

## ES EXECUTIVE SUMMARY

### ES-1 INTRODUCTION

The 1987 State Legislature enacted into law Hawai'i Revised Statutes, Chapter 174C - State Water Code to protect Hawai'i's surface and ground water resources. The State Water Code (the Code) called for the establishment of a Commission on Water Resource Management (CWRM) to oversee the general administration of the Code. The Code also calls for the preparation of a Hawai'i Water Plan to serve as a dynamic, long-range planning guide for the CWRM.

The Hawai'i Water Plan consists of five parts:

**Table ES-1      Hawai'i Water Plan Components**

| <b>Component</b>                                           | <b>Responsible Agency</b>                                   |
|------------------------------------------------------------|-------------------------------------------------------------|
| Water Resource Protection Plan (WRPP)                      | State Department of Land and Natural Resources (DLNR), CWRM |
| Water Quality Plan (WQP)                                   | State Department of Health                                  |
| State Water Projects Plan (SWPP)                           | DLNR, Engineering Division                                  |
| Agricultural Water Use and Development Plan (AWUDP)        | State Department of Agriculture                             |
| County Water Use and Development Plans (WUDP) <sup>1</sup> | County Department of Water Supply <sup>1</sup>              |

In compliance with the Code, each of the four Counties is tasked with the development of its own WUDP. The primary objective of the WUDP is to set forth the allocation of water to land use to guide the county in its planning, management, and development of land use and water resource strategies and policies for sustainable development. As stipulated in Hawai'i Administrative Rules §13-170-31, the County WUDP shall include, but not be limited to:

- (1) Status of water and related land development including an inventory of existing water uses for domestic, municipal, and industrial users, agriculture, aquaculture, hydropower development, drainage, reuse, reclamation, recharge, and resulting problems and constraints;
- (2) Future land uses and related water needs; and
- (3) Regional plans for water developments including recommended and alternative plans, costs, adequacy of plans, and relationship to the water resource protection and water quality plans.

The original Kaua'i WUDP was adopted by Kaua'i County ordinance on April 27, 1990. The CWRM conditionally accepted the WUDP on June 27, 1990 for incorporation into the Hawai'i

<sup>1</sup> A separate WUDP is to be prepared by each of the four Counties. The AWUDP was added to the Hawai'i Water Plan by mandate under Act 101, Session Laws of Hawai'i (SLH) 1998, by the State Legislature.

Water Plan. The key condition stipulated that the WUDP was to be reviewed and revised as necessary by the County to coincide with the review process of the Hawai'i Water Plan.

The Statewide Framework for Updating the Hawai'i Water Plan (Framework), dated February 2000, was created by the CWRM to facilitate coordination, integration, and consistency for preparing/ updating of the various components of the Hawai'i Water Plan. In addition, the Framework provides guidelines for the preparation of WUDP updates to ensure its effective implementation by the County and utilization by the CWRM for resource management purposes.

The Framework requires data and analyses to be based on ground water and surface water hydrologic units designated by the CWRM. There are thirteen aquifer system areas (ASYAs) on the island of Kaua'i. **Figure ES-1** shows the ASYAs and indicates the sustainable yield of each ASYA.

As provided for in the Code, sustainable yield (SY) is defined as "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 the commission."

As further defined and described in the WRPP:

The amount of ground water that can be developed in any Hawai'i aquifer is limited by the amount of natural recharge. Additionally, not all natural recharge an aquifer receives can be developed. Some aquifer outflow or leakage must be maintained to prevent seawater intrusion or to maintain some perennial streamflow. Therefore, the SY of an aquifer normally represents a percentage of the natural recharge.

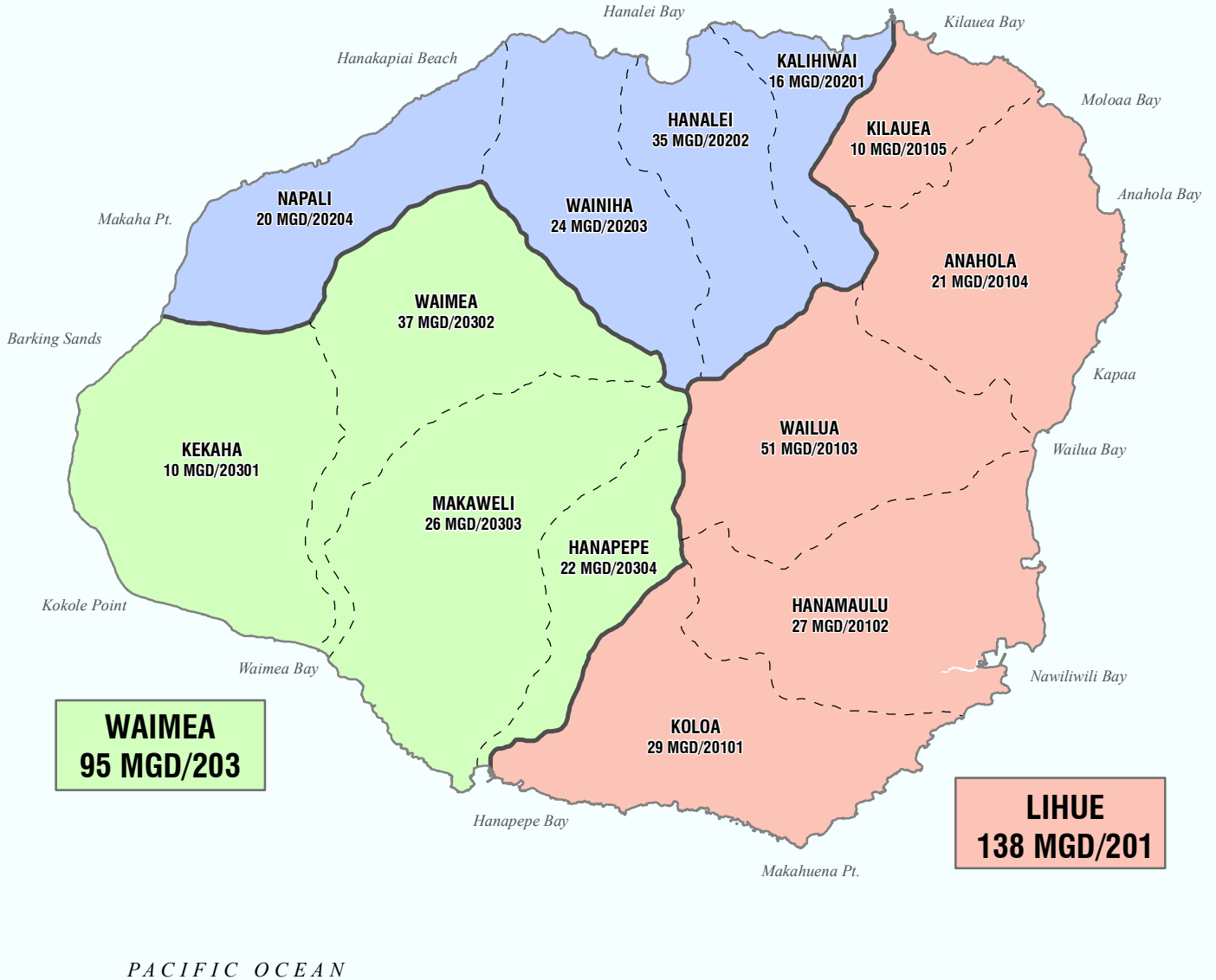
The estimation of aquifer SYs is not an exact science. Insufficient hydrologic, geologic, and meteorological data require the estimation of critical input parameters in any SY model. Differences in estimates of these input parameters and in how they are incorporated in a model can produce a wide range in predicted SY values for a given aquifer.

Given the range of predicted SYs for each aquifer, and the inherent uncertainty in each prediction, CWRM has applied the precautionary principle in selecting SYs for adoption in the WRPP. As the WRPP is a living document, SYs will be re-estimated continually based on the best information available as new information is acquired with time.

This WUDP presents data and analyses by ASYA, with a chapter dedicated to each ASYA. Since surface water hydrologic units and ground water hydrologic units are well-correlated, surface water data and analyses are also presented based on ASYAs.

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

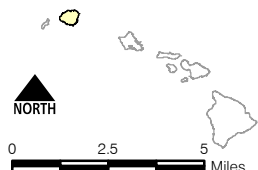
**HANAIEI**  
**95 MGD/202**



**FIGURE ES-1**

**Aquifer System Areas and Sustainable Yields**

**INDEX MAP - Island of Kaua'i**



**LEGEND:**

- Aquifer Sector Areas
- - Aquifer System Areas

## ES-2 METHODOLOGY

Each ASYA was evaluated using the following methodology.

