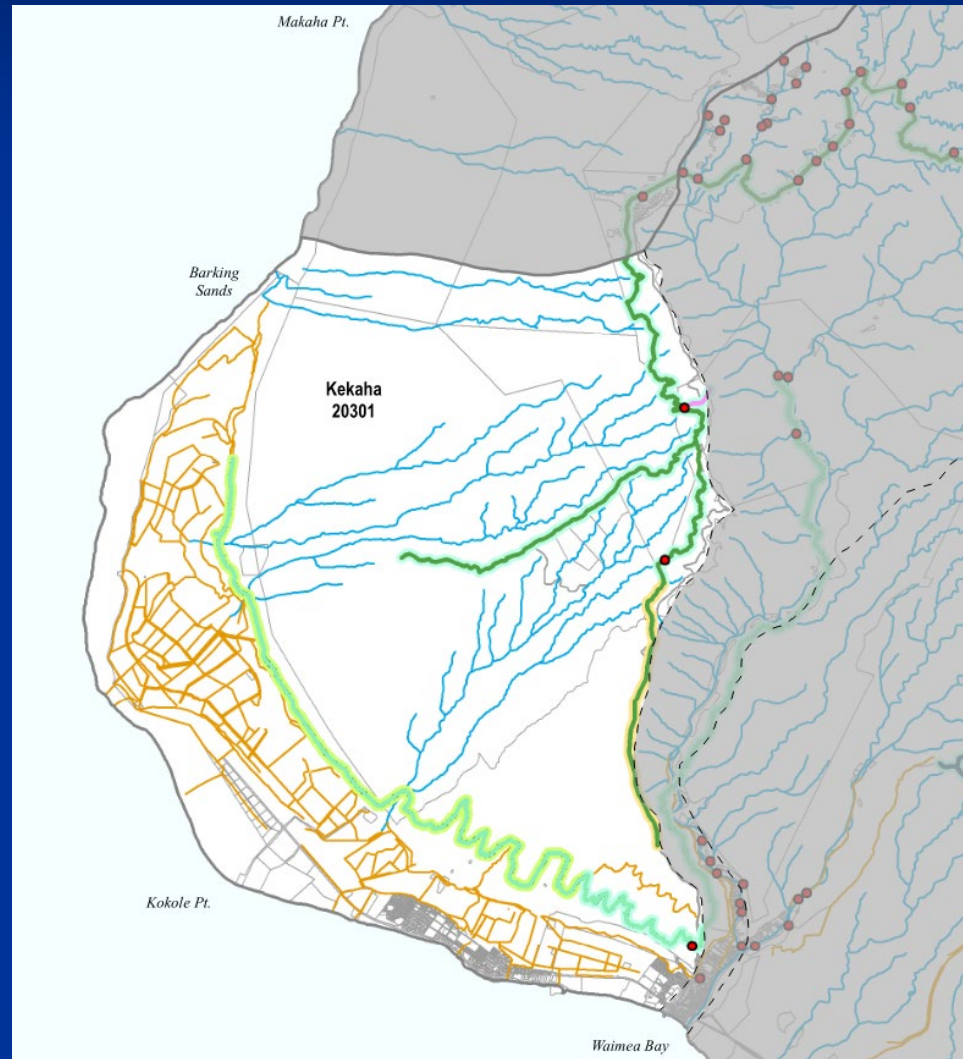
- Ground Water
 - Sustainable Yield
 - Production Wells



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

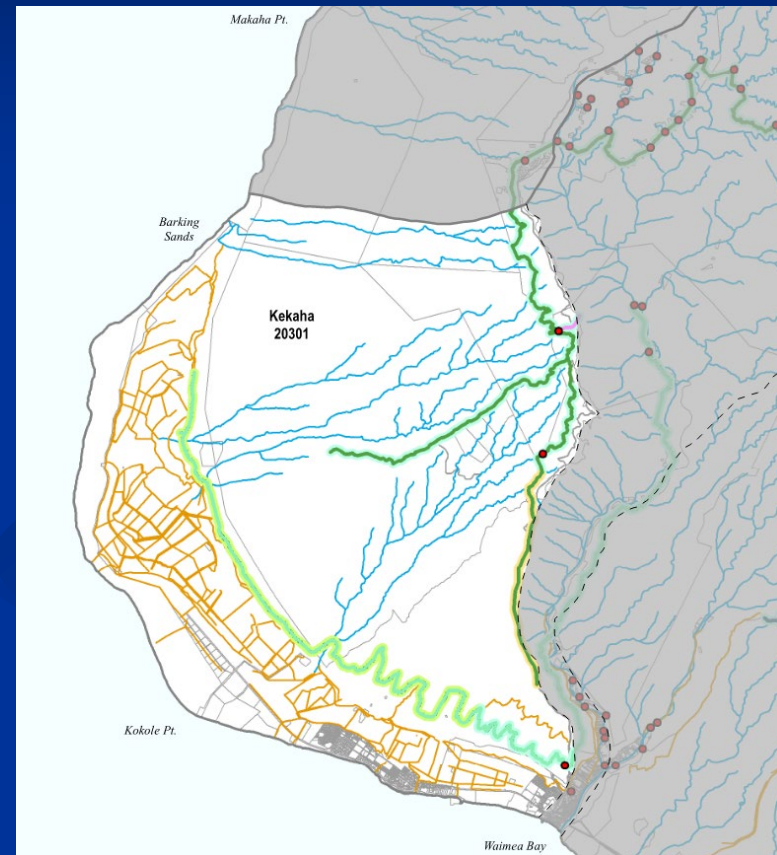
Water Resource Management

- Surface Water
 - Streams
 - Irrigation Systems
 - Diversions
 - Interim Instream Flow Standards



Waimea Watershed Agreement

- Agreement between DHHL, KIUC, and ADC (Kekaha Agriculture Association)
- IIFS were amended; flow in the streams has the highest priority
- Any diversion of water must be justified with no more water taken than is needed for beneficial uses, such as agriculture and renewable energy



Types of Water Resources

- Rainwater Catchment
- Recycled Water



ASYA Chapter

Sections:

