

# **County of Kauaʻi Water Use & Development Plan Update**

**CWRM Briefing  
December 19, 2023**



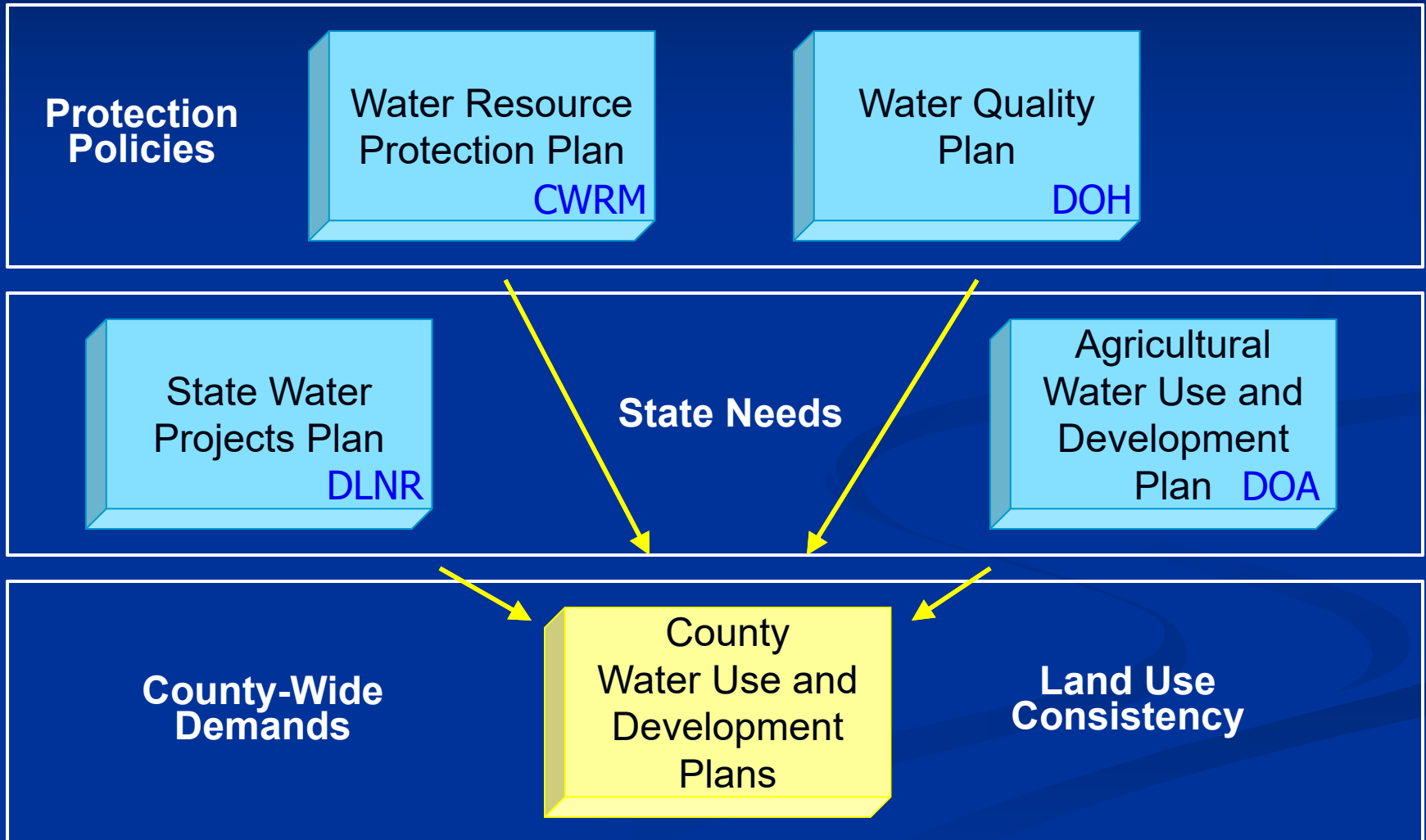
**Department of Water  
County of Kauaʻi**

**Fukunaga & Associates, Inc.**

# Presentation Outline

- Background
- Key Tasks
- Findings
- Recommendations
- Next Steps

# 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.*

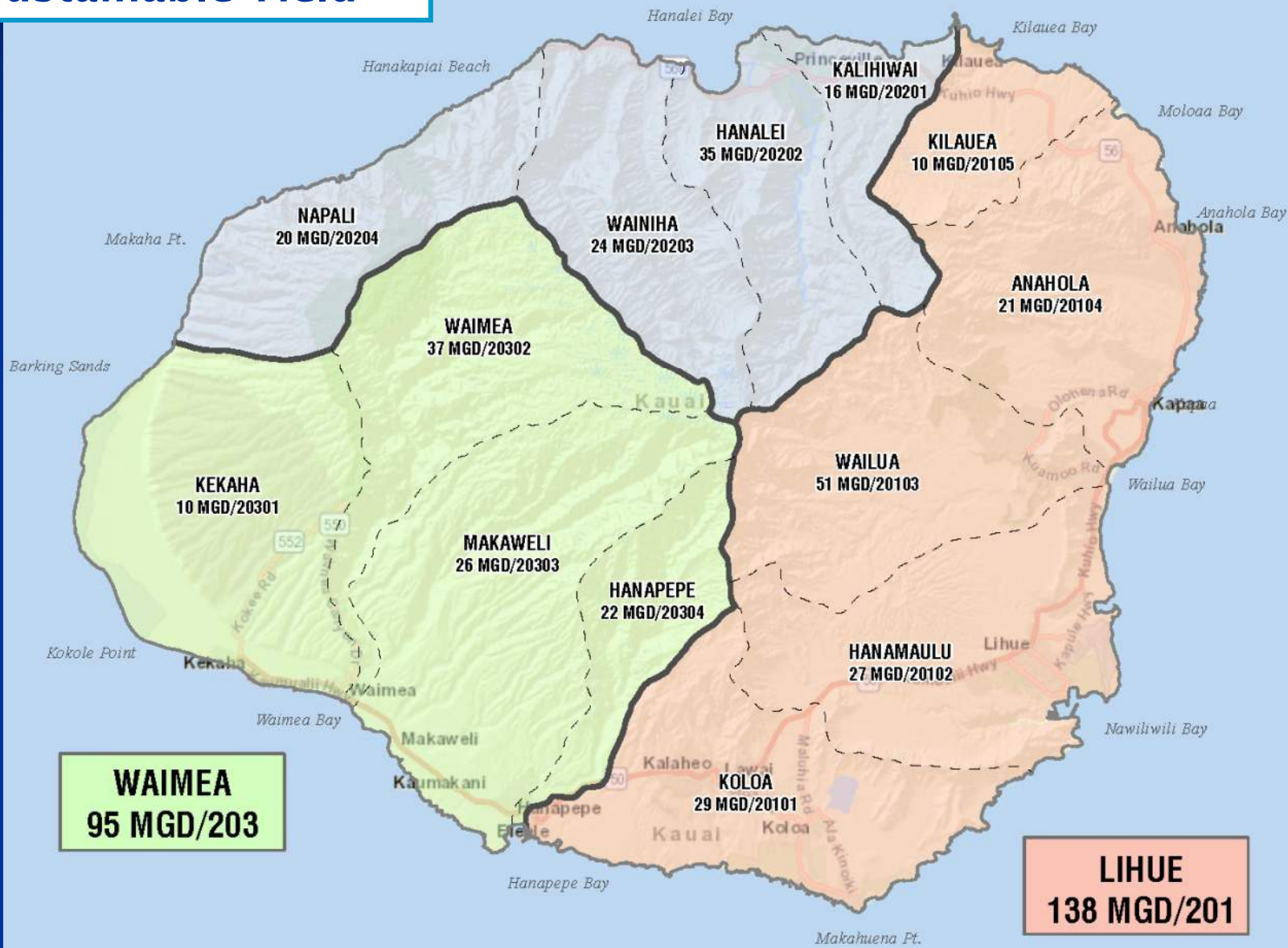
# Key Goals

- Provide guidance for meeting the future water needs of the County while preserving the integrity of the island's water resources
- Integrate sustainable water resources into the formulation and development of land use policies by the County

# CWRM Ground Water Hydrologic Units & Sustainable Yield

**HANAIEI**  
95 MGD/202

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



# Key Tasks

- Inventory of Existing Water Resources
- Inventory of Existing Water Uses
- Assessment of Land Use Plans and Policies;  
Projection of Future Water Use
- Public Participation
- Recommendations

# Existing Water Resources

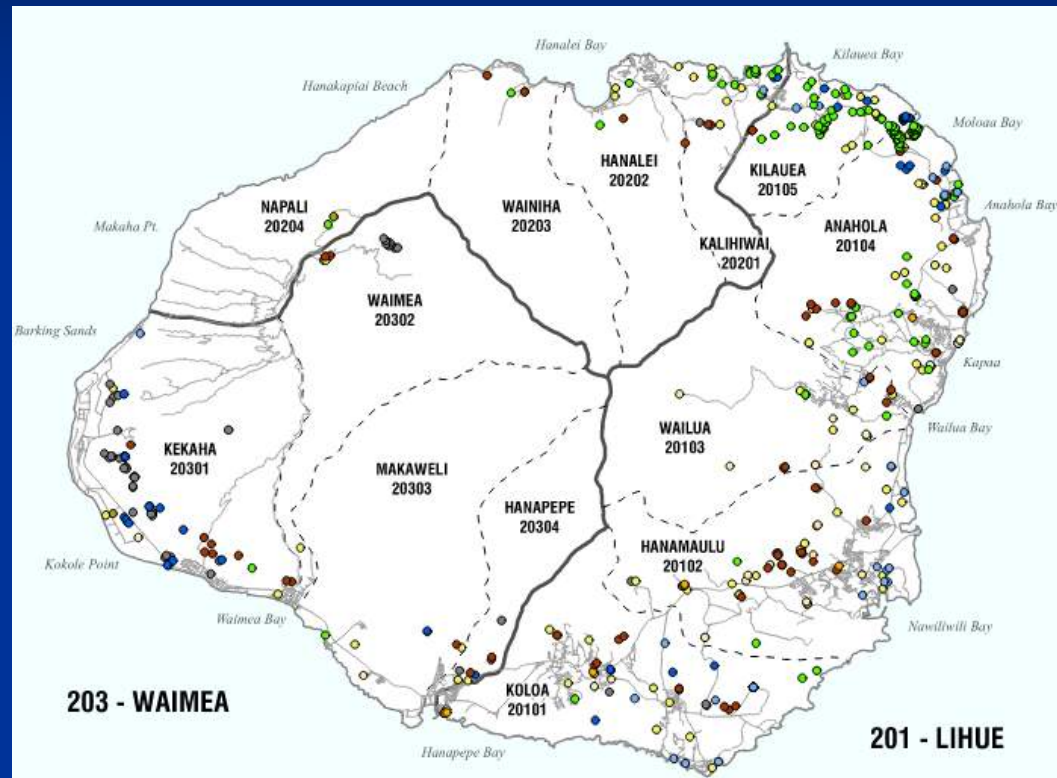
Types of water resources:

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



# Existing Water Resources

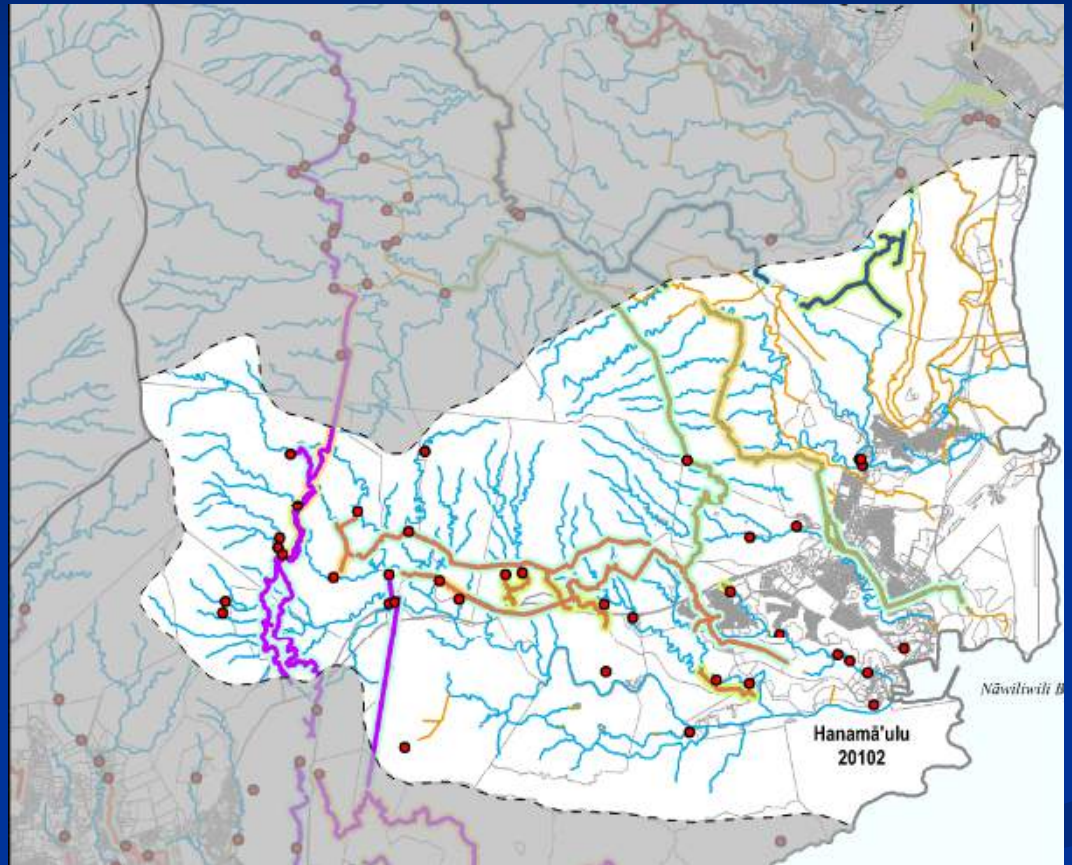
- Ground Water
  - Sustainable Yield
  - Production Wells



Sustainable yield is the maximum rate at which water may be withdrawn from a water source without impairing the utility or quality of the water source, as determined by CWRM