### ES-2.1 Existing Water Resources

Water resources that are currently being utilized and were examined in this report included the following:

- Ground water
- Surface water
- Rainwater catchment
- Recycled water

### ES-2.2 Existing Water Use

Existing water use for each ASYA was summarized based on information from the CWRM well database, Department of Health (DOH) Sanitary Surveys for Public Water Systems, and DOH estimated recycled water usage data.

### ES-2.3 Future Water Use

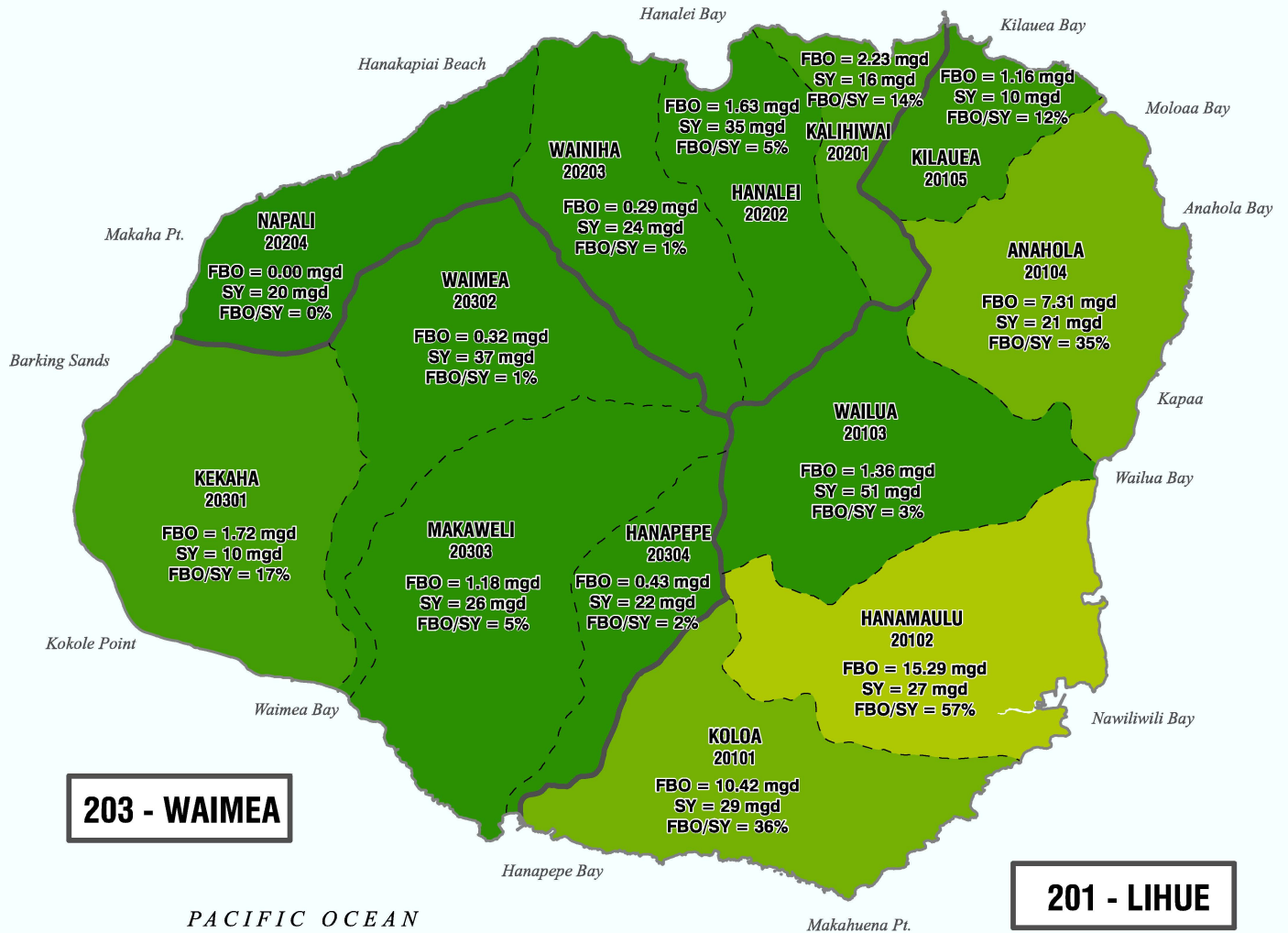
Water resource planning for this Kauaʻi WUDP update considers both land use based water demand projections and rate of population growth to develop estimates of future water needs. Land use based evaluations provide full build-out projections, or the ultimate water needs, if the maximum density allowed is developed. When compared to SY, it is possible to assess the sustainability of land use policies in terms of meeting the water needs associated with the potential full build-out development. Incremental water needs for the next 20 years are based on population and growth rate projections. A distinct difference between the scenarios is that the land use based projections are based on planning level standards, while the 20-year projections are based on actual consumption. See **Section 2.2** for more information on the approach to estimating future water use.

#### ES-2.3.1 Full Build-Out Water Demand Projections

Full build-out water demand projections are land use based and provides an estimate of the maximum water needs anticipated if all land is developed to the highest extent allowed by current land use policies set by the State of Hawaiʻi and County of Kauaʻi. Maximum development, in terms of unit counts and land area, is determined from land use policies. Full build-out demand is determined by multiplying these unit counts and land areas by appropriate water use rates. Comparing these projections to the SYs of each ASYA identifies areas where water resources are more than adequate to support maximum demands, thereby providing guidance for future assessments to focus efforts on the more sensitive areas. It is also noted that the full build-out scenarios are unlikely to occur because it assumes that all land area is developed to the maximum density allowed, including redevelopment of existing developed areas. See **Figure ES-2** and **Figure ES-3** for the general plan and zoning full build-out water demand as compared to the sustainable yield for each ASYA, respectively.



## 202 - HANAIEI

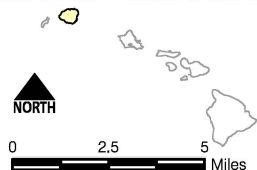


**NOTE:** The Zoning full build-out demand projections are conservative and are unlikely to be realized as it assumes that all land area is developed to the maximum density allowed. This includes the development of areas that are undevelopable (e.g. due to topography and roads/highways), and the redevelopment of underdeveloped parcels.

**FIGURE ES-3**

**ZONING  
FULL BUILD OUT  
VS.  
SUSTAINABLE YIELD**

### INDEX MAP - Island of Kaua'i



### LEGEND:

- Aquifer Sector Areas
- - Aquifer System Areas
- 0% FBO/SY
- 25% FBO/SY
- 50% FBO/SY
- 75% FBO/SY
- 100% FBO/SY

Full build-out water demands were computed based on the County's General Plan, community plans, and Comprehensive Zoning Ordinance (CZO).

The full build-out water demand based on the General Plan is used to determine if there are adequate water resources to sustain the long-range land use vision adopted by the County.

Community development plans establish more detailed policy than the General Plan. Full build-out water demand was calculated for the Līhu'e Community Plan and the South Kaua'i Community Plan. The General Plan full build-out water demand projections were refined by these community plan demands where applicable.

The CZO is the County's legal instrument that regulates land development, and implements the General Plan policies; therefore, zoning must be consistent with the General Plan. The full build-out water demand based on County Zoning is used to determine if there are adequate water resource to sustain the level of development that is allowed by law. County Zoning is more detailed and precise than the General Plan.

See **Section 2.2.2** for more information on the approach to full build-out water demand projections.

### **ES-2.3.2 Water Demand Projections to the Year 2035**

Existing water use is the basis of computing the water demand projections to the year 2035. Water demand to the year 2035 is projected by applying the population growth rate to existing water demand. See **Section 2.2.3** for more information on the approach to water demand projections to the year 2035.

### **ES-2.3.3 Agricultural Water Use**

Agricultural water use is difficult to determine due to the lack of available data. The AWUDP, dated December 2003 and revised December 2004, was limited in scope due to time and funding constraints. More recent, comprehensive information on agricultural lands is available in the County of Kauai Important Agricultural Lands Study and is relied on as the best available information for estimating agricultural water use. The study evaluated agricultural lands for eight criteria. This WUDP compares agricultural lands that met all eight criteria to the diversified water use rate of 3,400 gallons per acre per day (gpac) estimated in the AWUDP.

The State of Hawai'i, Department of Agriculture (DOA) is currently updating the AWUDP, and its information will supersede the agricultural water use information included in this WUDP when it becomes available<sup>2</sup>.