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

Existing Water Uses

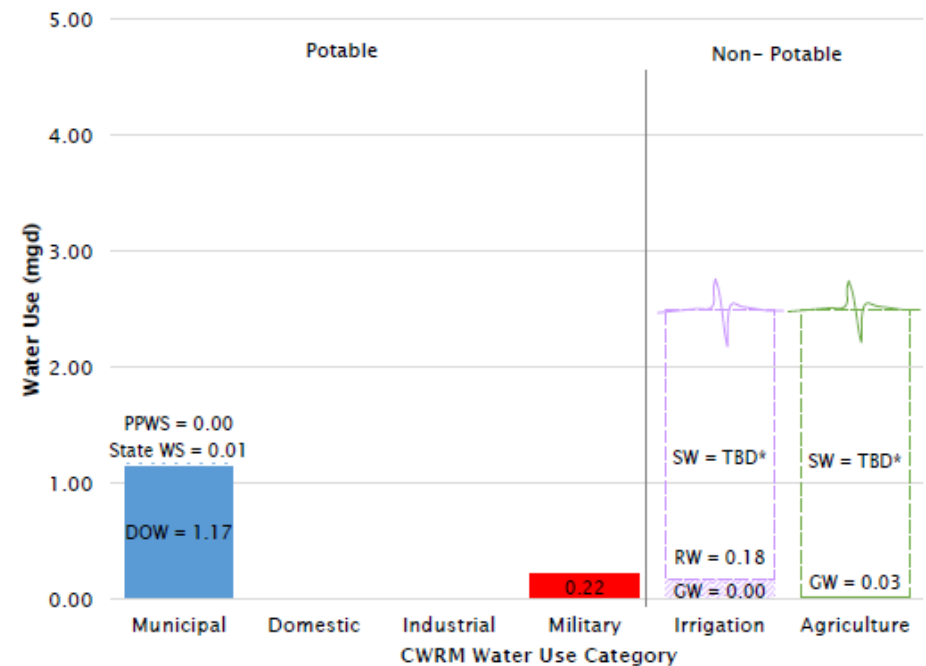
Table 201301-6: Existing Water Use by Category - Kekaha ASYA

CWRM Category	Ground Water (mgd)	Other Sources (mgd)	Total (mgd)
Domestic	0.00		0.00
Industrial			
Irrigation	0.00	0.18 ¹	0.18
Agriculture	0.03	TBD ²	0.03
Military	0.22		0.22
Municipal			
DOW System	1.17		1.17
State System	0.01		0.01
Private-Public WS	0.00		0.00
TOTAL	1.43	0.18	1.61