# Existing Water Resources

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



# Existing Water Resources

- Rainwater Catchment
- Recycled Water



# Existing Water Uses

**Table 20102-6: Existing Water Use by Category – Hanamā‘ulu ASYA**

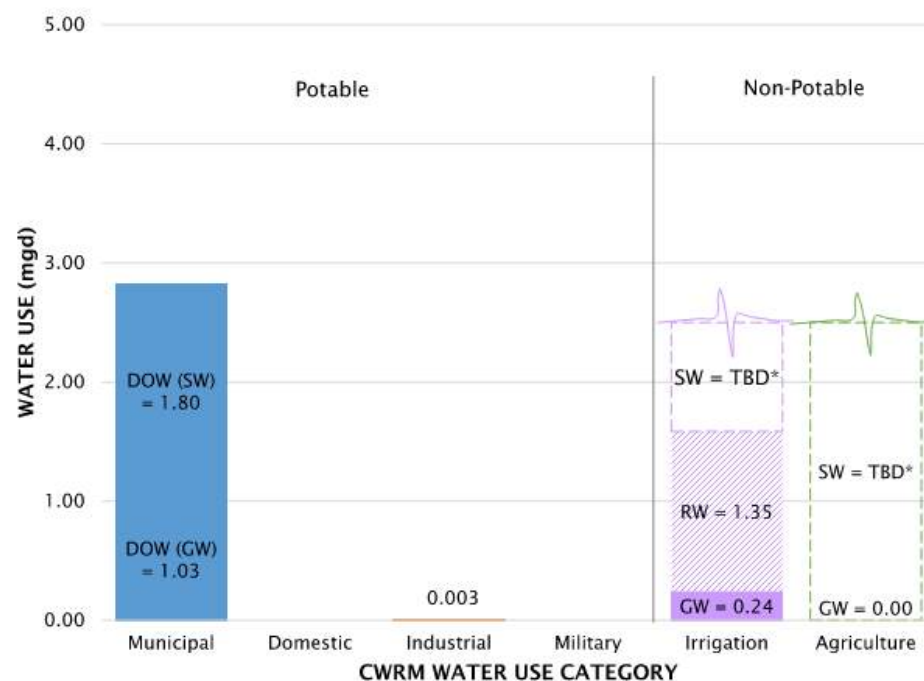
CWRM Category	Groundwater (mgd)	Other Sources (mgd)	Total (mgd)
Domestic	0.00		0.00
Industrial	0.003		0.00
Irrigation	0.24	1.35 <sup>1</sup>	1.59
Agriculture	0.00	TBD <sup>2</sup>	0.00
Military			0.00
Municipal			
DOW System	1.03	1.80 <sup>3</sup>	2.83
Private Public WS	0.00		0.00
<b>TOTAL</b>	<b>1.27</b>	<b>2.18</b>	<b>4.42</b>

<sup>1</sup> Recycled Water

<sup>2</sup> Surface Water – TBD from AWUDP

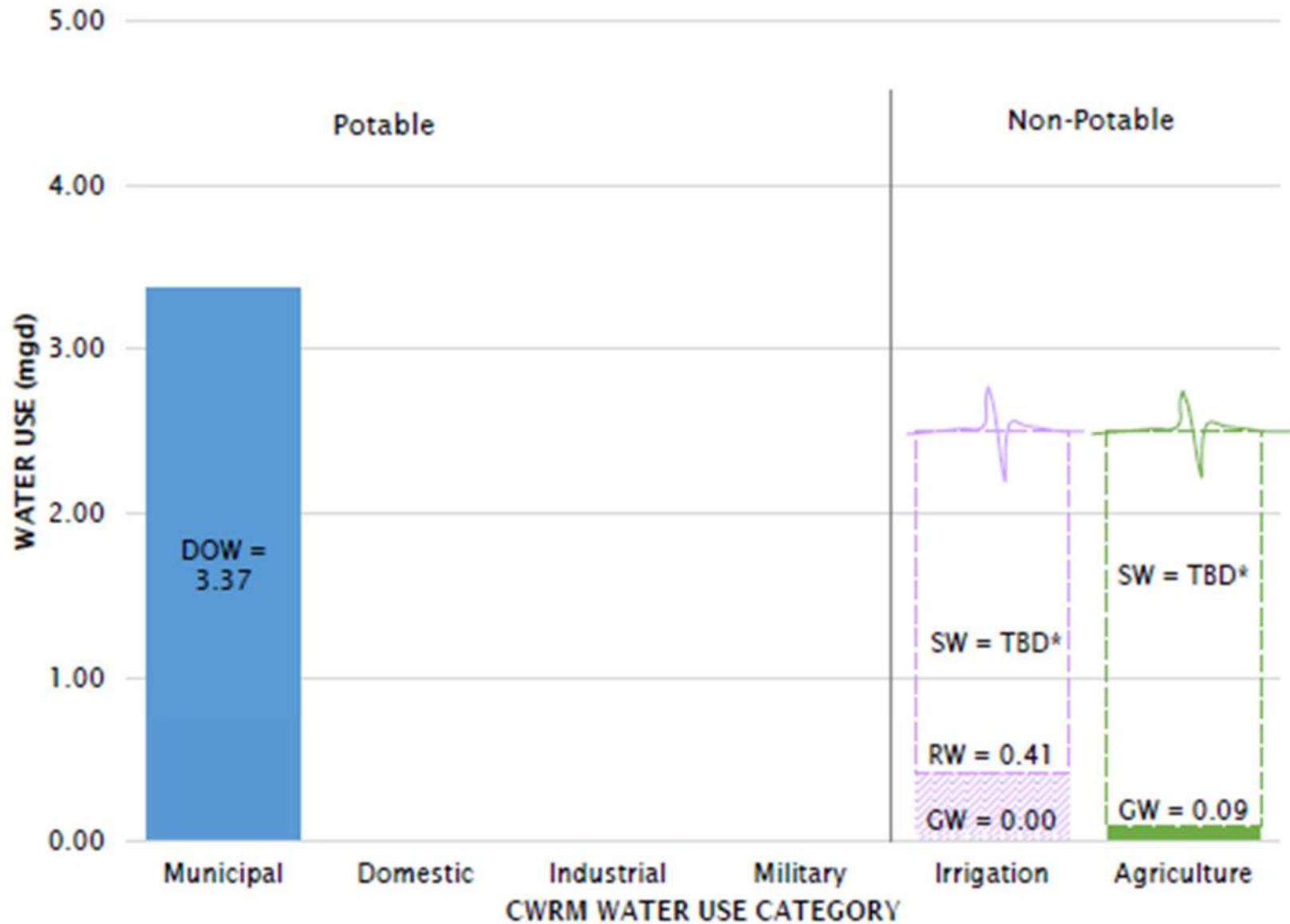
<sup>3</sup> Surface Water – Estimated

**Figure 20102-7: Existing Water Use by Category – Hanamā‘ulu ASYA**



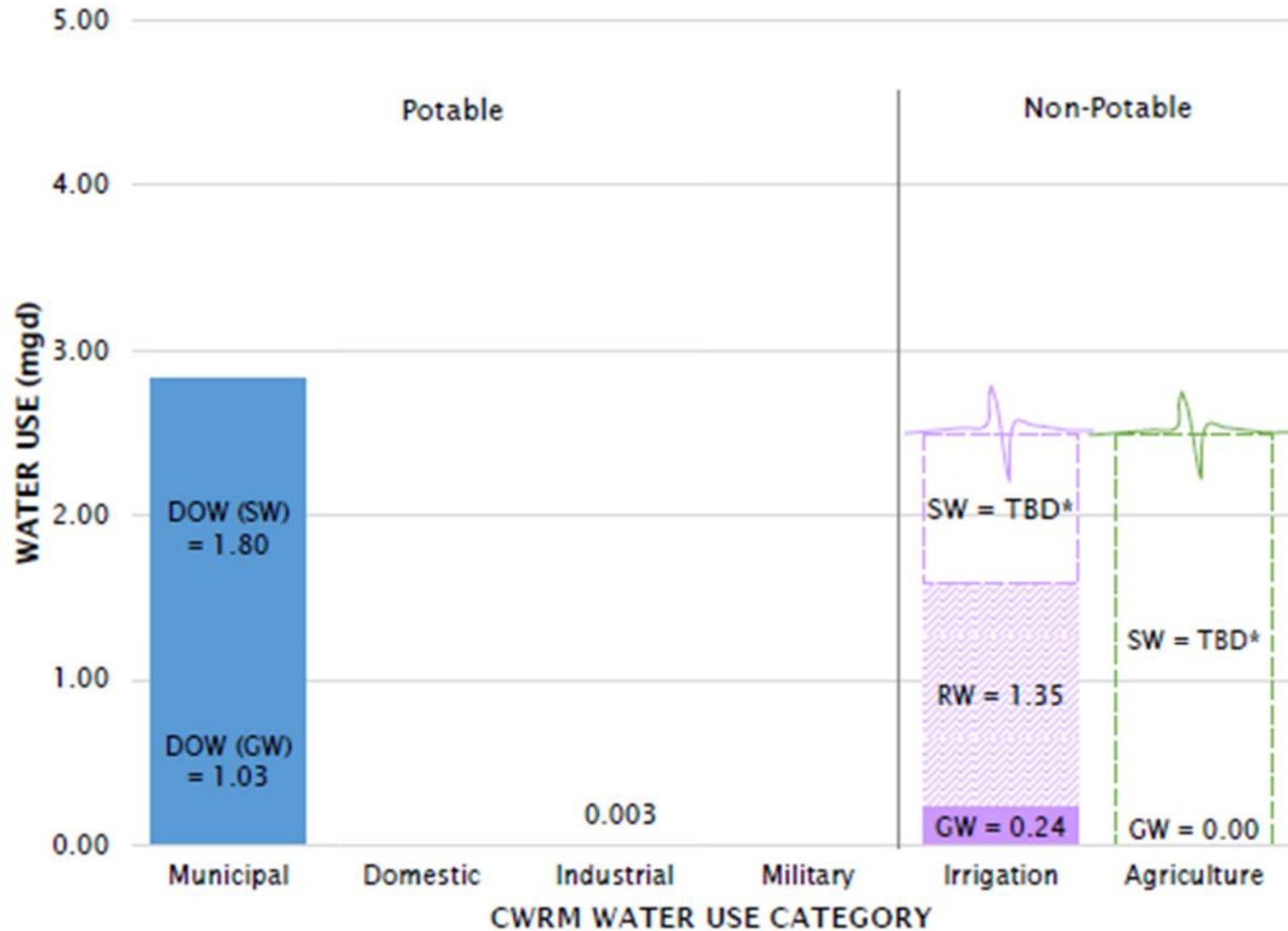
\*Values to be determined by other components of the Hawai‘i Water Plan

## 20101 Kōloa – Existing Water Use by Category



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

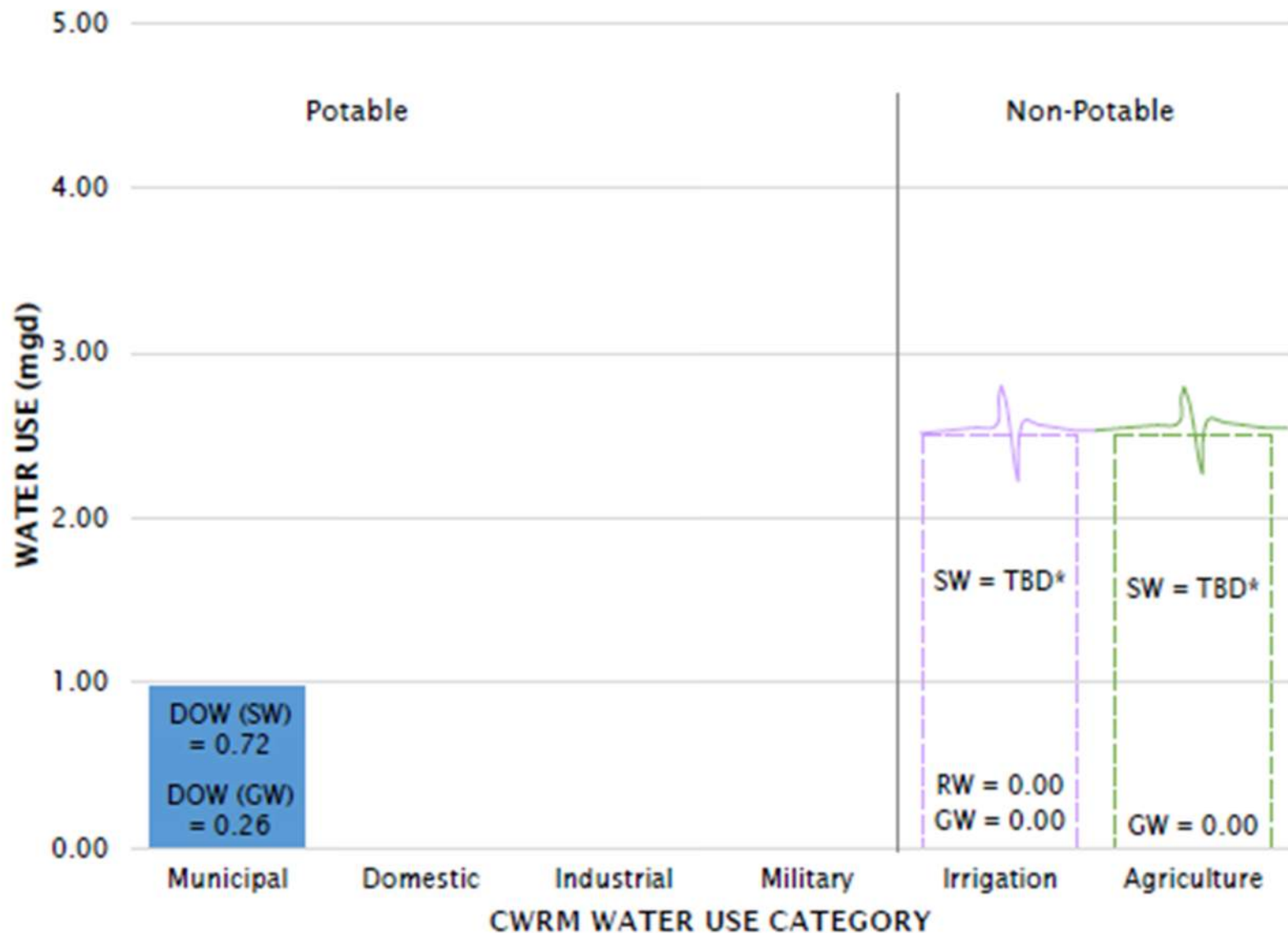
## 20102 Hanamā'ulu – Existing Water Use by Category