## **ES-2.4 Resource and Facility Recommendations**

Several water resource enhancement measures were examined to meet the projected water demands. These include conventional supply-side measures (i.e., ground water and surface water development), water conservation, alternative supply-side measures (i.e., rainwater catchment, storm

---

<sup>2</sup> The AWUDP, dated December 2019 and revised 2021, was adopted in March 2025 with conditions. The AWUDP may be downloaded here: <https://dab.hawaii.gov/arm/files/2023/02/Final-AWUDP-with-Appendices-B-to-F-webview.pdf>

be sustained). The feasibility of these water resource enhancement options was compared to provide a recommended combination of measures.

## **ES-3 AQUIFER SYSTEM AREA SYNOPSES**

A brief synopsis of each ASYA follows; refer to **Figure ES-1** for the ASYA boundaries.

**20101 – Kōloa Aquifer System Area**

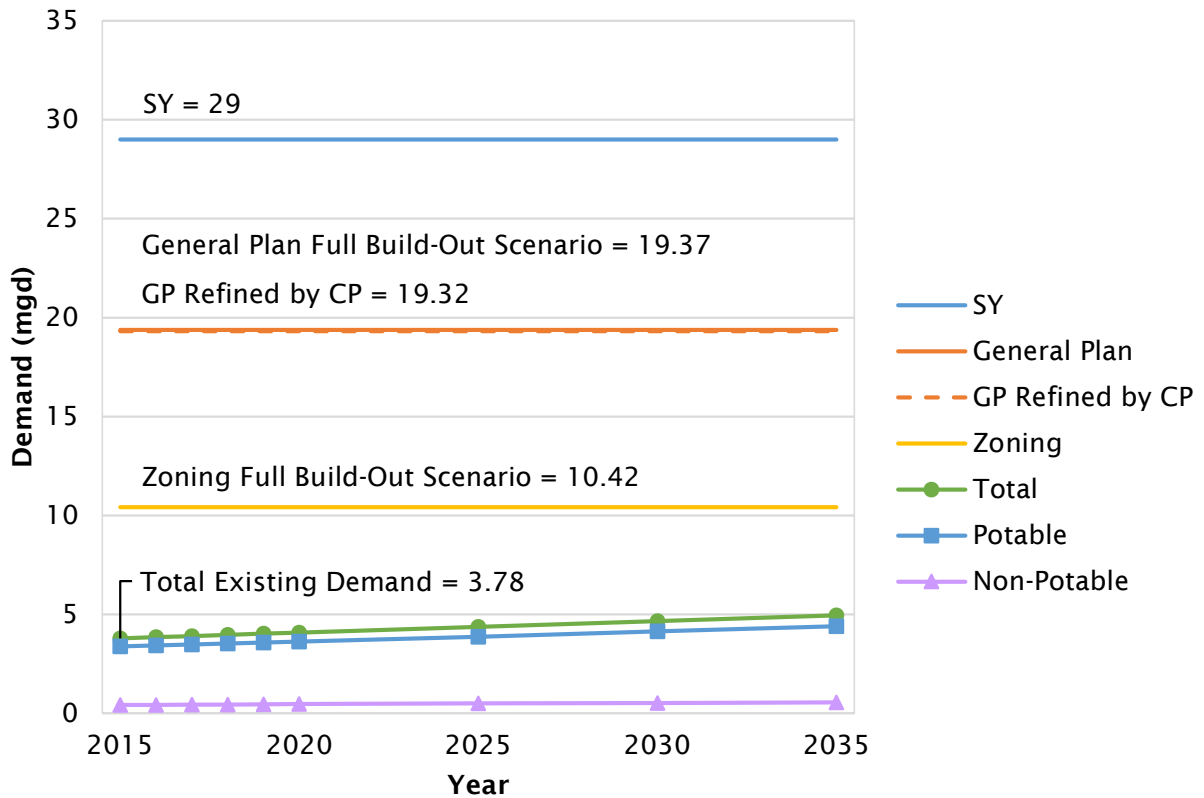
Development to the highest extent allowed by the General Plan and County Zoning within the Kōloa ASYA is sustainable. The 2035 water demand projection for the Kōloa ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Alternative water sources, such as recycled water generated from wastewater reclamation facilities, should be used where available to reduce demands on both ground and surface water resources and to conserve water resources as a whole. Recycled water is available from the Po'ipū Water Reclamation Facility (WRF) and Grand Hyatt Wastewater Reclamation Facility (WWRF). Ground water resources could continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Kōloa ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of groundwater.

Demand-side management, such as development density control, is not needed based on the full build-out projections. Although the full build-out projections are sustainable, the County Planning Department will need to consider potential impacts on available water resources when considering any future zoning modifications. Modifications that may result in increased development density within the area will increase demands on water resources.

### Medium Growth Rate B Water Demand Projections and Full Build Out – Kōloa ASYA



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 Aquifer System Area

Development to the highest extent allowed by the General Plan and County Zoning within the Hanamā‘ulu ASYA is sustainable. The 2035 water demand projection for the Hanamā‘ulu ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

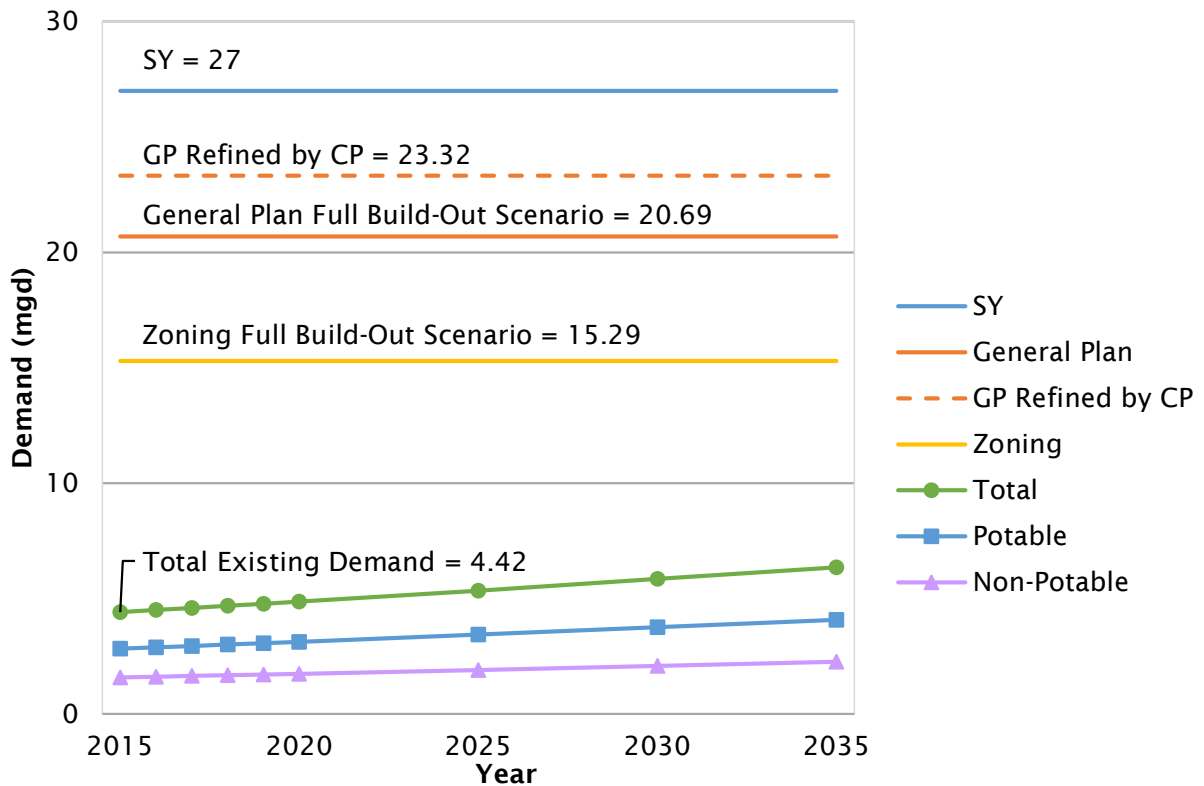
Alternative water sources, such as recycled water generated from wastewater reclamation facilities and storm water reuse, should be used where available to reduce demands on both ground and surface water resources and to conserve water resources as a whole. Recycled water is available from the Līhu‘e Wastewater Reclamation Facility (WWRF), Līhu‘e-Puhi Wastewater Treatment Plant (WWTP), and Wailua WWRF. Two areas within the Hanamā‘ulu ASYA were identified in the U.S. Department of the Interior, Bureau of Reclamation’s Appraisal of Stormwater Reclamation and Reuse Opportunities in Hawai‘i Report<sup>2</sup> to have the opportunity to use utilize storm water reclamation and reuse. However, storm water infrastructure would need to be developed to treat and convey the storm water for reuse. Ground water is typically the preferred source for drinking water and for meeting other potable water needs. However, developing ground water in this area has historically been difficult, and there have been concerns about the future reliability of ground water resources. Further study and monitoring could assist in determining if more ground water development is viable. Surface water in the Hanamā‘ulu ASYA also serves potable uses due to the difficulties with ground water well production in the area. Expansion of the surface water treatment plant is proposed by Grove Farm to meet the projected demands of its Līhu‘e-Hanamā‘ulu Master Planned Community. Surface water, where available, should also be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections. Although these projections are sustainable, the County Planning Department should exercise caution and consider potential impacts on available water resources when considering any future zoning modifications. Modifications that may result in increased development density within the area will increase demands on water resources.