¹ Recycled Water

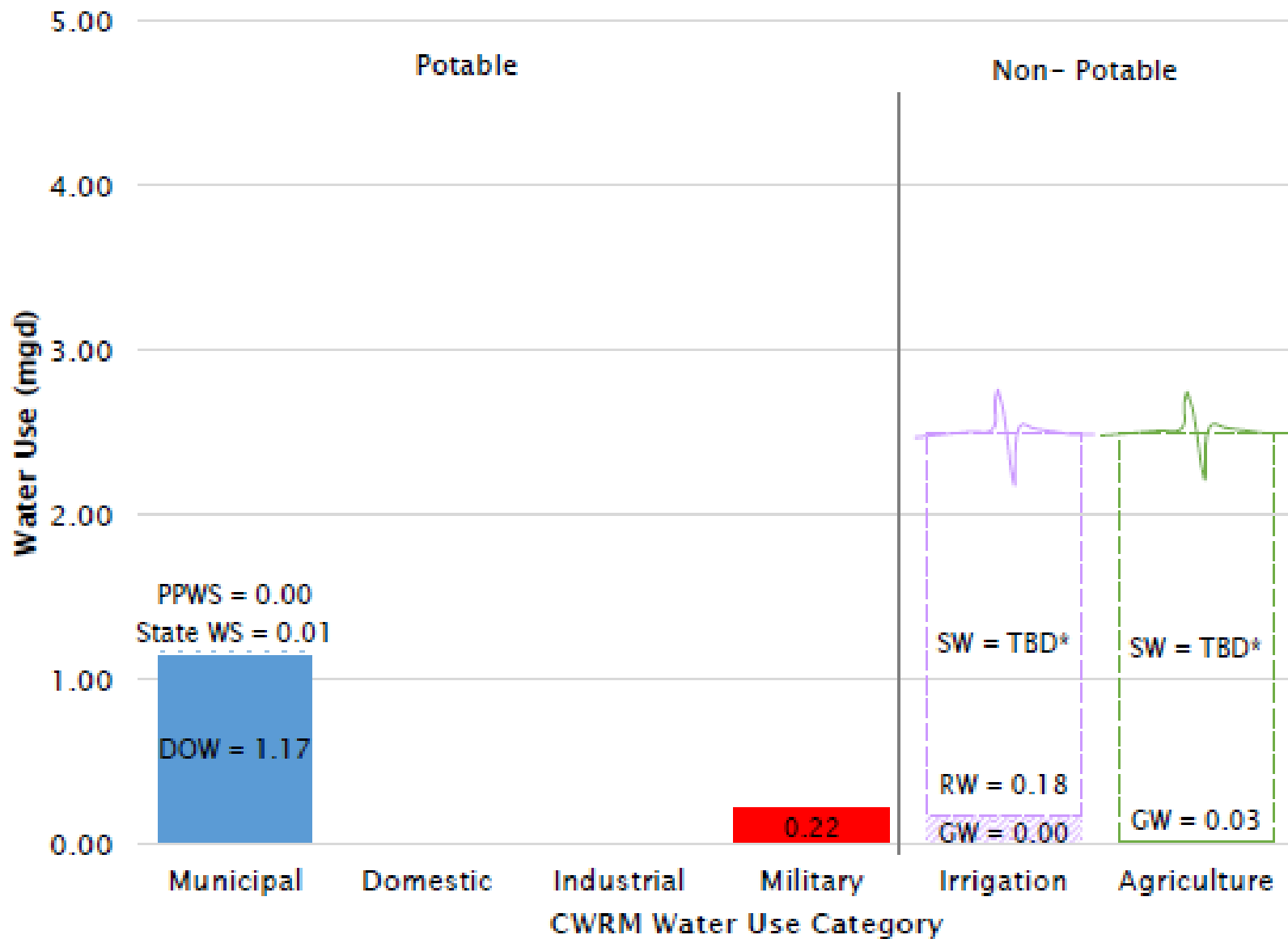
² Surface Water - TBD from AWUDP

Figure 20301-7: Existing Water Use by Category - Kekaha ASYA



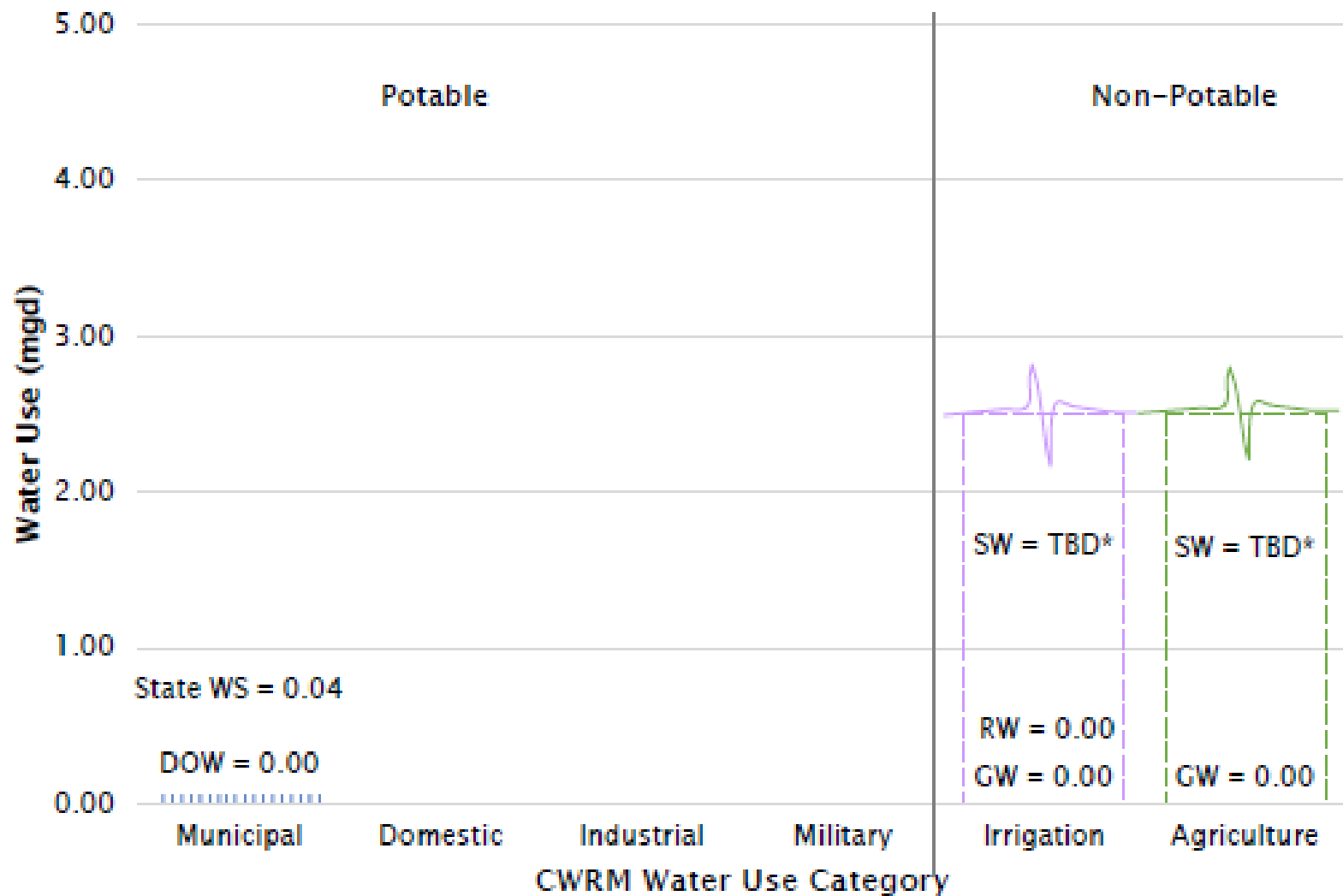
*Values to be determined by other components of the Hawai'i Water Plan

20301 Kekaha – Existing Water Use by Category



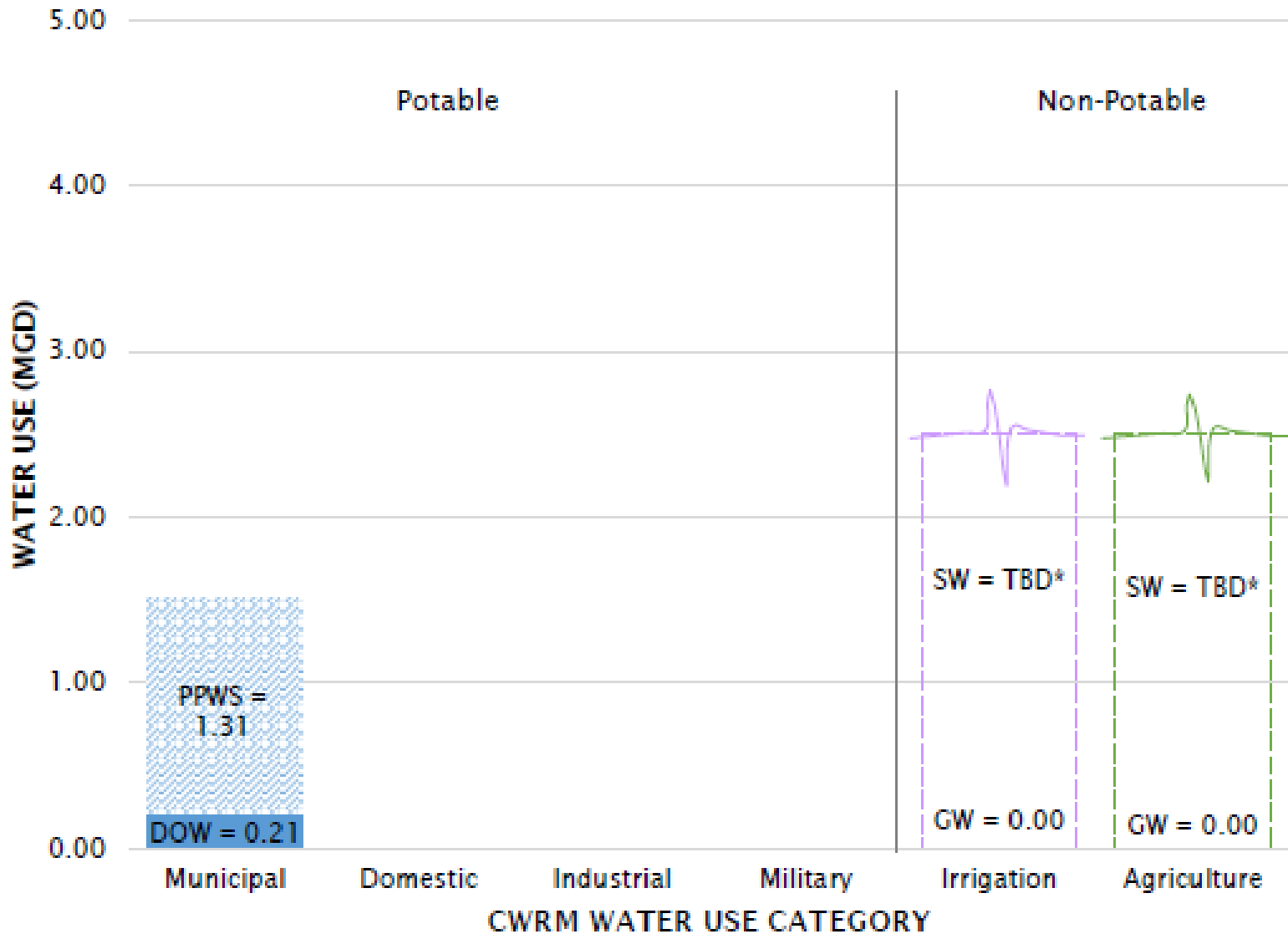
*Values to be determined by other components of the Hawai'i Water Plan