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

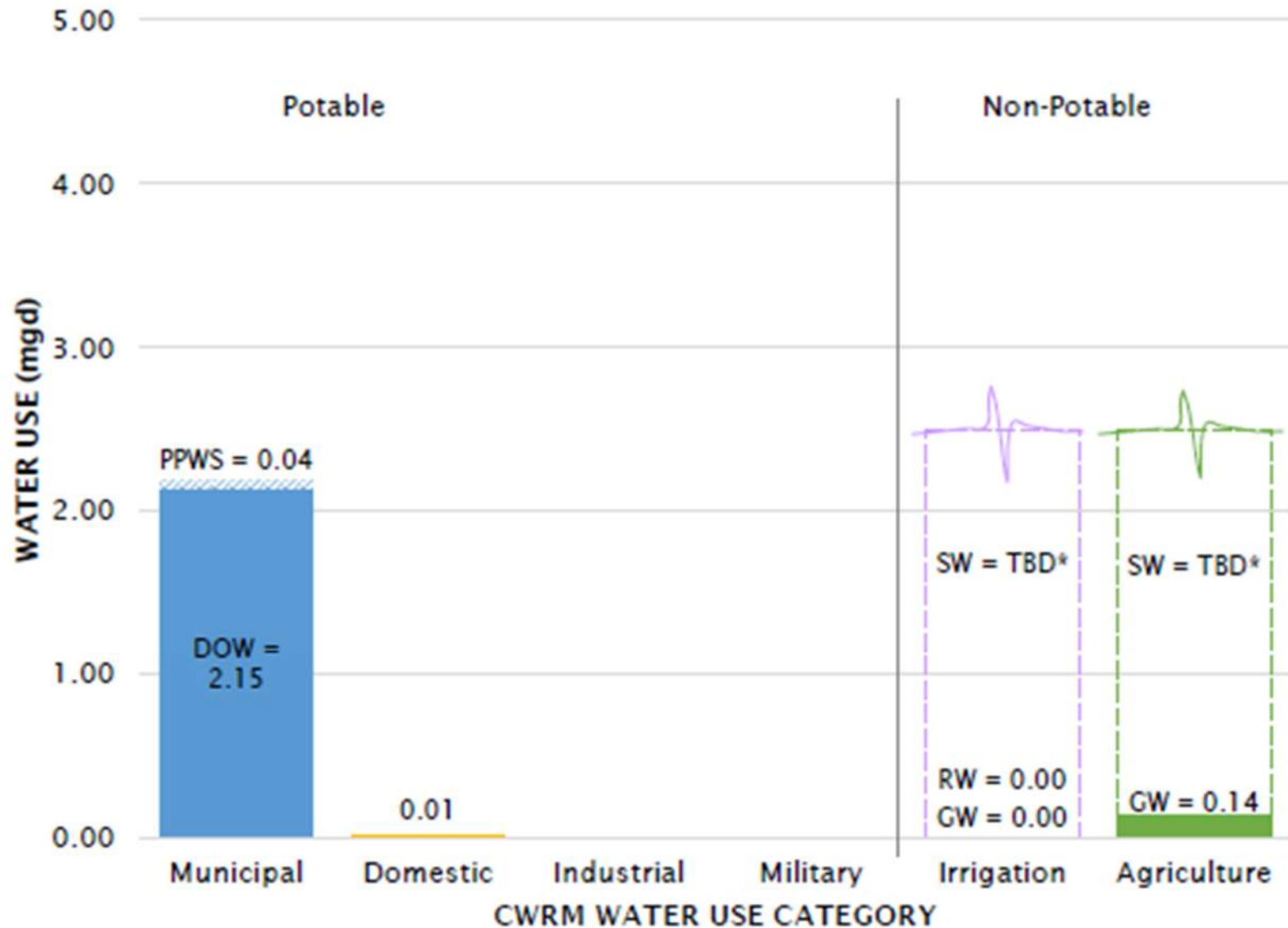


## 20103 Wailua – Existing Water Use by Category



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

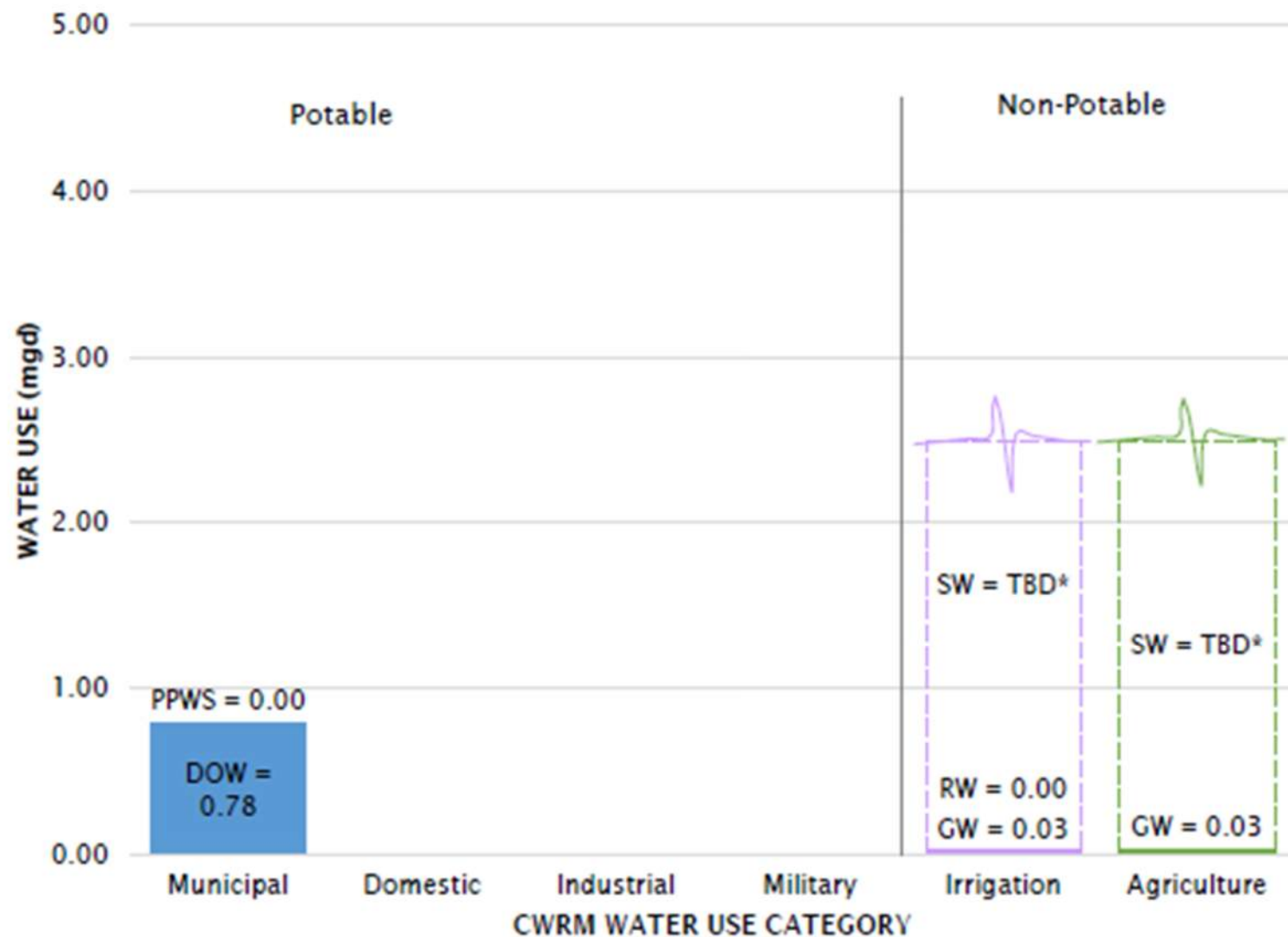
## 20104 Anahola – Existing Water Use by Category



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

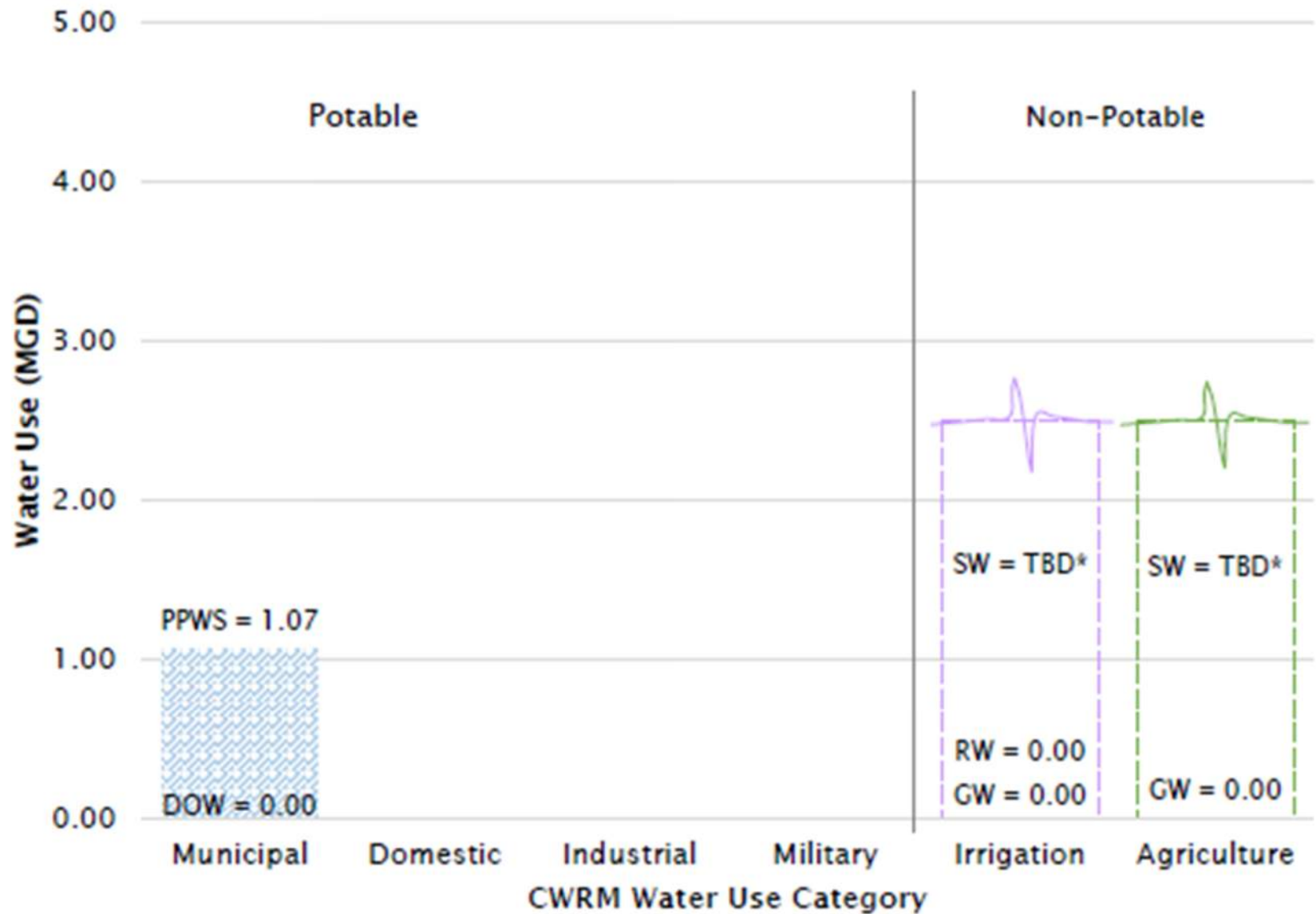


## 20105 Kīlauea – Existing Water Use by Category



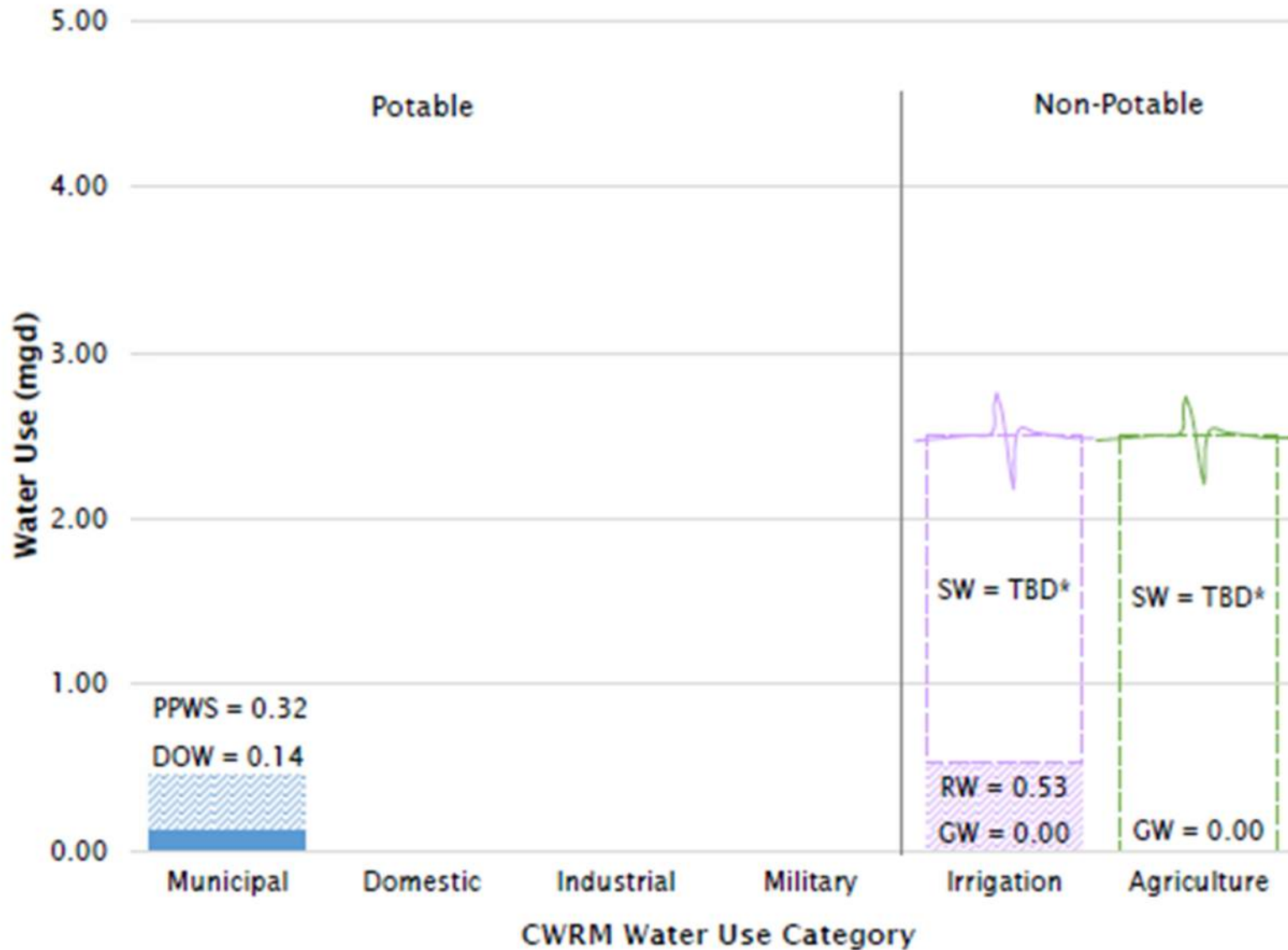
\*Values to be determined by other components of the Hawai'i Water Plan