---

<sup>2</sup> [https://files.hawaii.gov/dlnr/cwrm/planning/hsrar\\_element3.pdf](https://files.hawaii.gov/dlnr/cwrm/planning/hsrar_element3.pdf) (link active as of June 2024)

### Medium Growth Rate B Water Demand Projections and Full Build Out – Hanamā‘ulu ASYA



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 Aquifer System Area

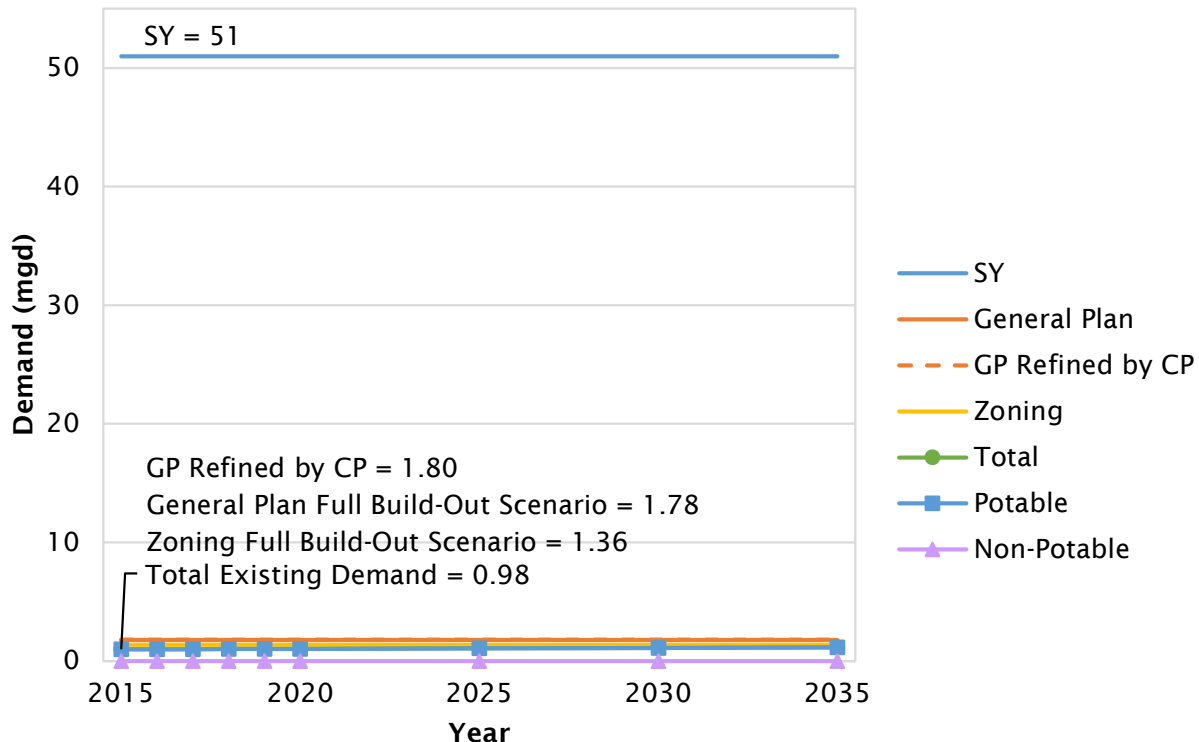
Development to the highest extent allowed by the General Plan and County Zoning within the Wailua ASYA is sustainable. The 2035 water demand projection for the Wailua ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water is typically the preferred source for drinking water and for meeting other potable water needs. However, it is noted that developing ground water in this area has historically been difficult. Further study and monitoring could assist in determining if more ground water development is viable to meet potable water demands. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections. Although the full build-out projections are sustainable, the County Planning Department will need to consider potential impacts on available water resources when considering any future zoning modifications. Modifications that may result in increased development density within the area will increase demands on water resources.

#### Medium Growth Rate B Water Demand Projections and Full Build Out – Wailua ASYA



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.

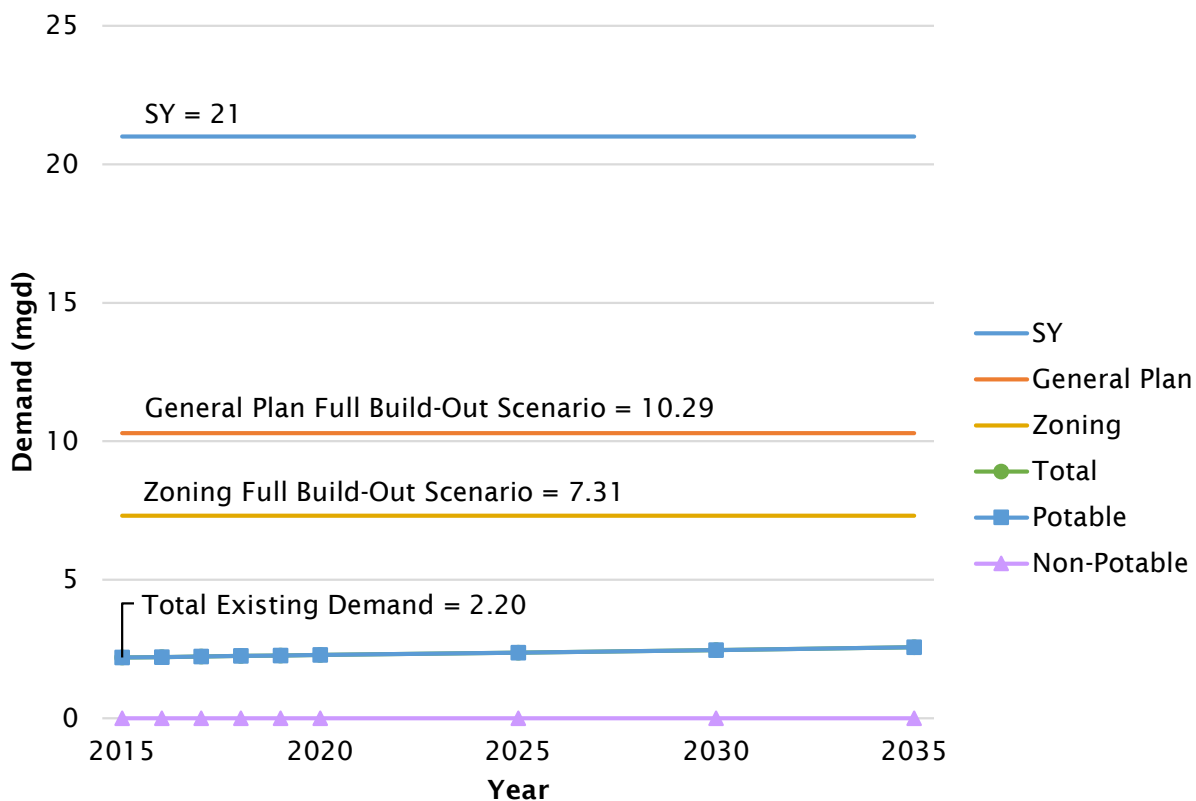
**20104 – Anahola Aquifer System Area**

Development to the highest extent allowed by the General Plan and County Zoning within the Anahola ASYA is sustainable. The 2035 water demand projection for the Anahola ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water resources could continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Anahola ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections. Although the full build-out projections are sustainable, the County Planning Department will need to consider potential impacts on available water resources when considering any future zoning modifications. Modifications that may result in increased development density within the area will increase demands on water resources.

**Medium Growth Rate B Water Demand Projections and Full Build Out – Anahola ASYA**

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.