20302 Waimea – Existing Water Use by Category



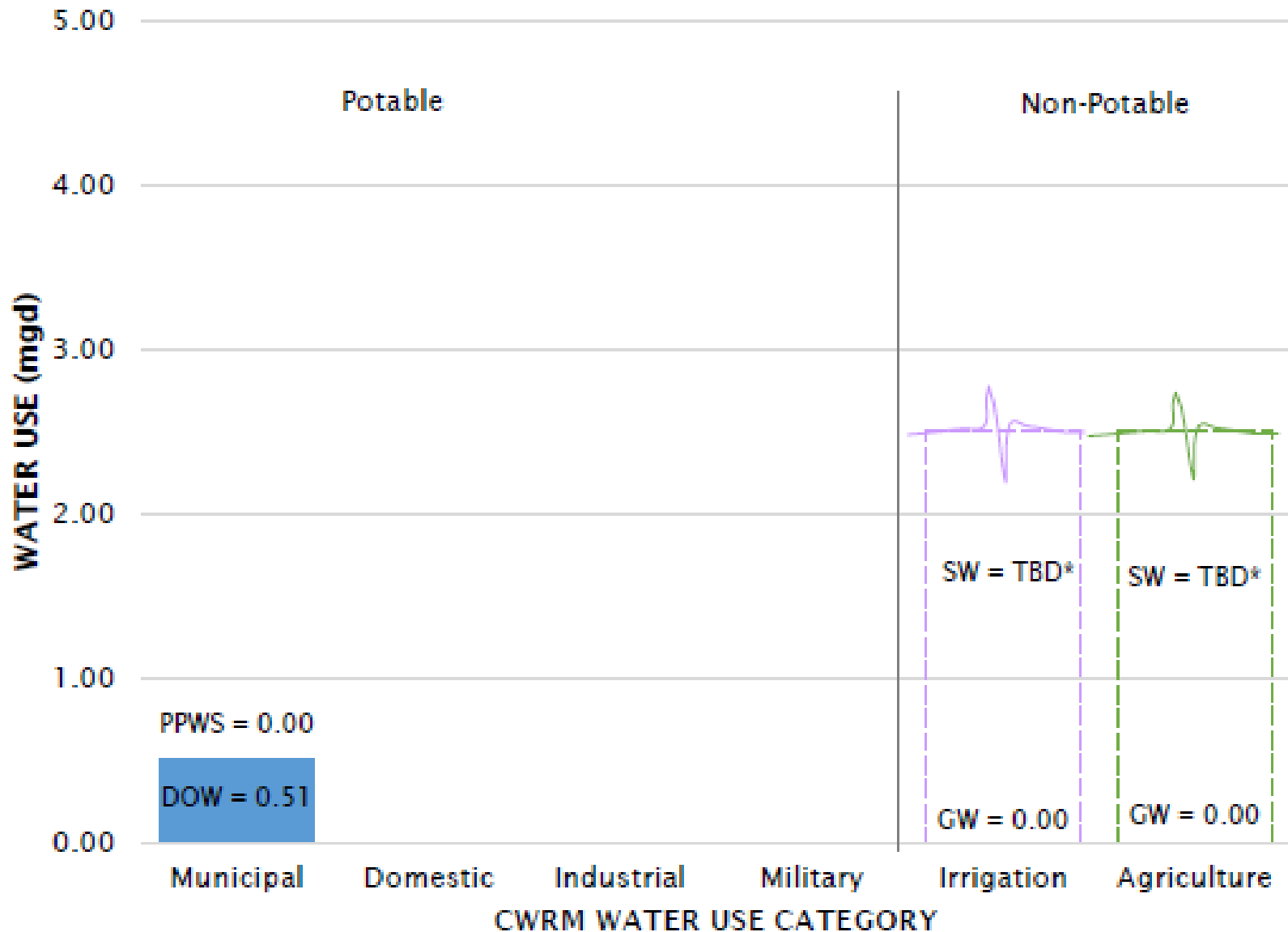
*Values to be determined by other components of the Hawai'i Water Plan

20303 Makaweli – Existing Water Use by Category



*Values to be determined by other components of the Hawai'i Water Plan

20304 Hanapēpē – Existing Water Use by Category



*Values to be determined by other components of the Hawai'i Water Plan

ASYA Chapter

Sections:

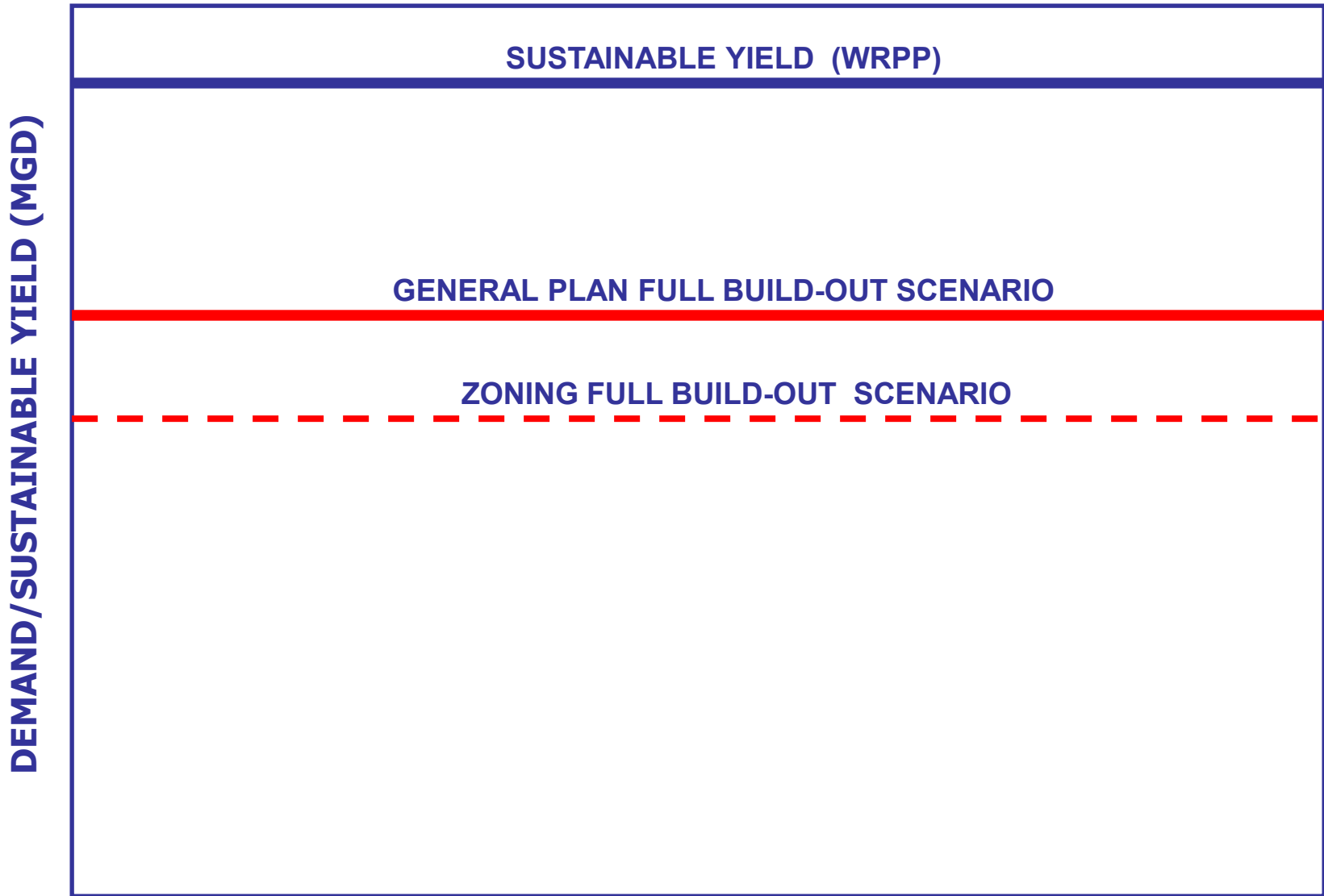
- System Area Profile
- Types of Water Resources
- Existing Water Use
- Projected Future Water Use
- Resource and Management Recommendations

Assess land use plans and policies and future projected water demands

Projected Future Water Use

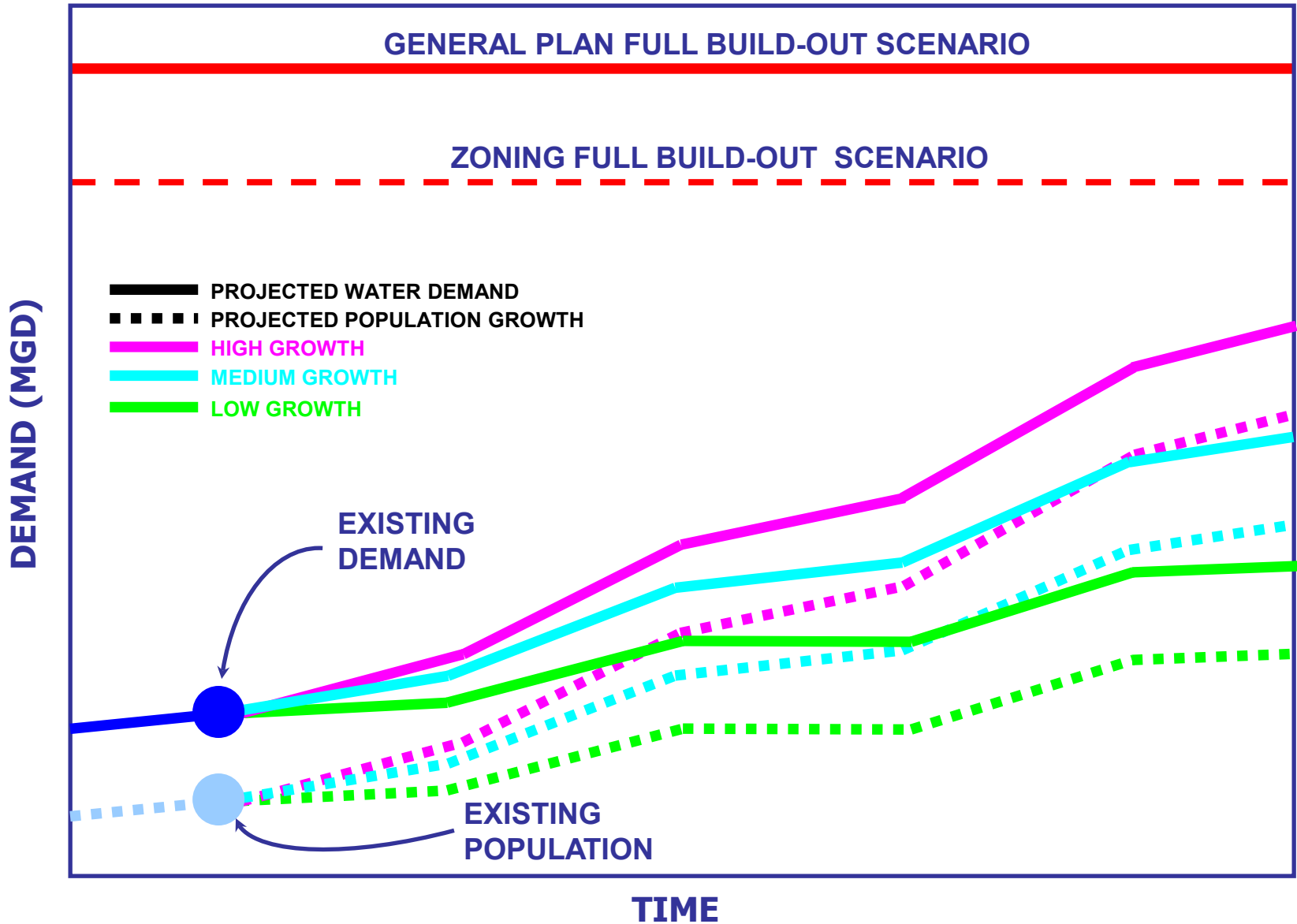
- Based on Full Build-Out Water Demands
 - Reviewed existing land use plans and policies
 - Conservative approach – assumes ALL land area developed to its theoretical maximum extent
 - Based on existing water system standards and allowable density
 - Focused on domestic, commercial and industrial demands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