## 20201 Kalihiwai – Existing Water Use by Category



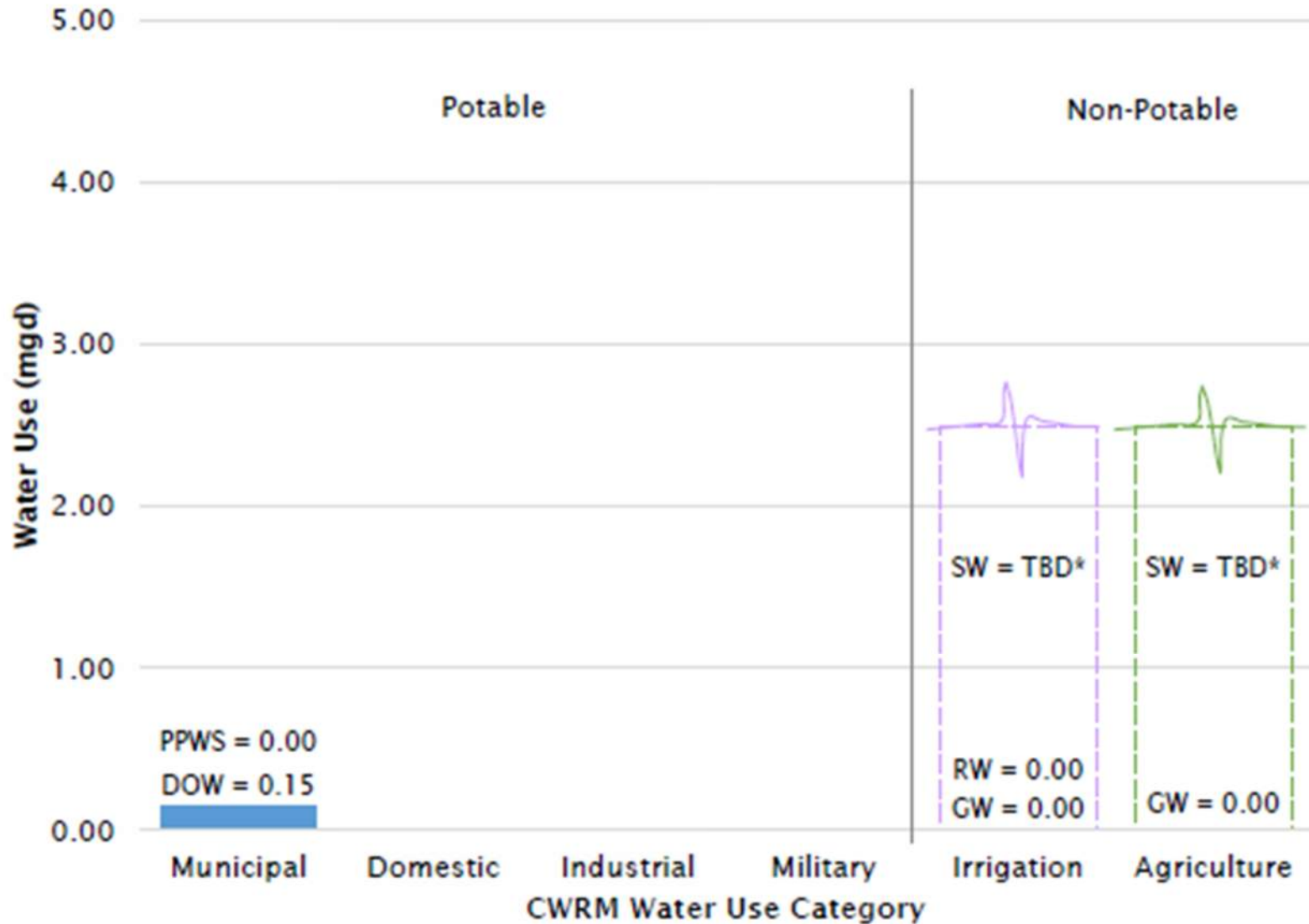
\*Values to be determined by other components of the Hawai'i Water Plan

## 20202 Hanalei – Existing Water Use by Category



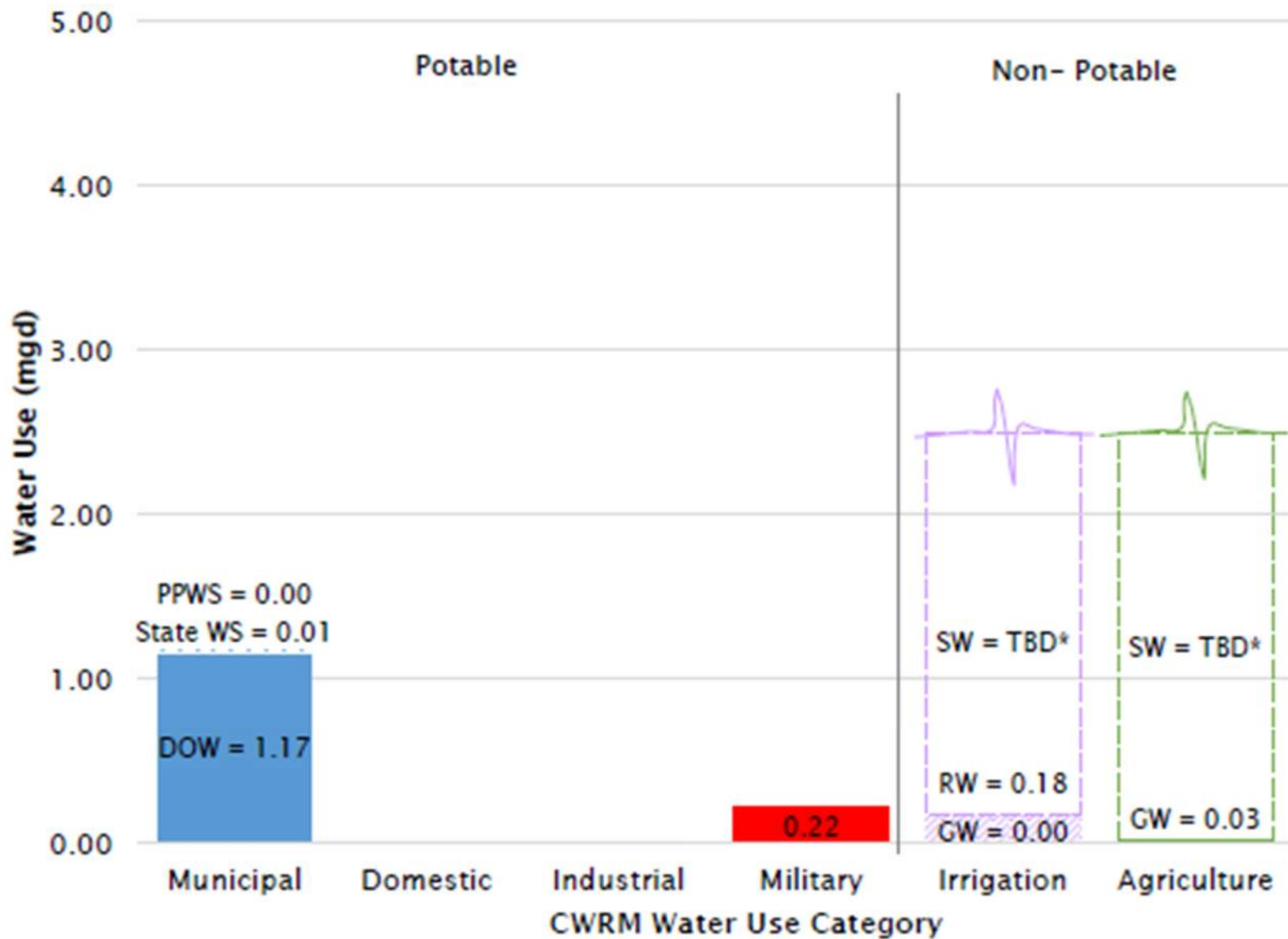
\*Values to be determined by other components of the Hawai'i Water Plan

## 20203 Wainiha – Existing Water Use by Category



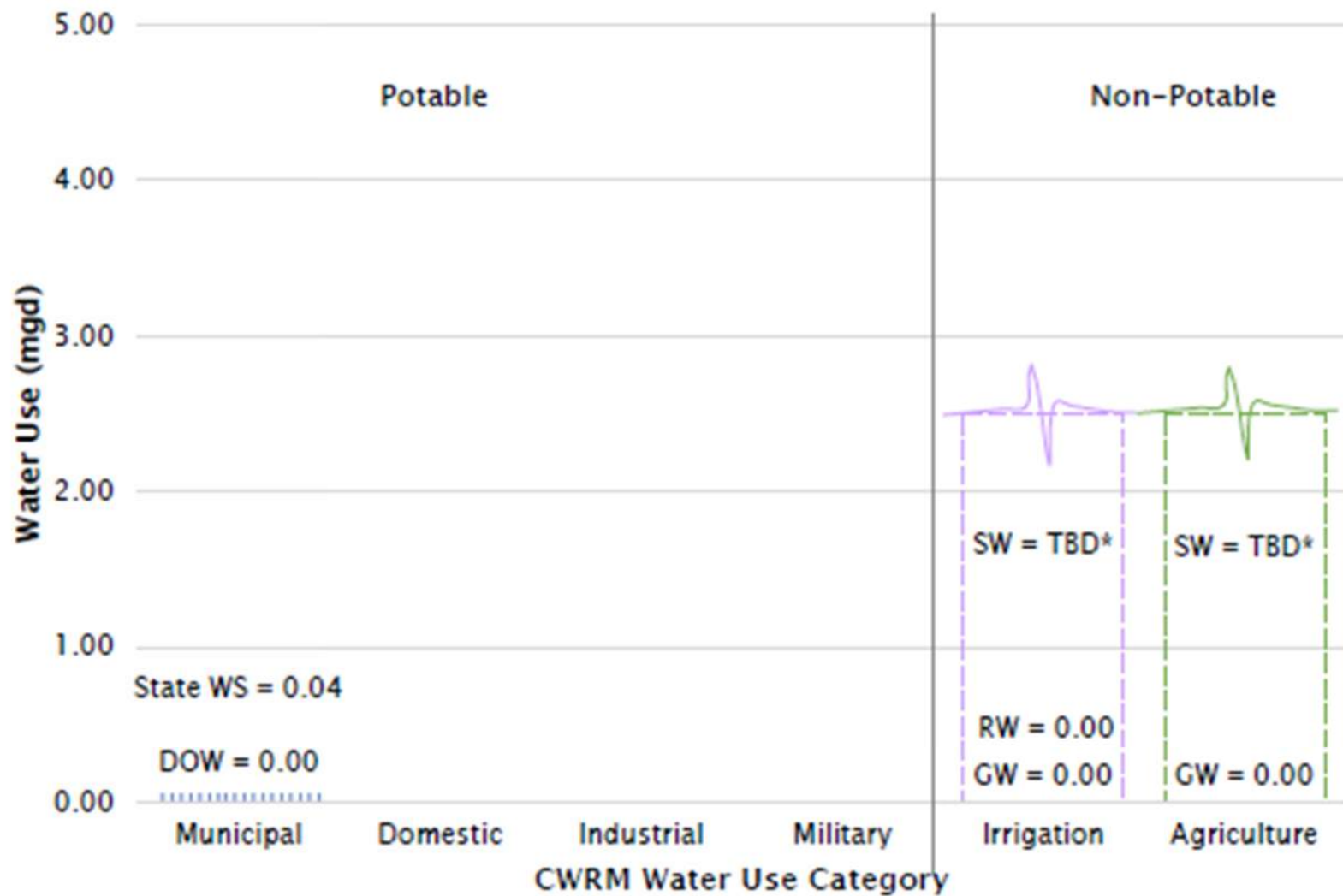
\*Values to be determined by other components of the Hawai'i Water Plan

## 20301 Kekaha – Existing Water Use by Category



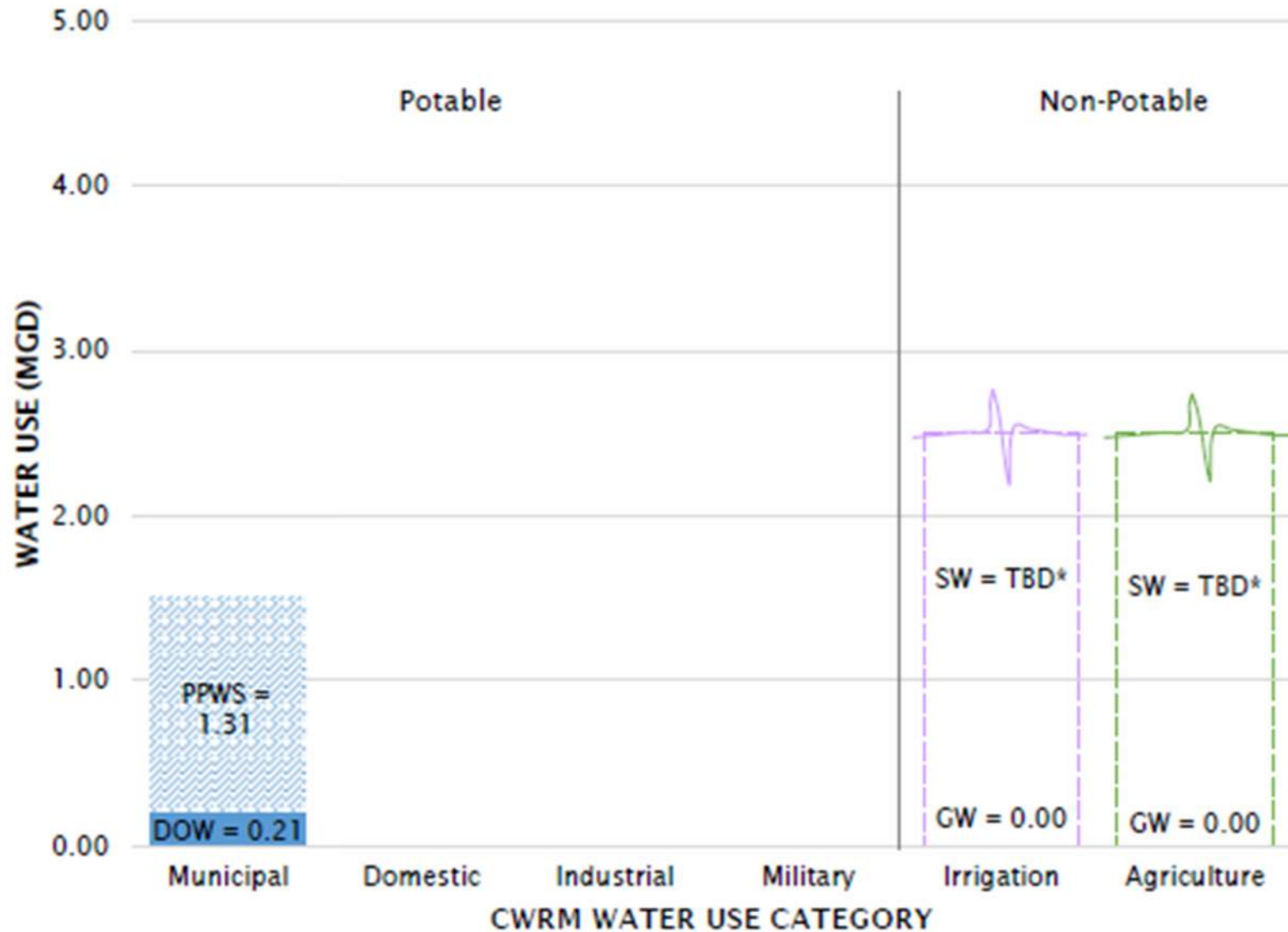
\*Values to be determined by other components of the Hawai'i Water Plan