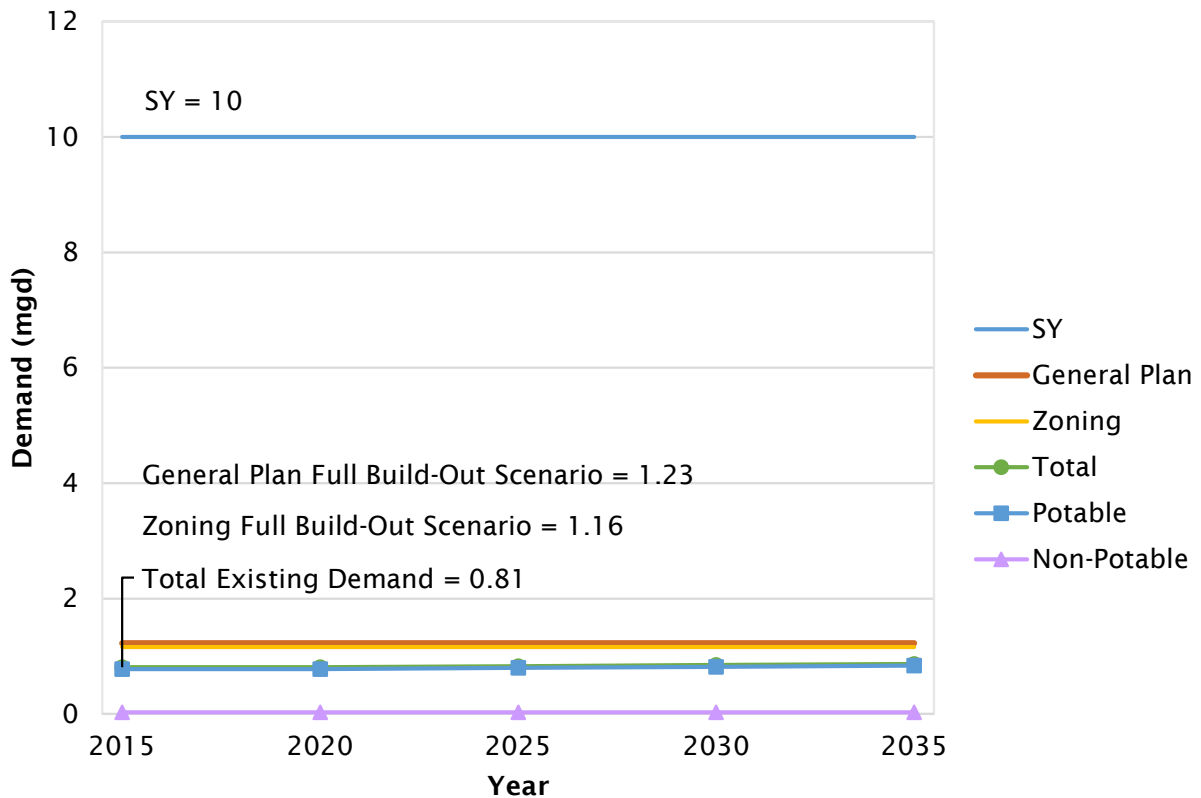
**20105 – Kīlauea Aquifer System Area**

Development to the highest extent allowed by the General Plan and County Zoning within the Kīlauea ASYA is sustainable. The 2035 water demand projection for the Kīlauea ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water resources could continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Kīlauea ASYA. Ground water is also a significant source of water to meet non-potable agriculture needs in the area. Since the projections of potable water demand are projected to remain low under full build-out conditions, increased use of ground water for agriculture can be accommodated within the sustainable yield. However, it is noted that the sustainable yield of the Kīlauea ASYA is only 10 mgd and caution should be exercised before committing to large quantities of ground water use for agriculture. Further, it is typically recommended that ground water sources be primarily used as potable drinking water for human consumption, and therefore, it is encouraged that other sources of water be explored to meet future agricultural water needs. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections. Although the full build-out projections are sustainable, the County Planning Department will need to consider potential impacts on available water resources when considering any future zoning modifications. Modifications that may result in increased development density within the area will increase demands on water resources.

**Medium Growth Rate B Water Demand Projections and Full Build Out – Kīlauea ASYA**

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 Aquifer System Area**

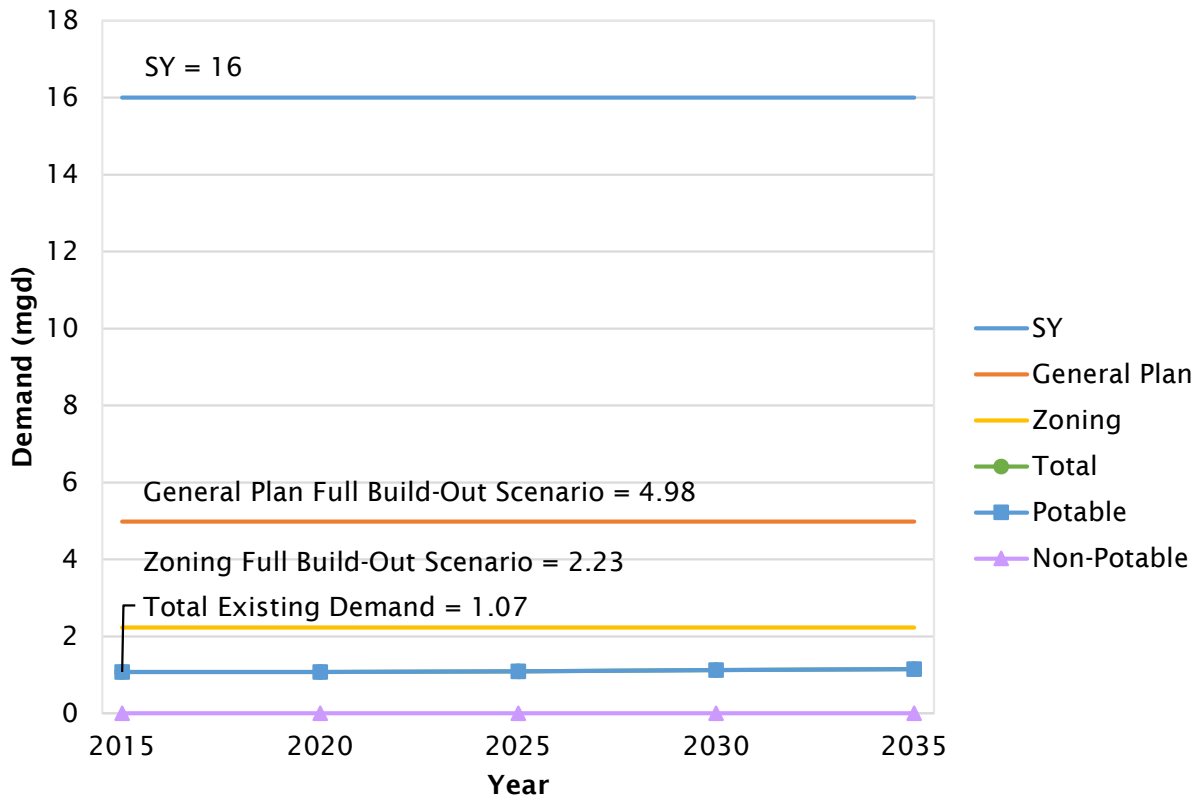
Development to the highest extent allowed by the General Plan and County Zoning within the Kalihiwai ASYA is sustainable. The 2035 water demand projection for the Kalihiwai ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water resources could continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Kalihiwai ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections. However, it is noted that the full build-out demand is based on development density of approximately 8 units per acre, and an increase in the average development density will increase demand. Therefore, if an increase in development density is considered, the effect on water demand should be assessed.