SUSTAINABILITY OF LAND USE POLICIES

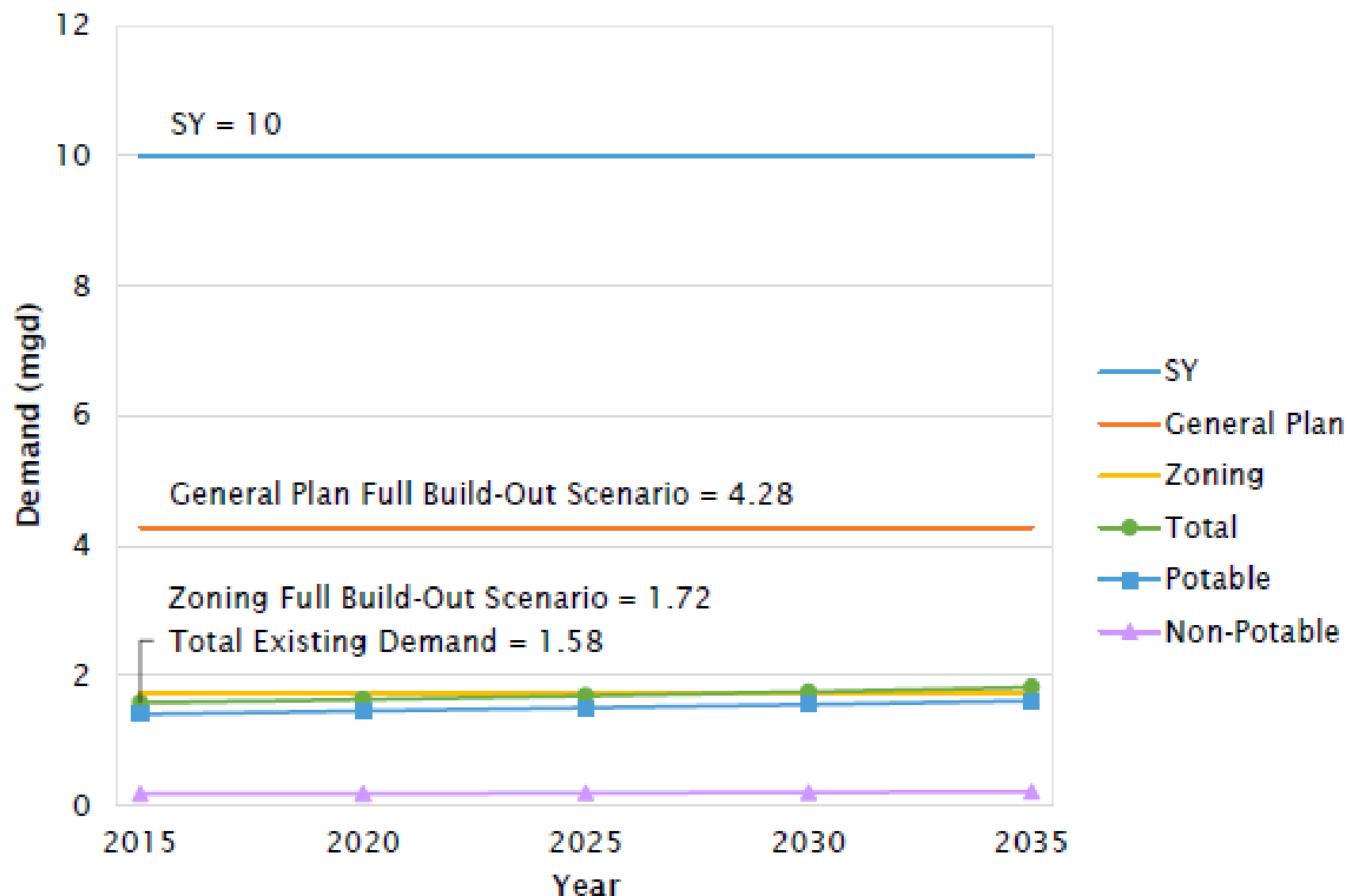


Less sensitive area

PROJECTED DEMAND

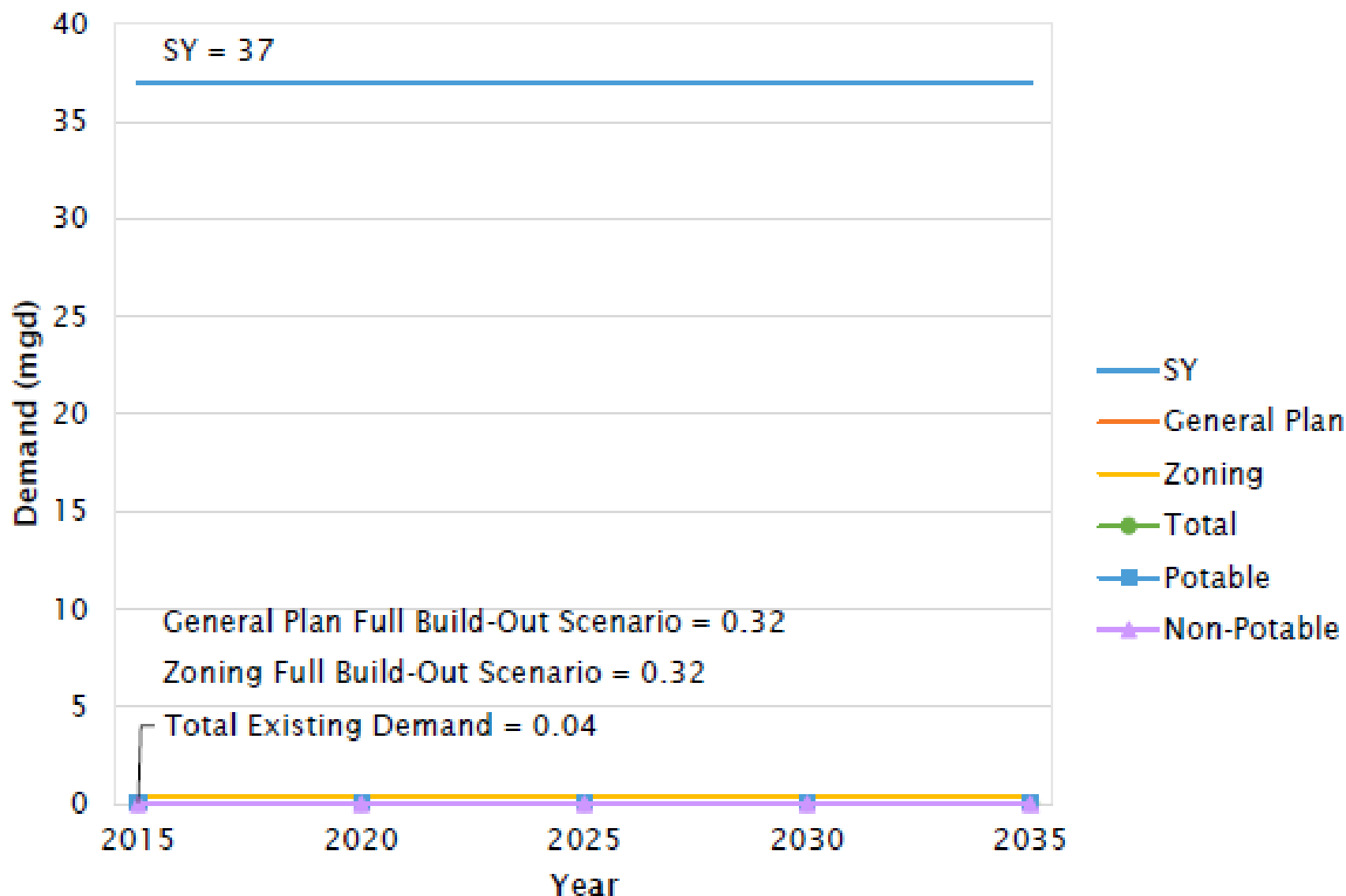


20301 Kekaha – Water Demand