## 20302 Waimea – Existing Water Use by Category



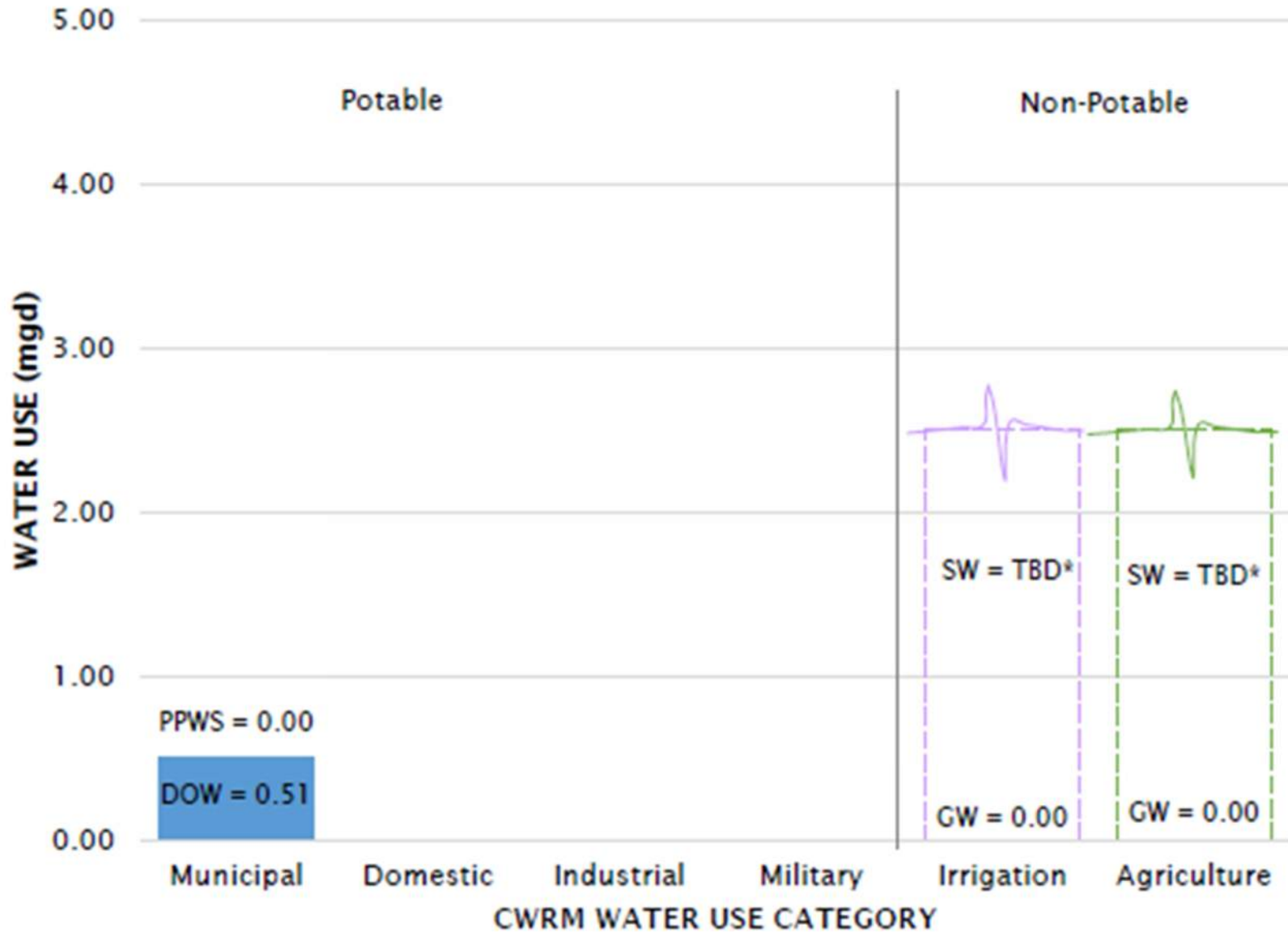
\*Values to be determined by other components of the Hawai'i Water Plan

## 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



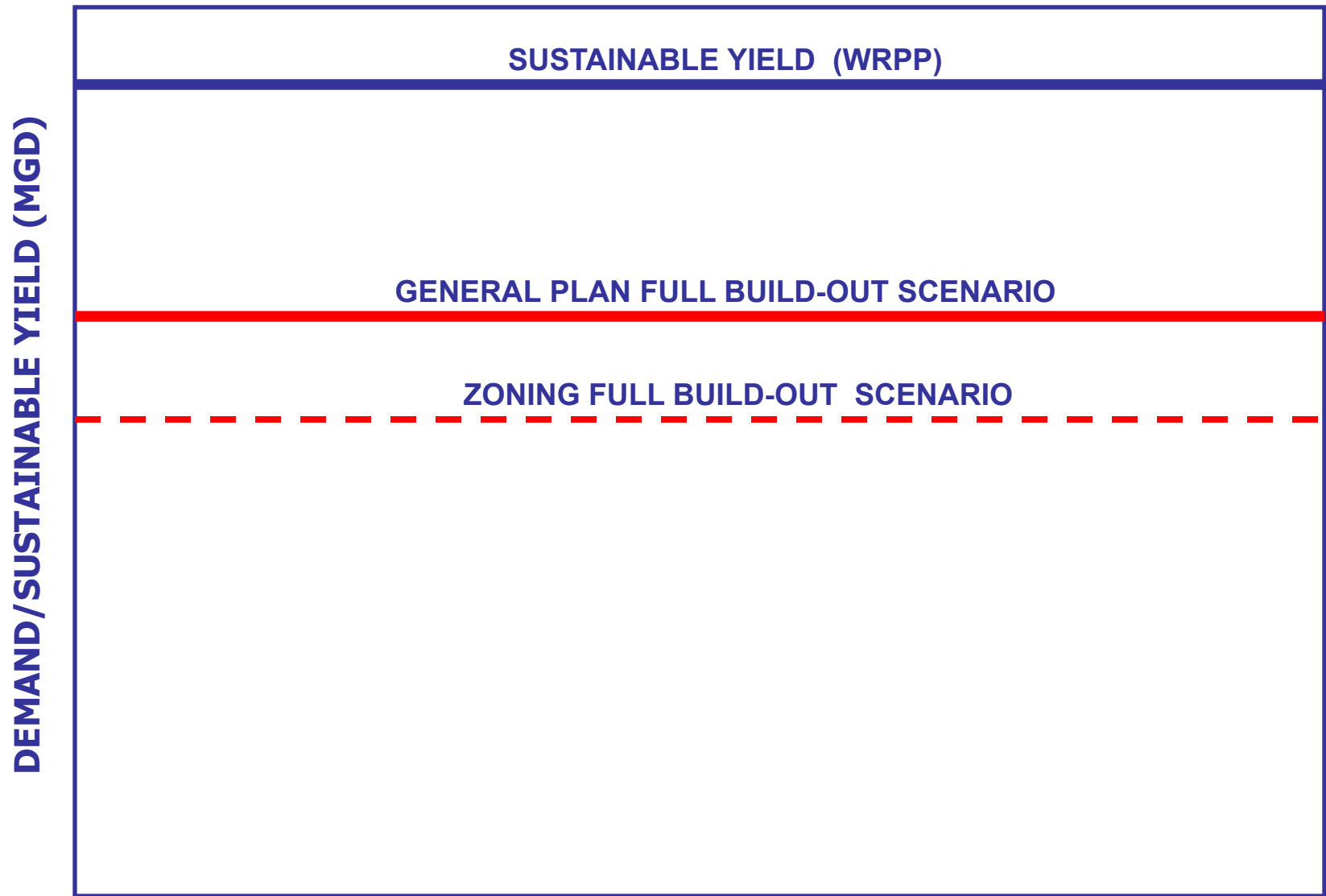
\*Values to be determined by other components of the Hawai'i Water Plan



# Projected Future Water Use

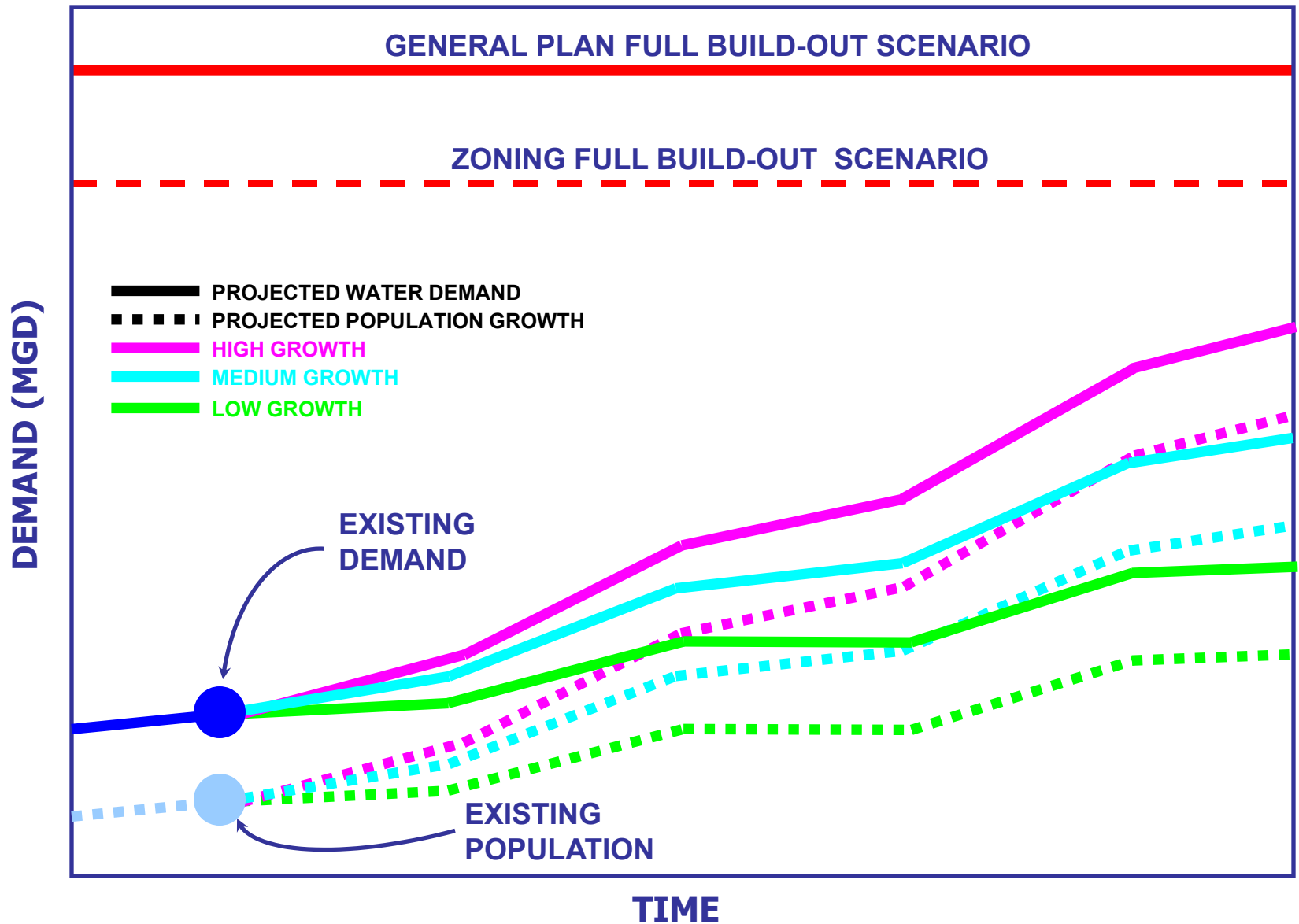
- Assess land use plans and policies and future projected water demands
- Based on Full Build-Out Water Demands
  - Reviewed existing land use plans and policies
  - Conservative approach – assumes ALL land area developed to its theoretical maximum extent
  - Based on existing water system standards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