### Medium Growth Rate B Water Demand Projections and Full Build Out – Kalihiwai ASYA



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 Aquifer System Area

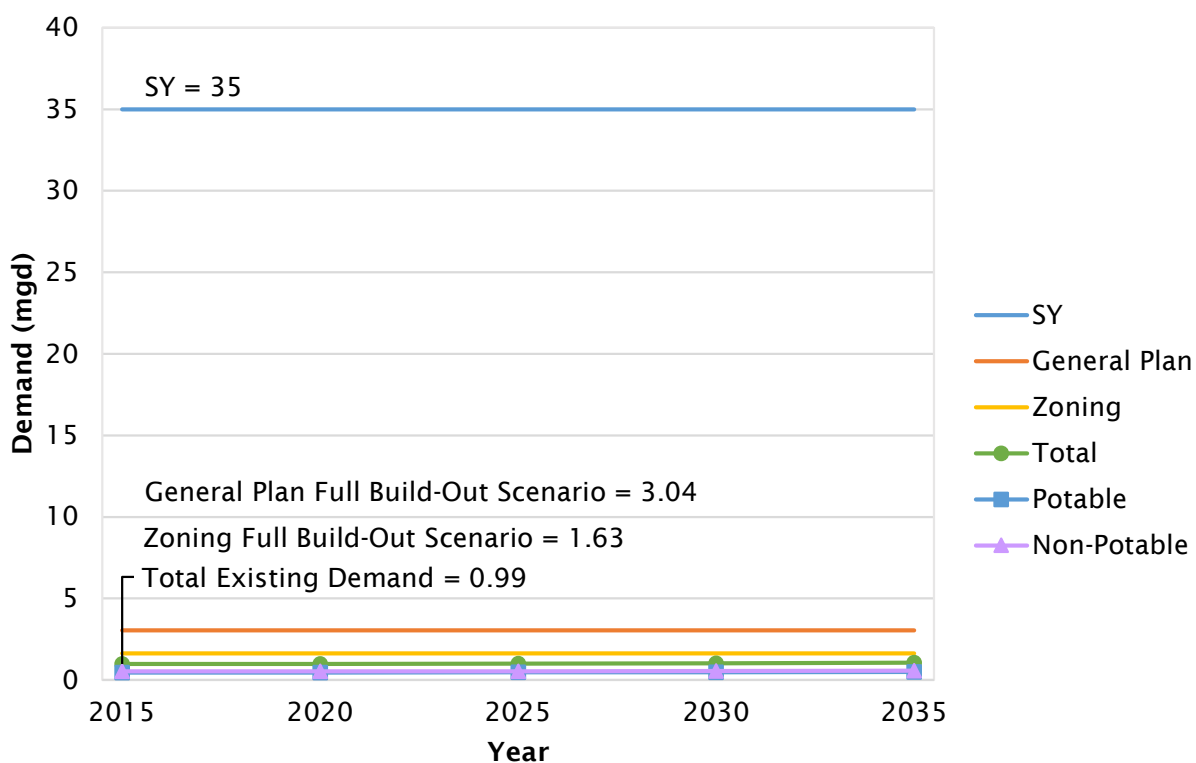
Development to the highest extent allowed by the General Plan and County Zoning within the Hanalei ASYA is sustainable. The 2035 water demand projection for the Hanalei ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Alternative water sources, such as recycled water generated from wastewater reclamation facilities, should be used where available to reduce demands on both ground and surface water resources and to conserve water resources as a whole. Recycled water is available from the Princeville Wastewater Reclamation Facility (WWRF). Ground water resources could continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Hanalei ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections.

### Medium Growth Rate B Water Demand Projections and Full Build Out – Hanalei ASYA



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 Aquifer System Area

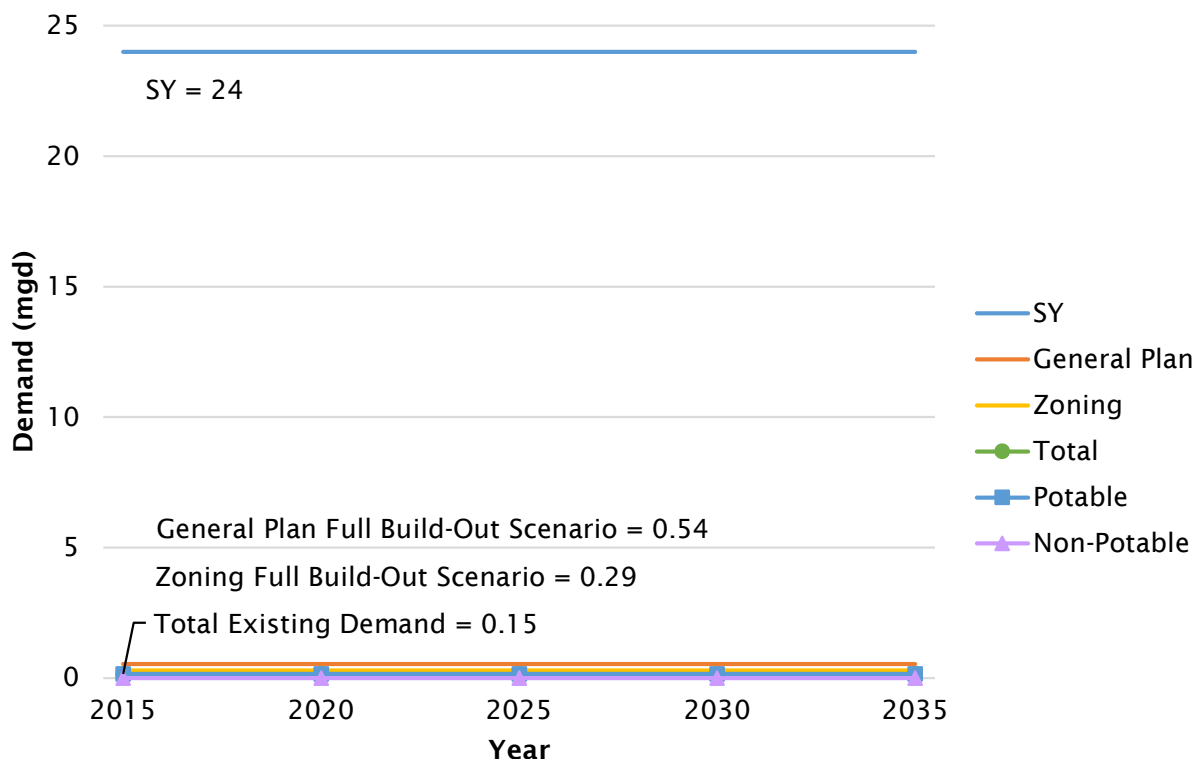
Development to the highest extent allowed by the General Plan and County Zoning within the Wainiha ASYA is sustainable. The 2035 water demand projection for the Wainiha ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water resources could continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Wainiha ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections.

### Medium Growth Rate B Water Demand Projections and Full Build Out – Wainiha ASYA

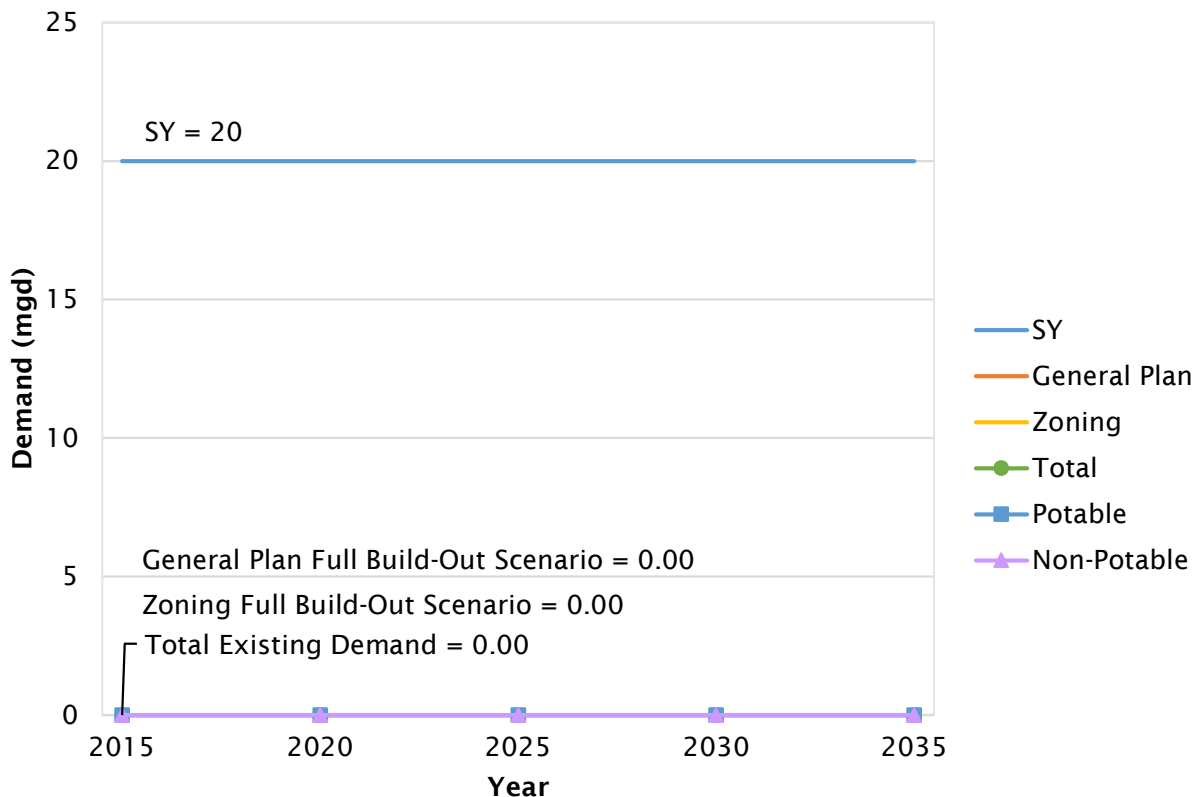


Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20203-4.1.1 County of Kaua'i Important Agricultural Lands Study.