Projections and Full Build-Out



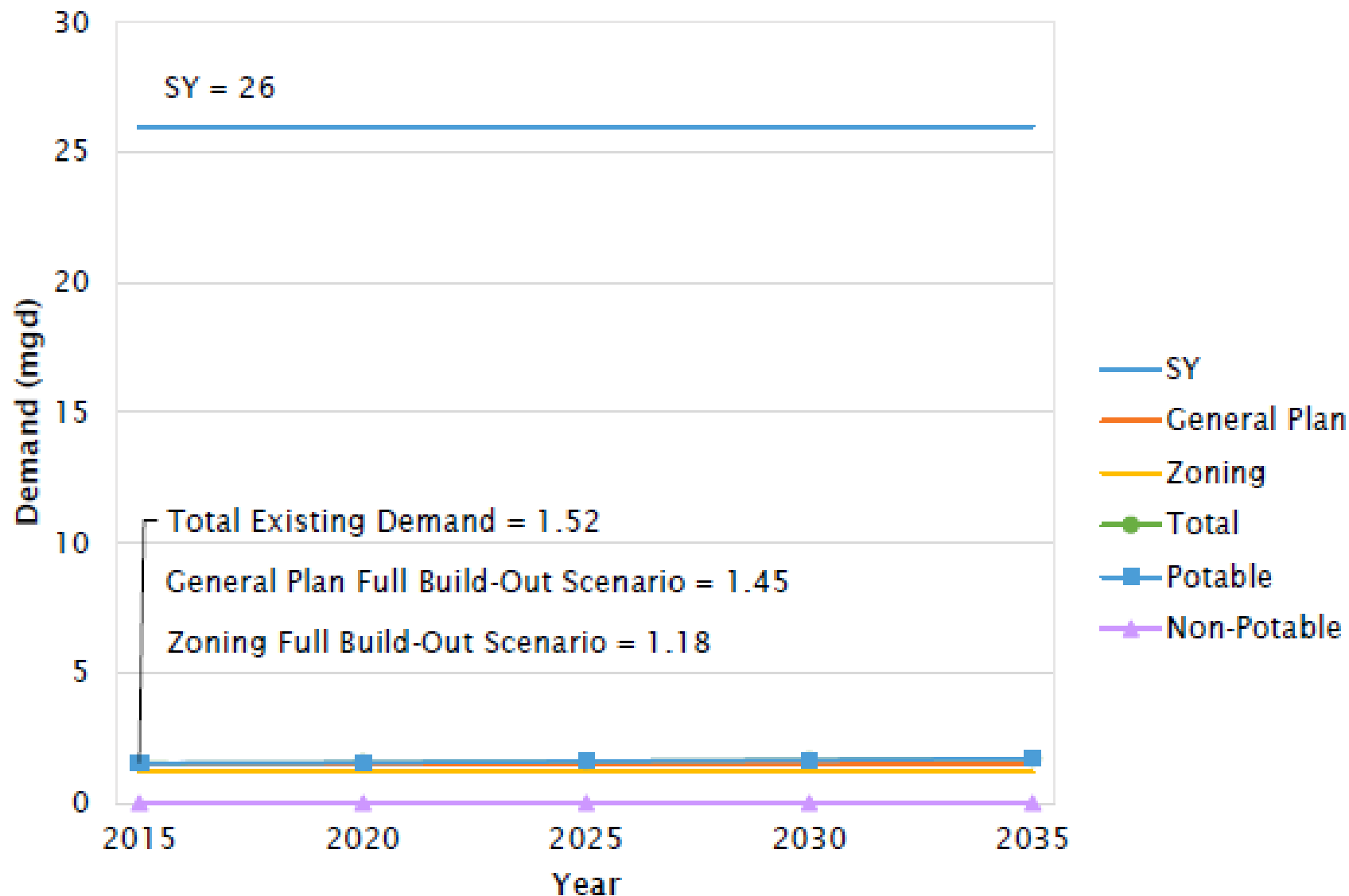
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20301-4.1.1 County of Kaua'i Important Agricultural Lands Study.