# SUSTAINABILITY OF LAND USE POLICIES

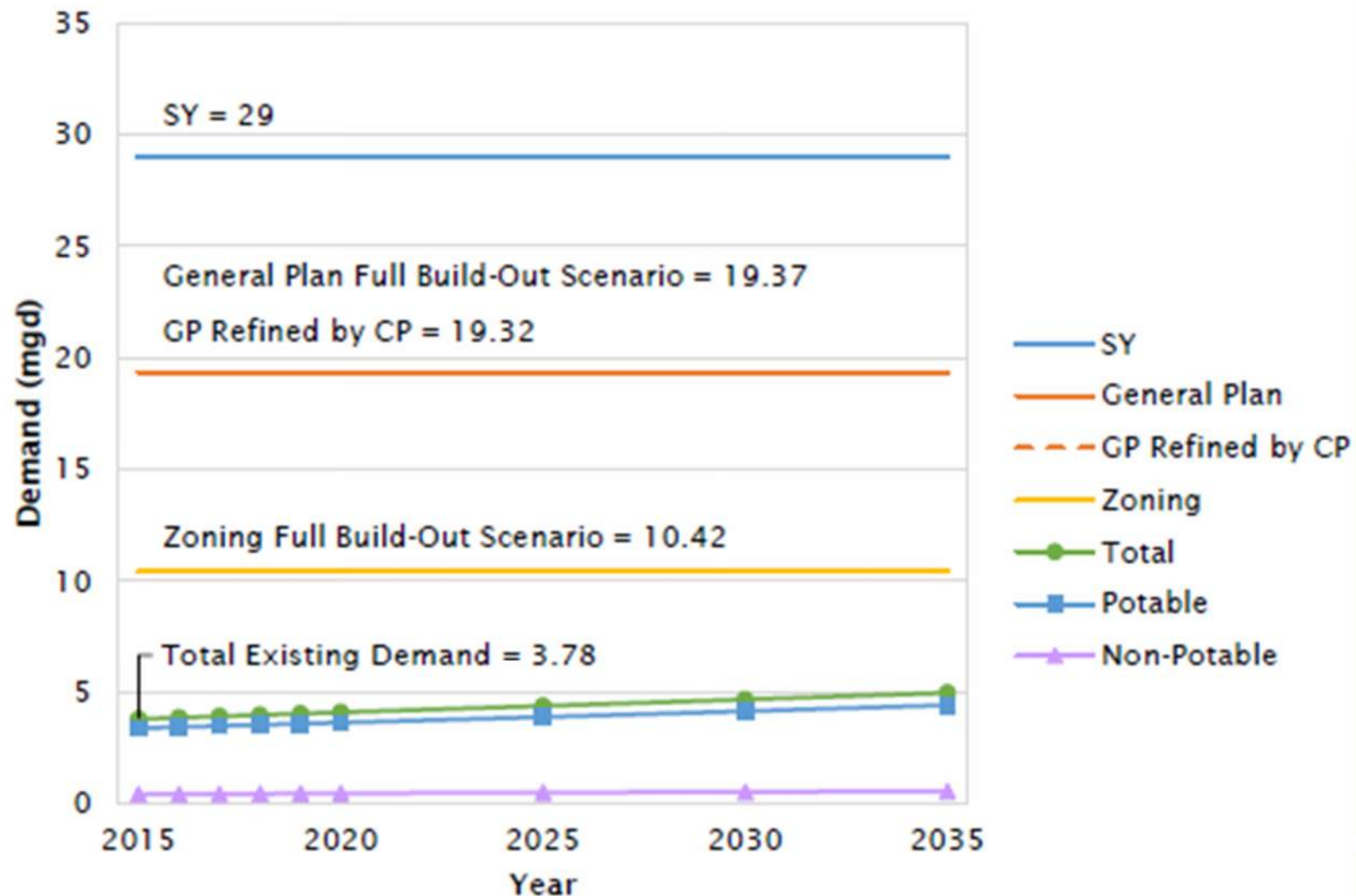


Less sensitive area

# PROJECTED DEMAND

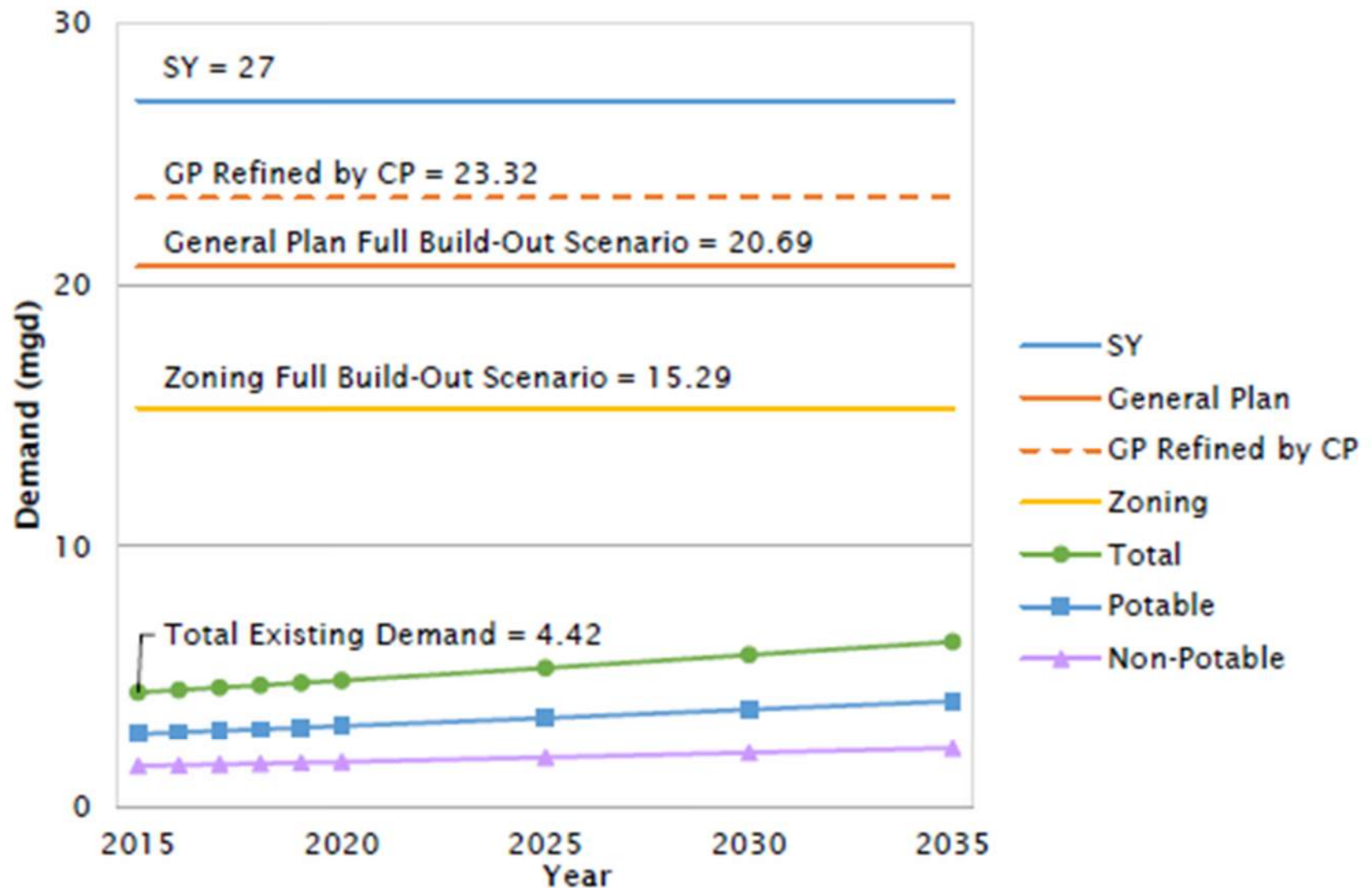


## 20101 Kōloa – Water Demand Projections and Full Build-Out



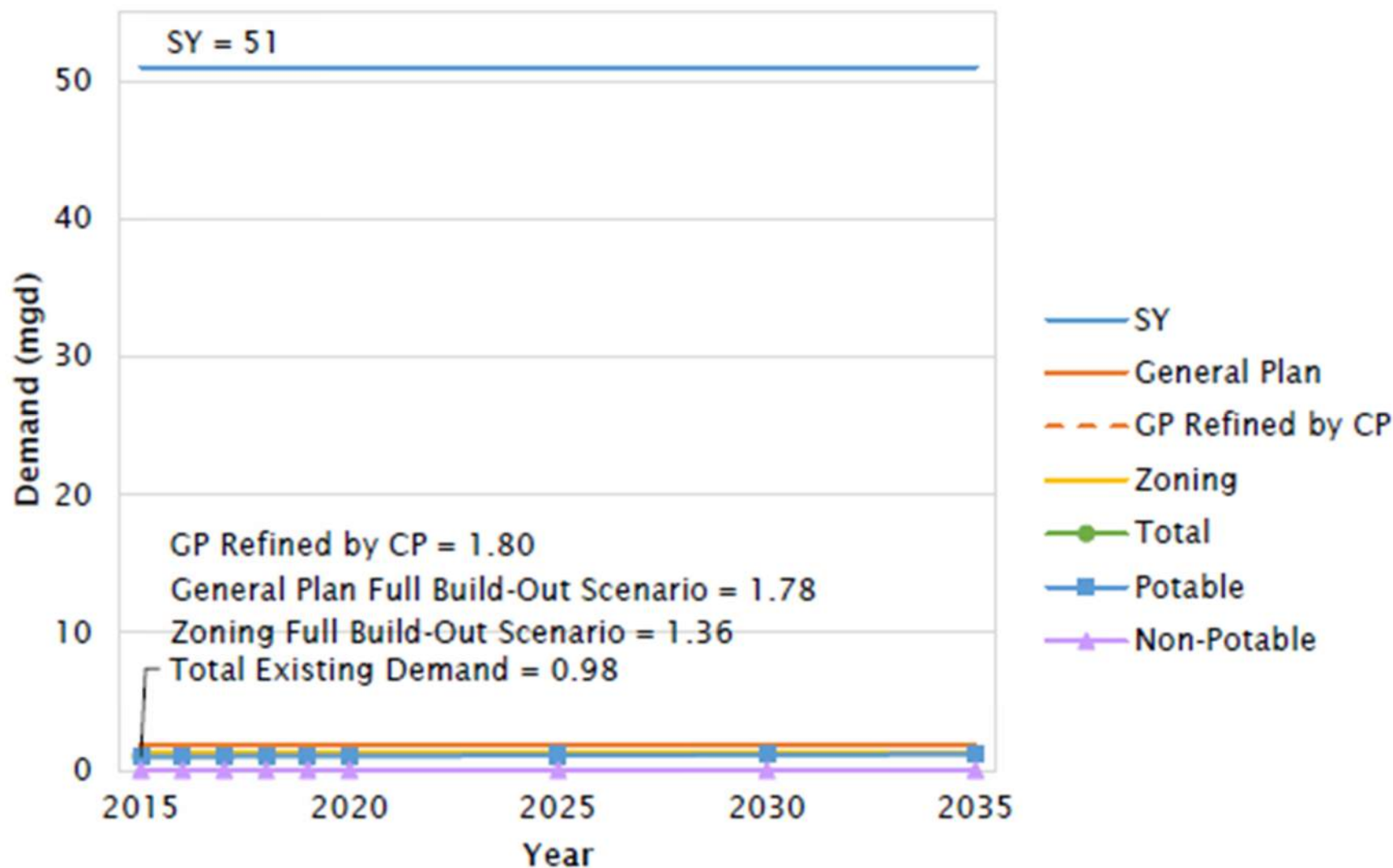
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20101-4.1.1 County of Kaua'i Important Agricultural Lands Study.

## 20102 Hanamā'ulu – Water Demand Projections and Full Build-Out



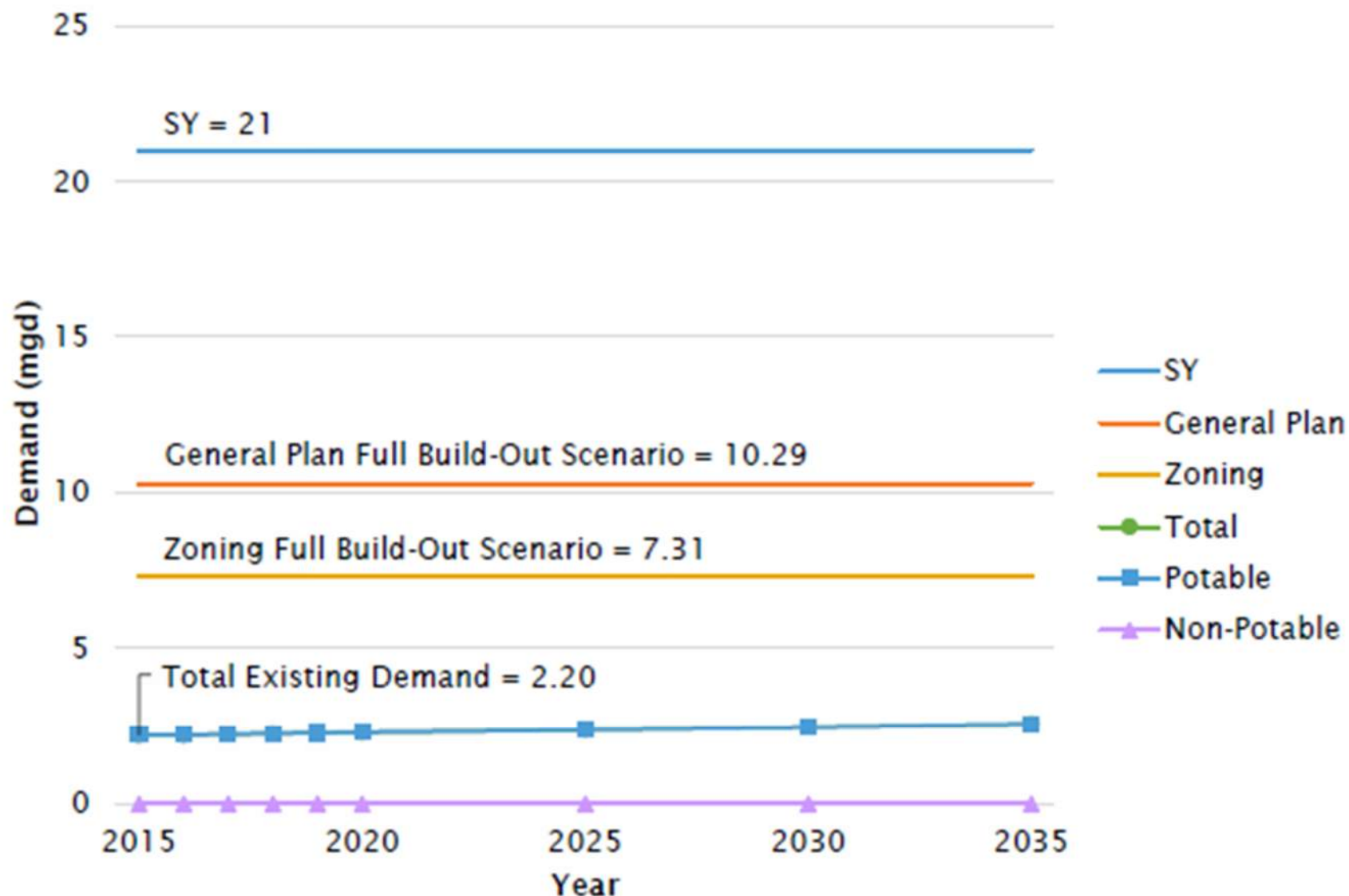
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20102-4.1.1 County of Kaua'i Important Agricultural Lands Study.

## 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.

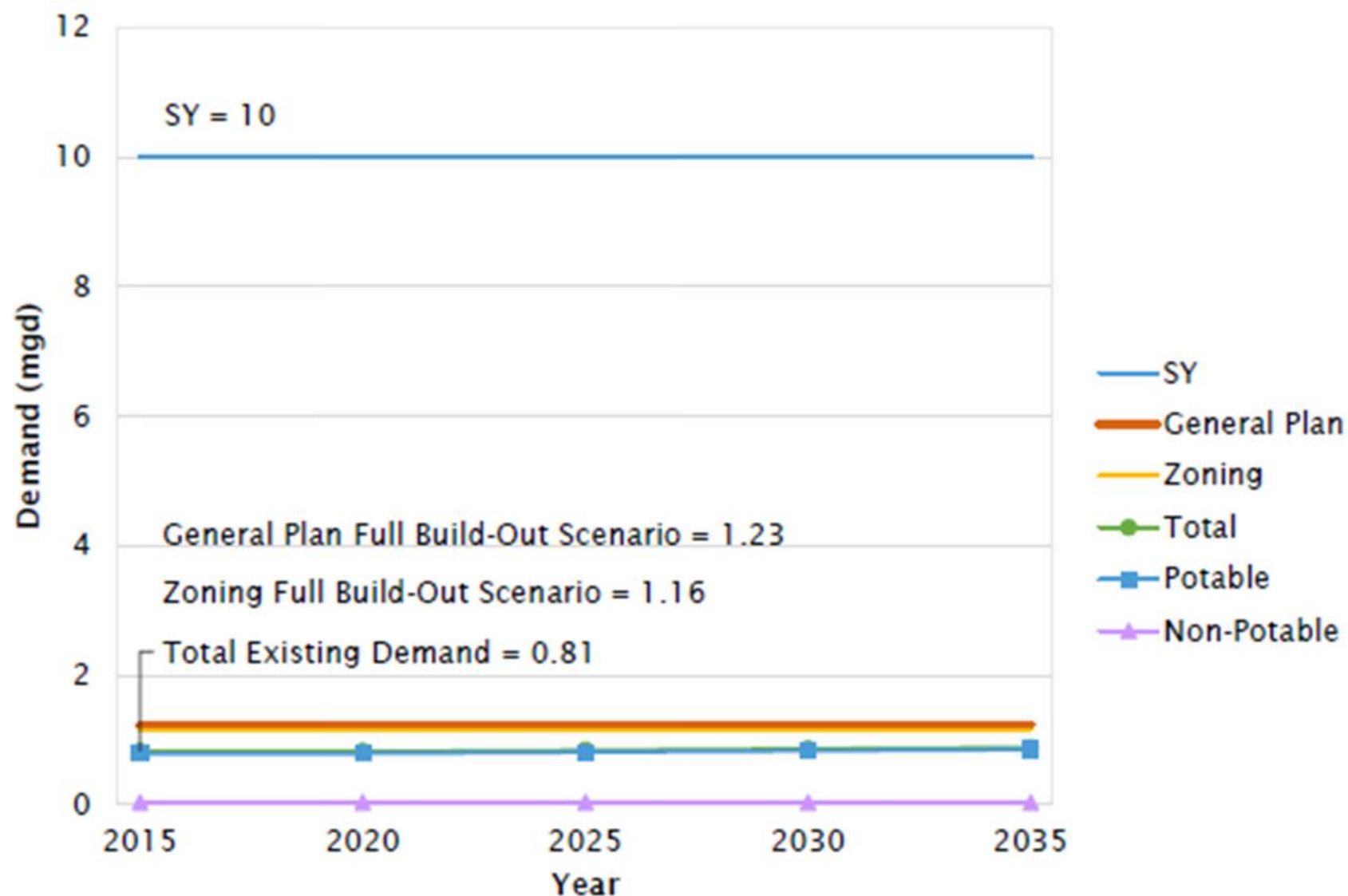
## 20104 Anahola – Water Demand Projections and Full Build-Out



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.