## 20204 – Nāpali Aquifer System Area

The Nāpali ASYA is largely uninhabited and undeveloped, and there are no projected water demands to be met. Rainwater catchment is the likely alternative for any remote domestic users in this area.

### Medium Growth Rate B Water Demand Projections and Full Build Out – Nāpali ASYA



Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use.

**20301 – Kekaha Aquifer System Area**

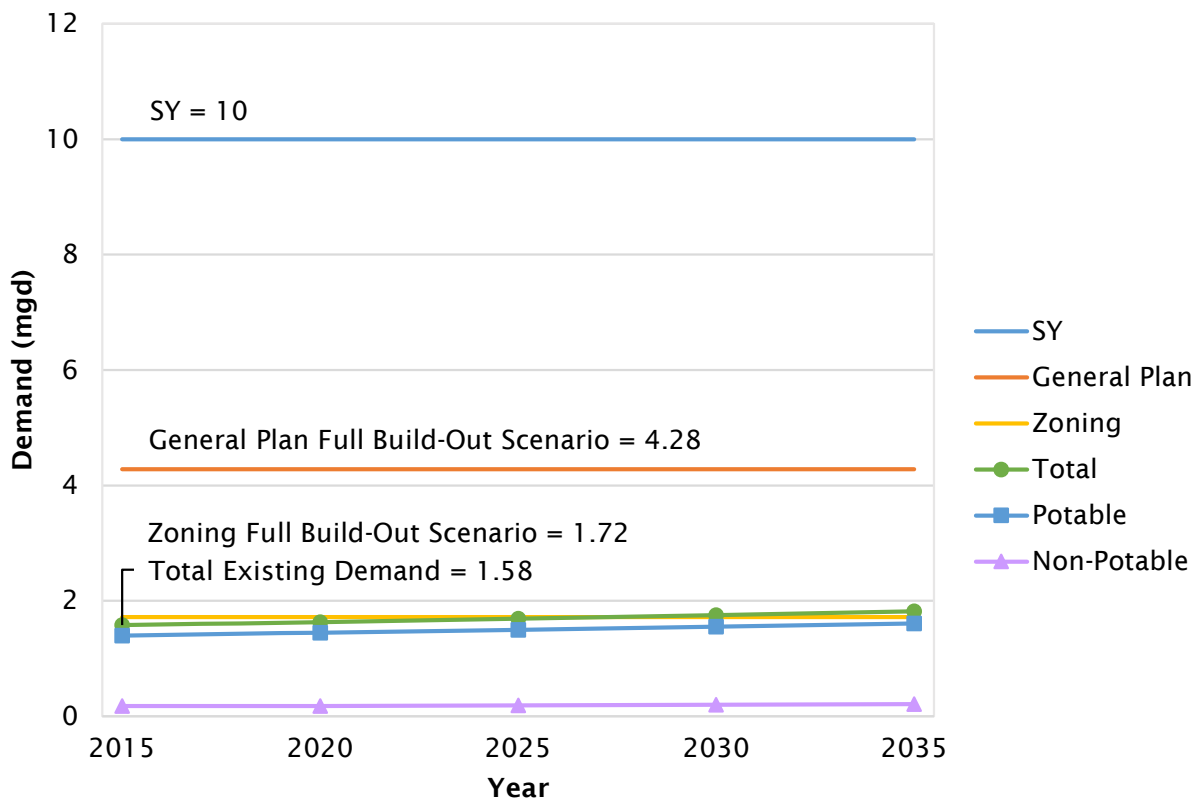
Development to the highest extent allowed by the General Plan and County Zoning within the Kekaha ASYA is sustainable. The 2035 water demand projection for the Kekaha ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Alternative water sources, such as recycled water generated from wastewater reclamation facilities, should be used where available to reduce demands on both ground and surface water resources and to conserve water resources as a whole. Recycled water is available from the Waimea Wastewater Reclamation Facility (WWRF). Ground water resources could continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Kekaha ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water. The Waimea Watershed Agreement established interim instream flow standards (IIFS) related to the Kekaha Ditch Irrigation System and Kōke'e Ditch Irrigation System to take steps to restore flows in streams, and the agreement notes that diversions must be justified with no more water taken than is needed for other beneficial uses, such as agriculture and renewable energy.

Demand-side management, such as development density control, is not needed based on the full build-out projections.

### Medium Growth Rate B Water Demand Projections and Full Build Out – Kekaha ASYA



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.

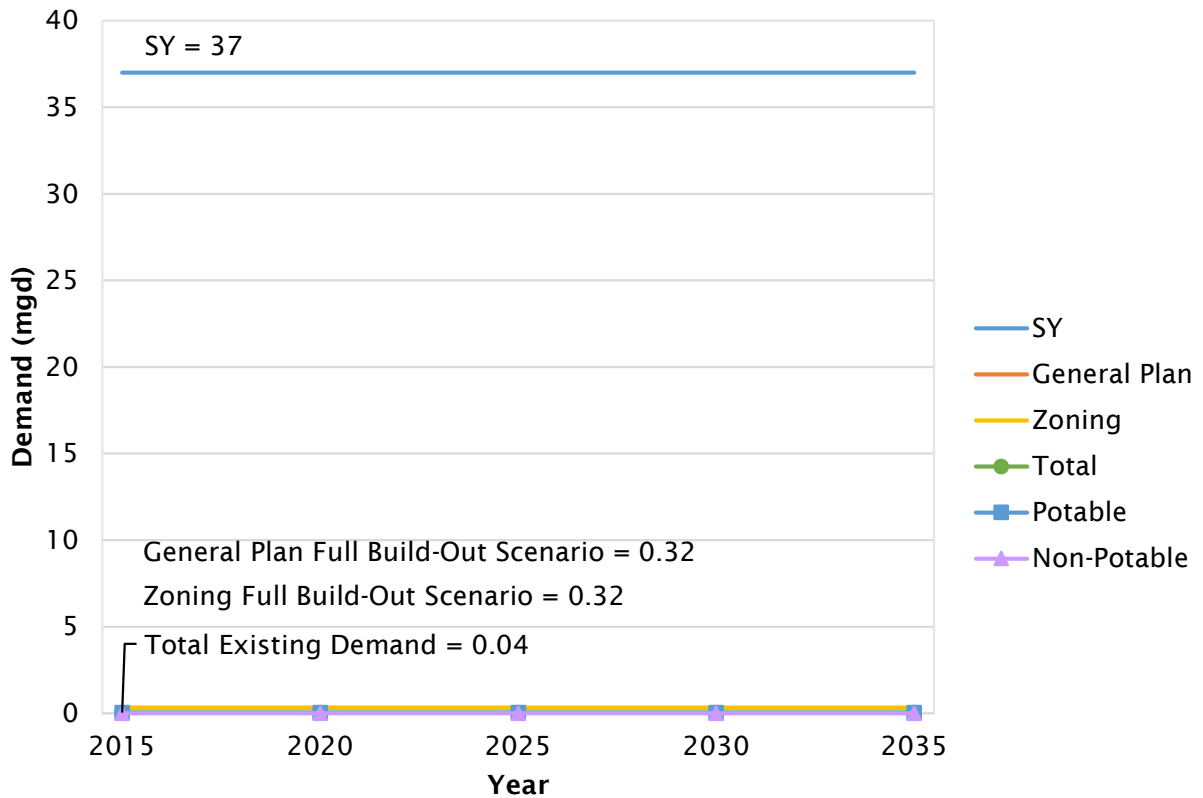
**20302 – Waimea Aquifer System Area**

Development to the highest extent allowed by the General Plan and County Zoning within the Waimea ASYA is sustainable. The 2035 water demand projection for the Waimea ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water resources should continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Waimea ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water. The Waimea Watershed Agreement established IIFS related to the Kekaha Ditch Irrigation System and Kōke'e Ditch Irrigation System to take steps to restore flows in streams, and the agreement notes that diversions must be justified with no more water taken than is needed for other beneficial uses, such as agriculture and renewable energy.