20302 Waimea – Water Demand Projections and Full Build-Out



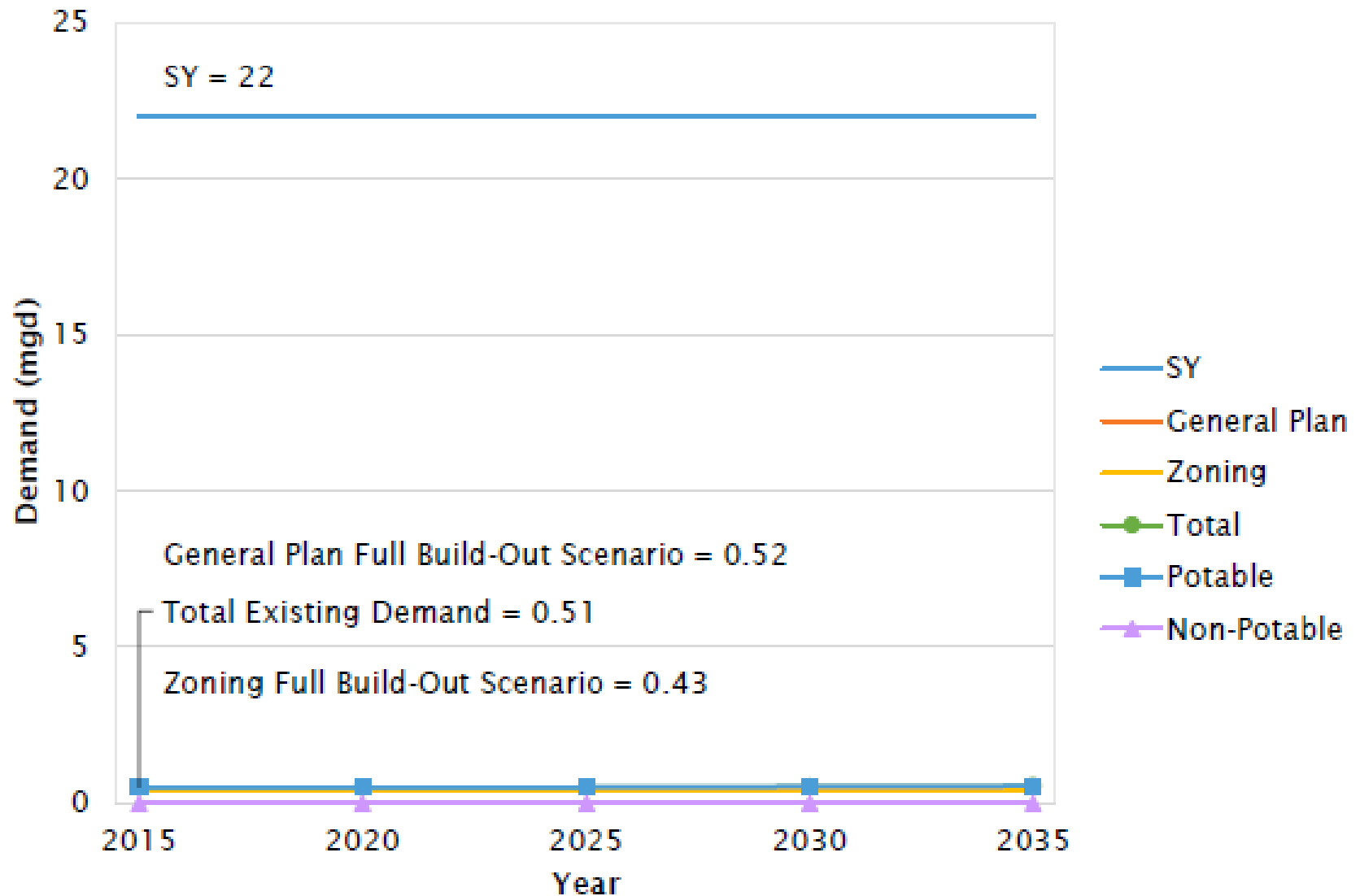
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20302-4.1.1 County of Kaua'i Important Agricultural Lands Study.

20303 Makaweli – 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 20303-4.1.1 County of Kaua'i Important Agricultural Lands Study.

20304 Hanapēpē – 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 20304-4.1.1 County of Kaua'i Important Agricultural Lands Study.

Projected Future Water Use

- Projected Agricultural Water Use

20304 Hanapēpē – Irrigation of Agricultural Lands	
Surface Water Supply*	3 mgd
Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study	904 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	98%

*Declared surface water use from diversions

20301 Kekaha – Irrigation of Agricultural Lands	
Surface Water Supply*	51.86 mgd
Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study	7,555 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	202%

*Total declared flow originally associated with KODIS and KEDIS. However, as a result of a 2017 mediation agreement, the interim IFS were amended such that the flow in the stream has the highest priority with diversions only as needed for other uses with the interim IFS numbers being the minimum stream flow to be provided.

20302 Waimea – Irrigation of Agricultural Lands

Surface Water Supply*	0.28 mgd
Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study	34 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	241%

*Declared surface water use from diversions

20303 Makaweli – Irrigation of Agricultural Lands

Surface Water Supply*	23.19 mgd
Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study	7,620 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	90%

*Declared surface water use from diversions

ASYA Chapter

Sections:

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

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



**Email comments to wrp@kauaiwater.org
Subject line: KWUDP**

<http://kauaiwater.org/kwudp.asp>

Mount Wai'ale'ale