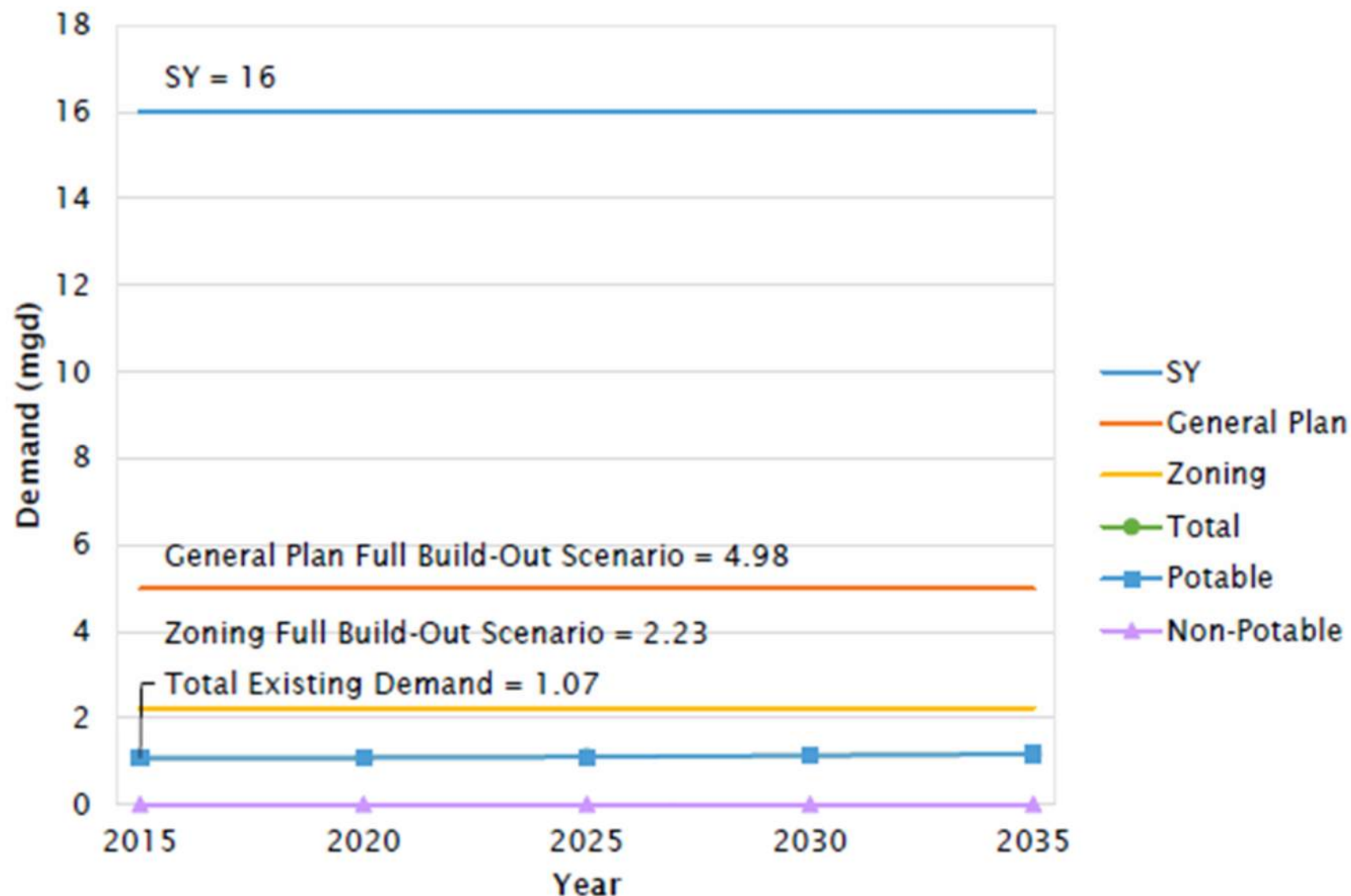
## 20105 Kīlauea – Water Demand Projections and Full Build-Out



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 20105-4.1.1 County of Kaua'i Important Agricultural Lands Study.

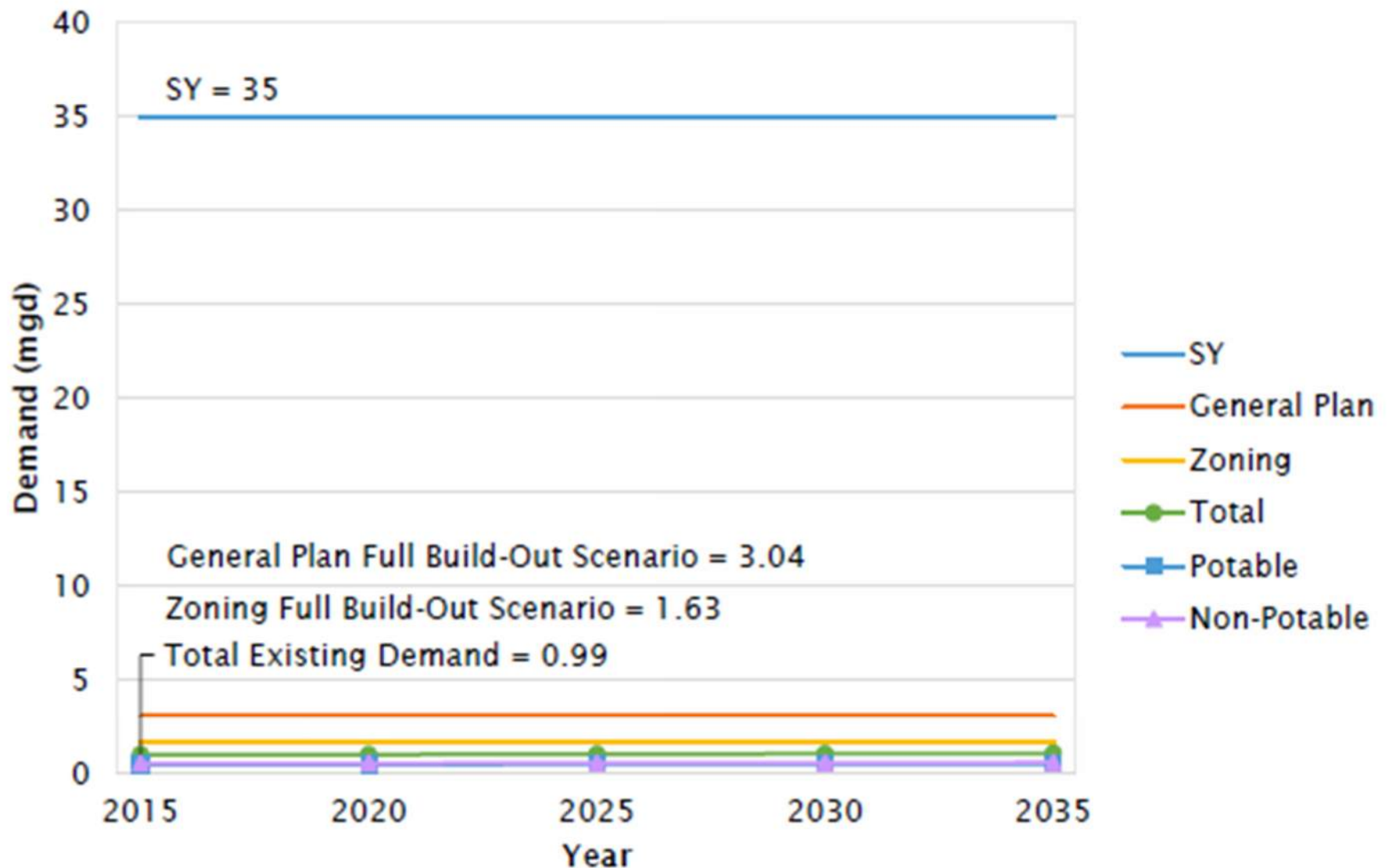


## 20201 Kalihiwai – Water Demand Projections and Full Build-Out



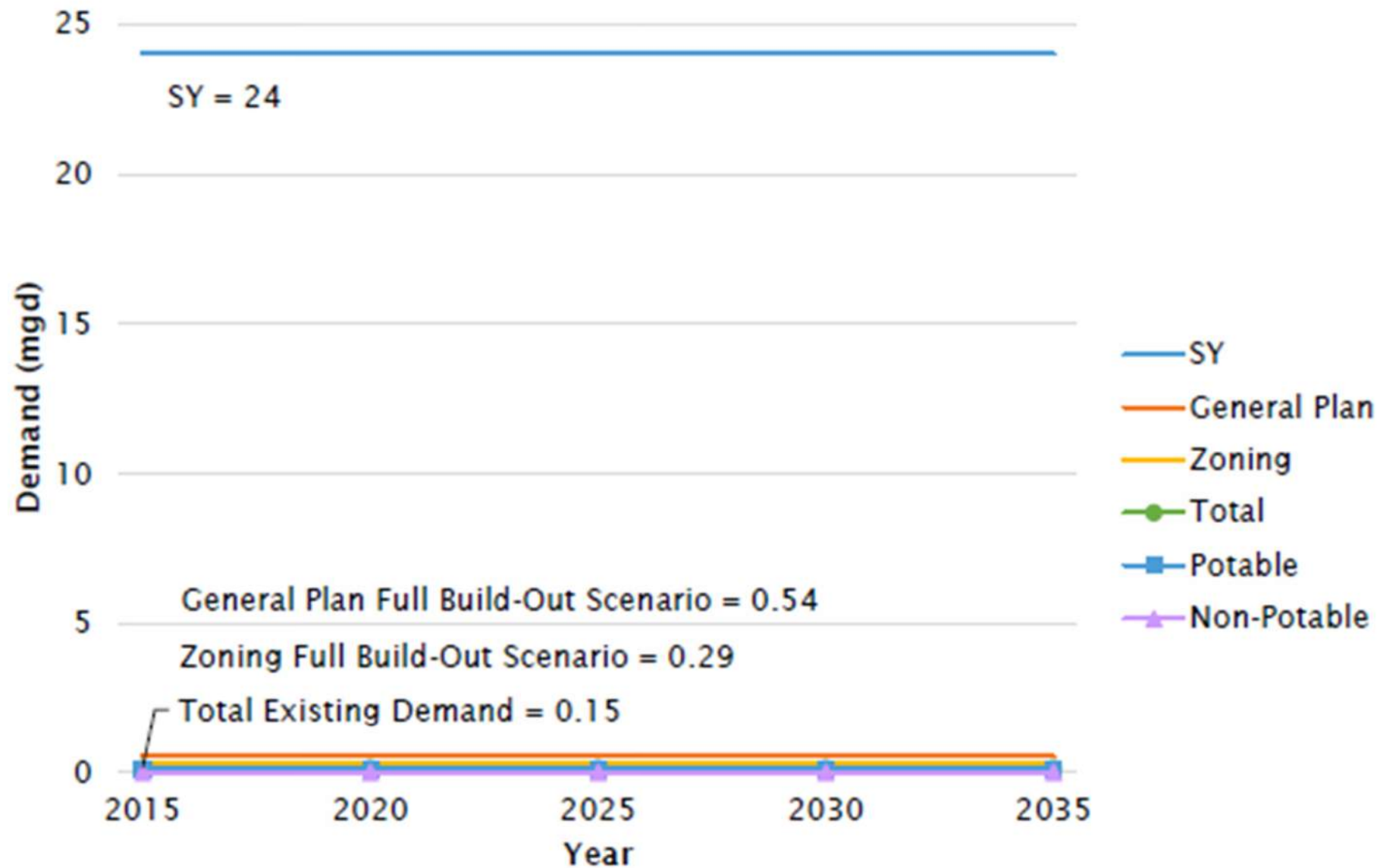
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20201-4.1.1 County of Kaua'i Important Agricultural Lands Study.

## 20202 Hanalei – Water Demand Projections and Full Build-Out



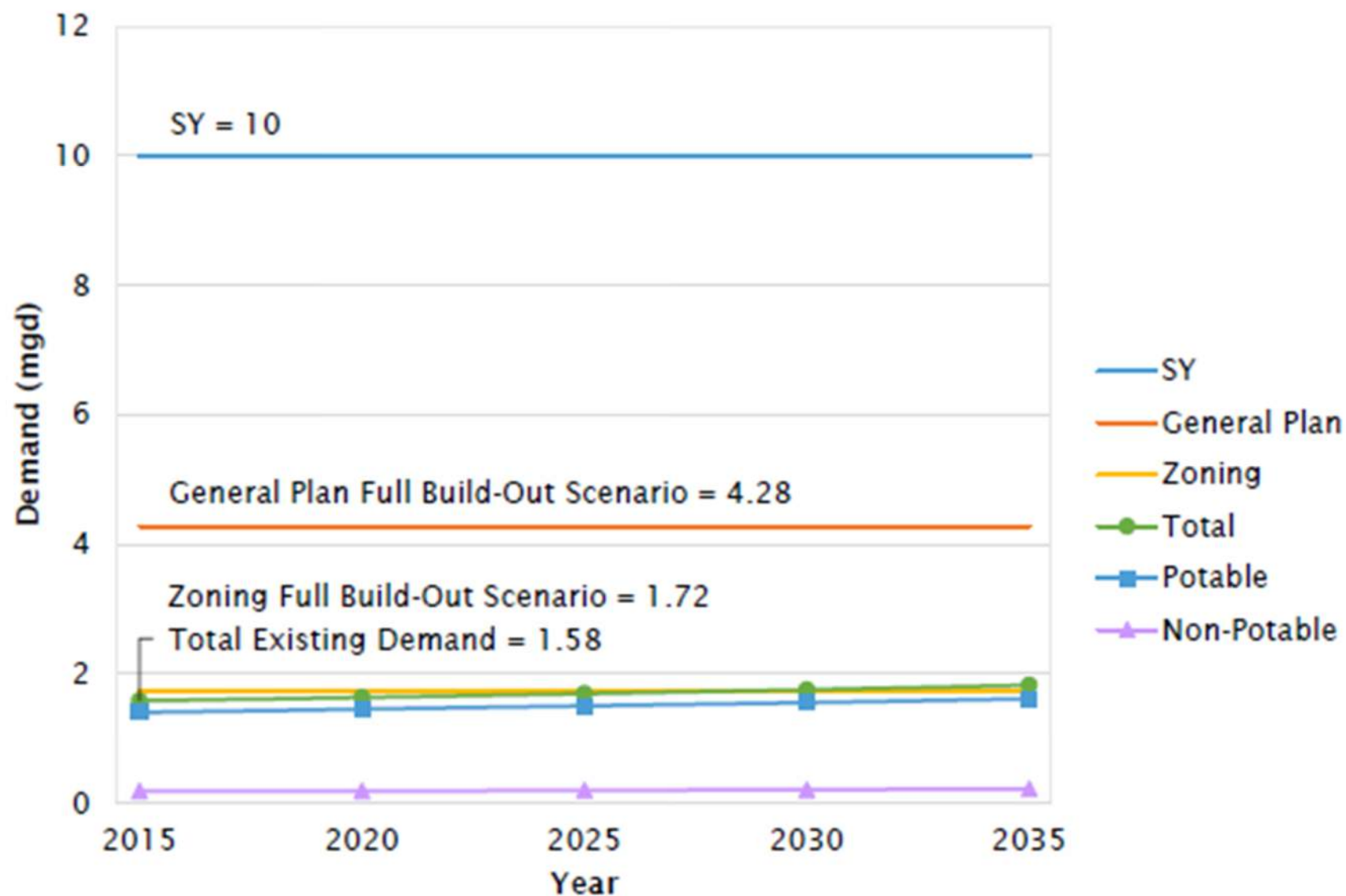
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20202-4.1.1 County of Kaua'i Important Agricultural Lands Study.