Demand-side management, such as development density control, is not needed based on the full build-out projections.

**Medium Growth Rate B Water Demand Projections and Full Build Out – Waimea ASYA**

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 Aquifer System Area

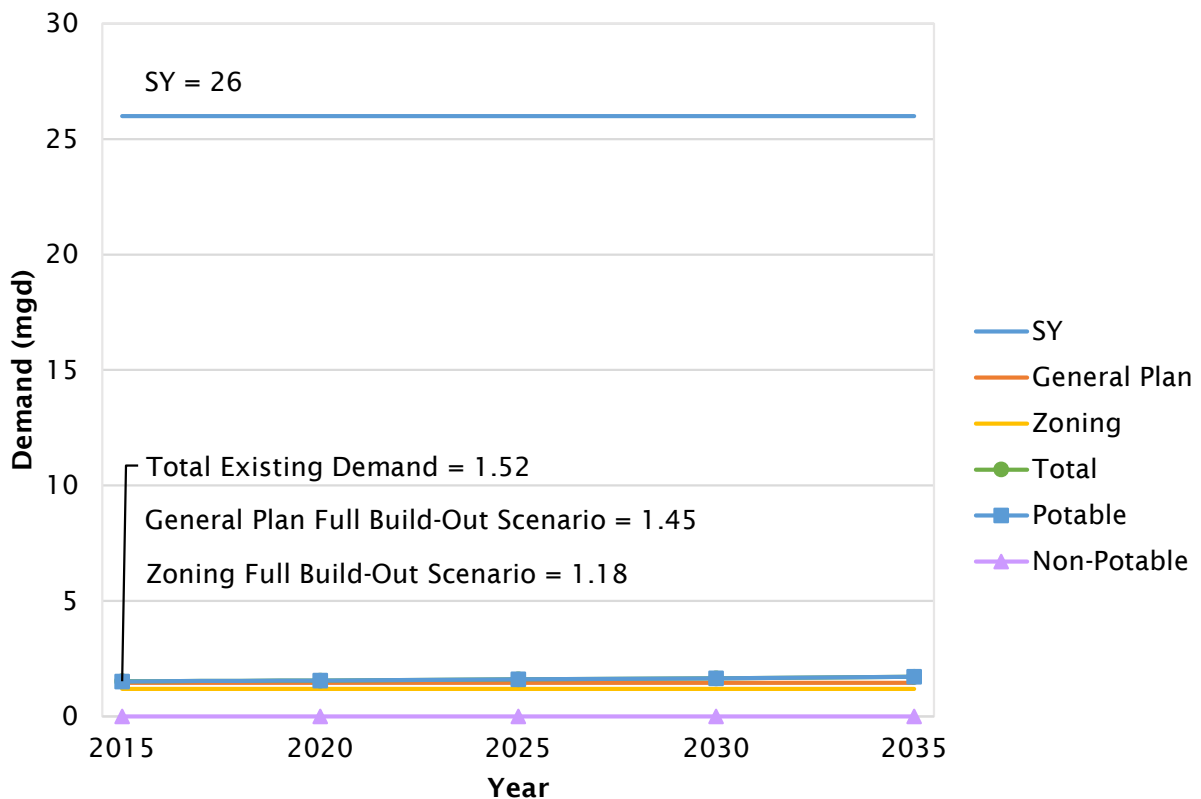
Development to the highest extent allowed by the General Plan and County Zoning within the Makaweli ASYA is sustainable. The 2035 water demand projection for the Makaweli ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water resources should continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Makaweli ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections.

#### Medium Growth Rate B Water Demand Projections and Full Build Out – Makaweli ASYA



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 Aquifer System Area

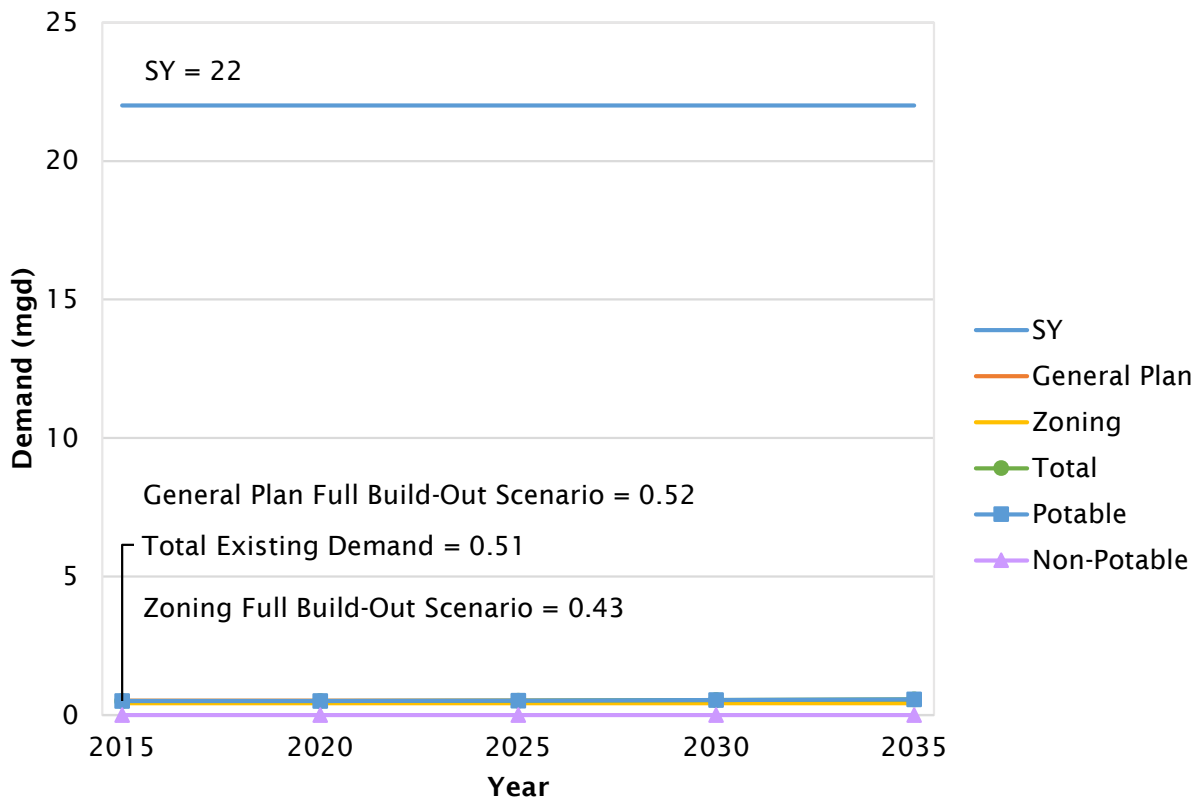
Development to the highest extent allowed by the General Plan and County Zoning within the Hanapēpē ASYA is sustainable. The 2035 water demand projection for the Hanapēpē ASYA is also sustainable.

Implementation of conservation measures should continue to be encouraged. See **Section 1.5.7** for conservation measures.

Use of alternative water sources can reduce demands on both ground water and surface water resources and conserve water resources as a whole. However, aside from rainwater, there are no available alternative water sources in the area. Ground water resources should continue to be used and developed to meet potable water needs now and into the future and is the primary strategy to serve future potable demands in the Hanapēpē ASYA. Surface water, where available, should be used to meet non-potable demands in lieu of ground water.

Demand-side management, such as development density control, is not needed based on the full build-out projections.

### Medium Growth Rate B Water Demand Projections and Full Build Out – Hanapēpē ASYA



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.

## **ES-4 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS**

To optimize appropriate use of water resources, the quality of the water source should be matched to the quality of water required. The recommendations for each ASYA were made with this and the following contributing themes in mind.

- Prioritize and protect public trust uses of water
- Public Trust Doctrine: the State serves as the primary steward of the water resources public trust. As trustee, the State is responsible for the management and protection of Hawai'i's water resources for the benefit of the people of the State
- Reserve the highest quality of water for the most valued end use
- Promote water conservation
- Meet future demands at a reasonable cost

Potable water is considered the highest quality water, and the sustenance of life is considered the most valued end use. Recycled water, brackish ground water, untreated surface water, and other lower quality water sources should be used for landscaping and agriculture, thereby reserving potable water for human consumption. Further, if there is a practical alternative water source available, such as recycled water, that alternative source should be used in lieu of ground water or surface water.

Water resources are a finite resource that should be managed and used wisely. It should be conserved and not wasted. Implementation of conservation measures and watershed management should continue to be encouraged.