# 20203 Wainiha – Water Demand Projections and Full Build-Out



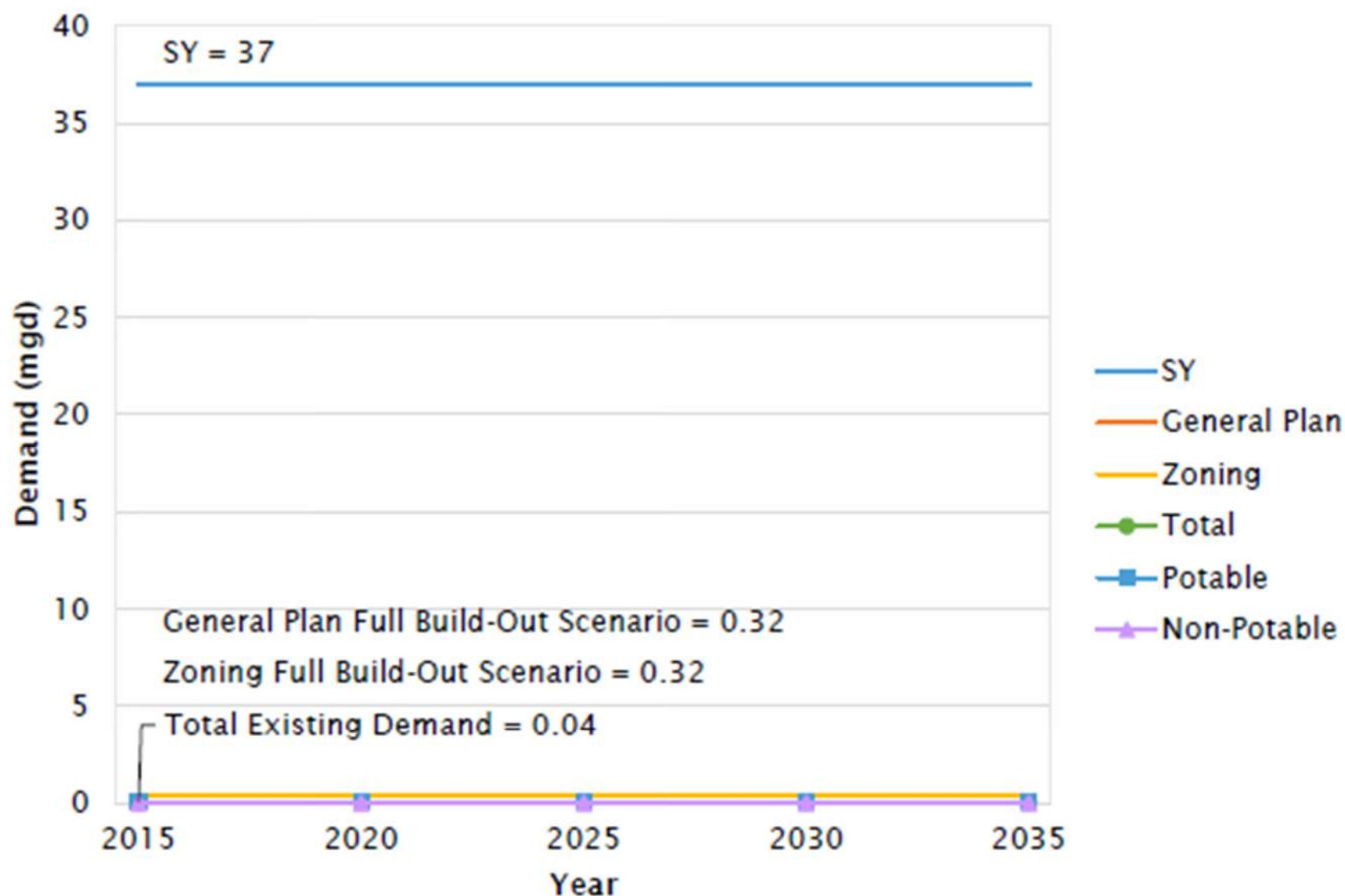
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20203-4.1.1 County of Kaua'i Important Agricultural Lands Study.

## 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.

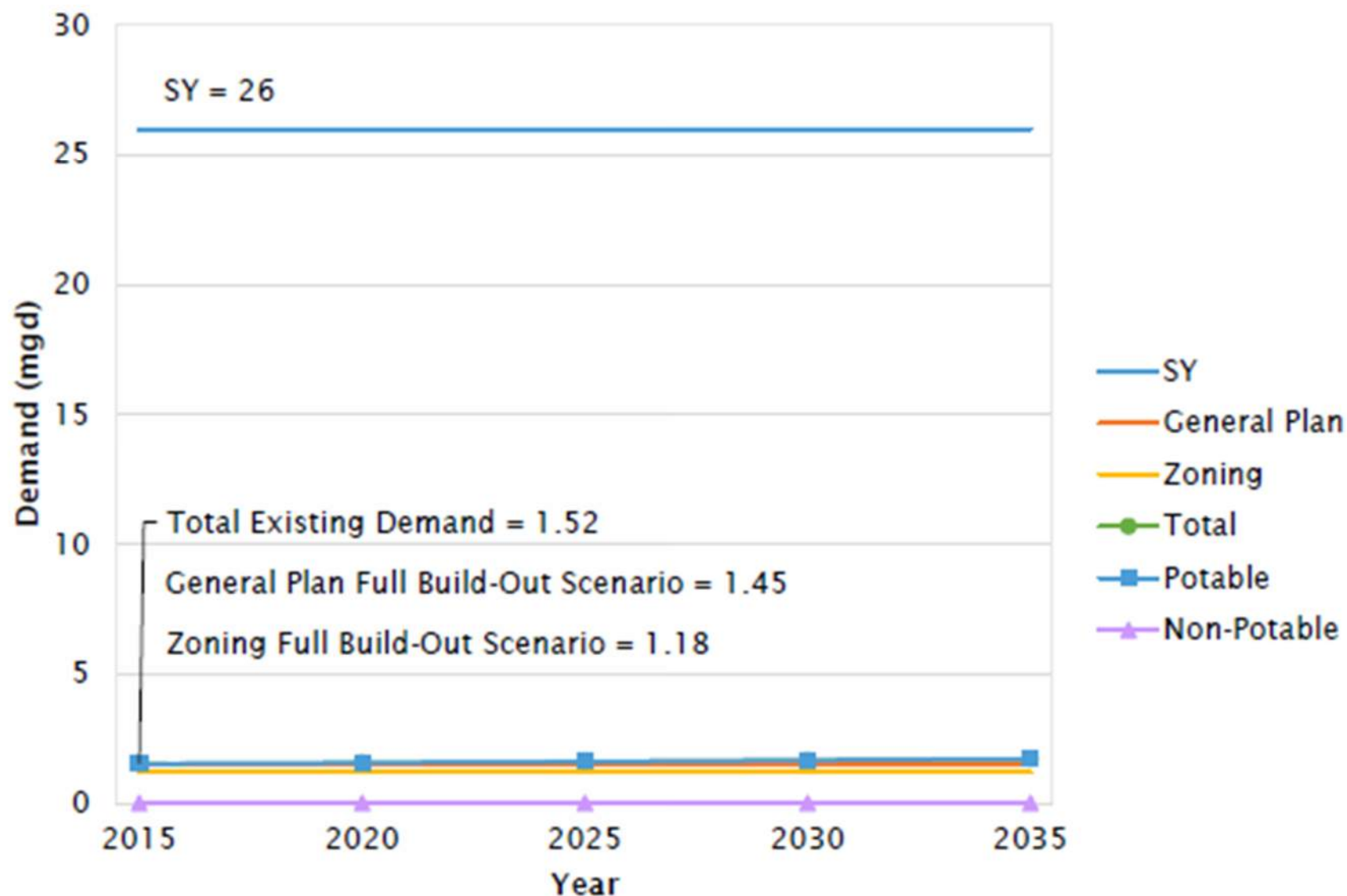
## 20302 Waimea – Water Demand Projections and Full Build-Out



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.

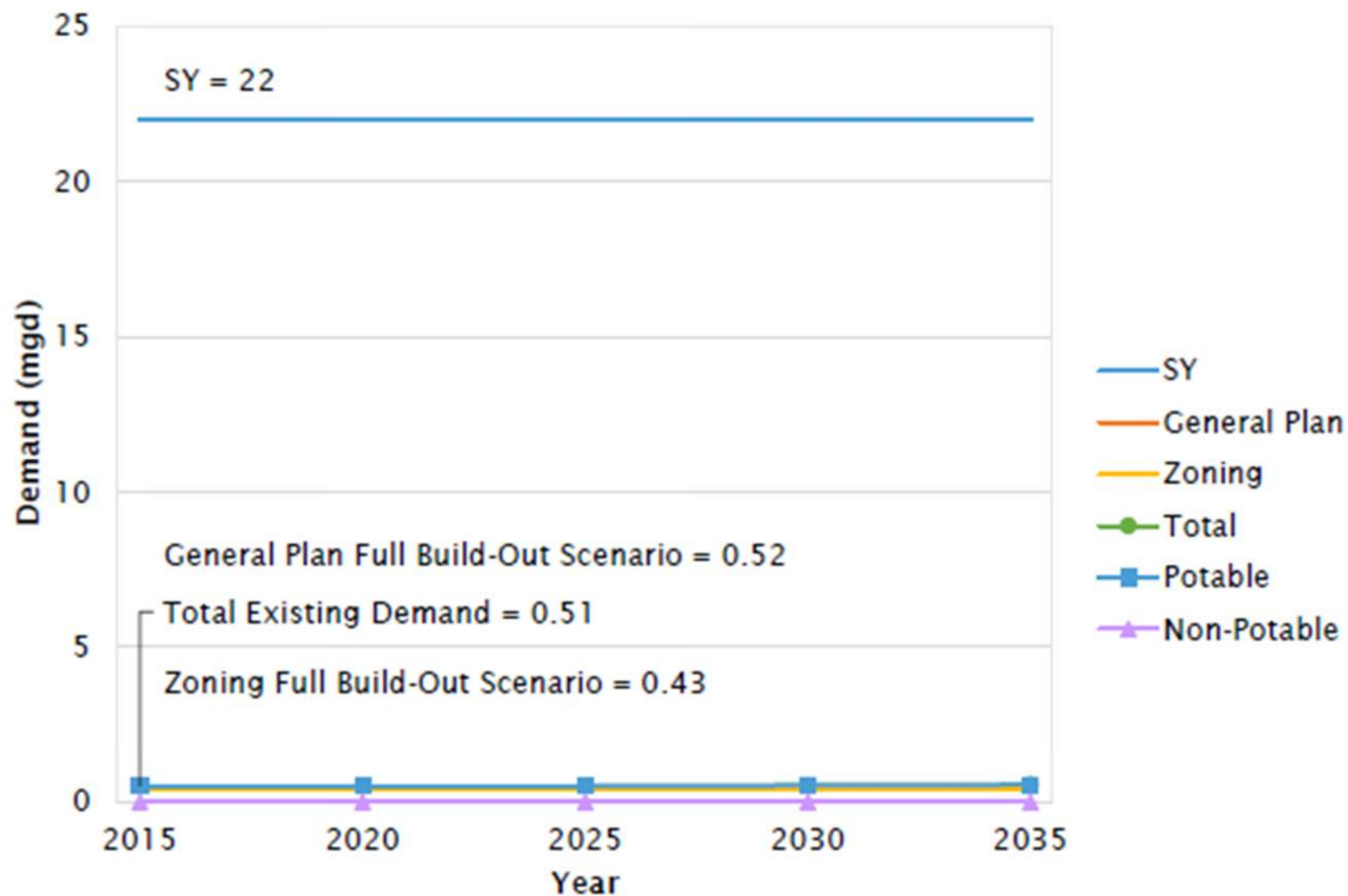


## 20303 Makaweli – Water Demand Projections and Full Build-Out



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

### Irrigation of Agricultural Lands

	20101 Kōloa	20102 Hanamā'ulu	20103 Wailua	20104 Anahola	20105 Kīlauea
Surface Water Supply*	21.19 mgd	6.87 mgd	7.56 mgd	2.96 mgd	0.32 mgd
Agricultural Lands with score $\geq 28$ in the IAL study	10,264 acres	11,520 acres	5,301 acres	4,567 acres	1,737 acres
% of land that can be irrigated @ rate of 3,400 gpad	61%	18%	42%	19%	5%

\*Declared surface water use from diversions



# Projected Future Water Use

## ■ Projected Agricultural Water Use

Irrigation of Agricultural Lands			
	20201 Kalihiwai	20202 Hanalei	20203 Wainiha
Surface Water Supply*	0.09 mgd	0.57 mgd	0.65 mgd
Agricultural Lands with score $\geq 28$ in the IAL study	1,306 acres	494 acres	57 acres
% of land that can be irrigated @ rate of 3,400 gpad	2%	34%	338%

\*Declared surface water use from diversions

# Projected Future Water Use

## ■ Projected Agricultural Water Use

### Irrigation of Agricultural Lands

	20301 Kekaha	20302 Waimea	20303 Makaweli	20304 Hanapēpē
Surface Water Supply*	See note	0.28 mgd	23.19 mgd	3 mgd
Agricultural Lands with score $\geq 28$ in the IAL study	7,555 acres	34 acres	7,620 acres	904 acres
% of land that can be irrigated @ rate of 3,400 gpad	See note	241%	90%	98%

\*Declared surface water use from diversions

NOTE: As a result of a mediation agreement in 2017, 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.

# A Living Document

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

# Recommendations - Resource Planning Objectives

- Follow the Public Trust Doctrine – *waters of the State are held for the benefit of the citizens of the State*
- Utilize the highest quality of water for the most valuable end use. The quality of water source should be matched to the quality of water required
- Promote water conservation – water is a most precious resource and shall be used wisely
- Watershed management is a critical source protection measure
- Meet future demands at a reasonable cost

# Recommended Alternatives

- Alternative Water Resources
- Conservation
- Ground Water – primary strategy
- Surface Water
- Demand-Side Management

# KWUDP Update vs. WSIP

- The **KWUDP Update** is an island-wide planning level guide with the primary objective of providing general estimates of water use based on land use plans and policies to assess sustainability
- The **DOW Water System Investment Plan (WSIP)** is a separate DOW project for planning long-range capital improvements for DOW water systems.

# Public Participation

- 2 rounds of public meetings (5 locations each)
- 3 stakeholder advisory group meetings
- Concerns included:
  - Interim instream flow standards
  - Stream diversions
  - Water use reporting
  - Sustainable yield
  - Reservoirs
  - DOW water system infrastructure improvements



# Next Steps

- CWRM to post the Public Review Draft
- CWRM to hold Public Hearing
- Revise WUDP Update
- Present WUDP Update to Kauai BWS
- Present WUDP Update to CWRM for adoption



**Mahalo**

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

**Mount Wai'ale'ale**