

## 4 System Water Use

### **CWC 10631(d)(1)**

*For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following: single-family residential; multifamily; commercial; industrial; institutional and governmental; landscape; sales to other agencies; saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; agricultural; distribution system water loss. The water use projections shall be in the same five-year increments described in subdivision (a).*

This section describes VWD's water system demands, including current water use and future demand forecasts. VWD water demands are primarily residential but also include commercial, industrial, institutional, landscape, and agricultural irrigation. VWD has approximately 22,522 water meters that delivered over 4,400 MG of potable water in 2020, not including losses.

### 4.1 Water Uses

Current and projected water use in VWD is divided into seven primary categories: single-family residential, multi-family residential, commercial, industrial, institutional, governmental, landscape, and agriculture. There are also four secondary categories of water use, including fire line water use, construction water, water exchanges to the neighboring Vista Irrigation District, OMWD and CMWD, and other unmetered and unbilled uses. And finally, there are system losses that account for the difference between actual water deliveries to VWD from its wholesaler and the actual water demands as measured from customer water meters.

#### 4.1.1 Current Water Use

Current water use for VWD was evaluated by examining the monthly metered water deliveries during calendar year 2020. VWD provided an average of 12.1 MGD of potable water to residential, commercial, light industrial, institutional, construction, landscape irrigation, and agricultural uses in calendar year 2020. It should be noted that this average demand figure does not include water consumption through fire lines, construction meters, water exchanges, or other end delivery facilities that are typically unbilled uses such as fire hydrant testing or system flushing. System and billing losses account for approximately 8 percent of the annual volume of potable water delivered from the SDCWA.

VWD serves a predominantly residential community, where approximately 65 percent of the water use is single-family and multi-family residential. Table 4-1 summarizes the demands by use type and a summary of their 2020 demands.

**Table 4-1. Demands for Potable and Non-Potable Water – Actual**

Use Type	2020 Actual		
	Additional Description	Level of Treatment When Delivered	Volume (MG)
Single Family		Drinking Water	2,135
Multi-Family		Drinking Water	741
Commercial		Drinking Water	342
Industrial		Drinking Water	40
Landscape		Drinking Water	841
Agricultural Irrigation		Drinking Water	201
Losses		Drinking Water	400
Other Potable	Fire Lines	Drinking Water	89
Other Potable	Construction Water	Drinking Water	24
Other Potable	Unmetered Unbilled	Drinking Water	22
<b>TOTAL</b>			<b>4,835</b>

Notes:

The volumes for real losses, apparent losses and unmetered unbilled demands were generated using the AWWA Water Audit Software.

### Projected Water Use

Future water use projections were generated in the 2018 Water, Wastewater and Recycled Water Master Plan (Master Plan) through the planning horizon year 2035 and coordinated with SDCWA projections. The following steps were utilized in developing future water demand projections:

- The approved land use coverage and zoning maps were provided by the land use agencies.
- In VWD’s Geographic Information System database, all parcels in VWD’s service area were attributed with their approved land use condition and unit water demands.
- Ultimate demand projections were then estimated by applying the appropriate unit water demands to all parcels identified as being served by VWD, or another agency through an exchange agreement.
- Demand projections for years 2025, 2030, and 2035, were updated by applying the San Diego Association of Governments Regional Growth Forecast Series 14 Update coverage to these ultimate demand projections. 2040 and 2045 projects were extrapolated based on land use data and SANDAG ultimate growth projections



Table 4-2 presents the projected future potable water demands for VWD in 5-year increments up to the year 2045. The ultimate future build-out water demand projection for VWD is approximately 8,055 MG per year.

**Table 4-2. Demands for Potable and Non-potable Water – Projected**

Use Type	Projected Water Use (MG)				
	2025	2030	2035	2040	2045 (opt)
Single Family	2,803	2,911	3,023	3,235	3,557
Multi-Family	973	1,010	1,049	1,123	1,235
Commercial	448	466	484	517	569
Industrial	53	55	57	61	67
Landscape	1,105	1,147	1,191	1,275	1,402
Agricultural irrigation	263	274	284	304	334
Losses	525	545	566	606	666
Fire Lines	117	122	127	136	149
Construction Water	31	33	34	36	40
Unmetered Unbilled	29	30	31	33	36
<b>TOTAL</b>	<b>6,347</b>	<b>6,593</b>	<b>6,846</b>	<b>7,326</b>	<b>8,055</b>

### Recycled Water

VWD is a member of the NSDWRC, which is a group of water and wastewater agencies that work together to identify benefits of regionalization of existing and planned recycled water systems to further maximize the use of recycled water. Regionalization of facilities will allow recycled water to play an even more significant role in meeting the future water needs in the north San Diego County area. The agencies involved in the NSDWRC include the OMWD, CMWD, San Elijo Joint Powers Authority, Leucadia Wastewater District, City of Oceanside, VWD, City of Escondido, Rincon MWD, and Santa Fe Irrigation District.

On February 6, 2013, the NSDWRC released a revised Regional Recycled Water Facilities Plan that identified new local and regional recycled water projects that could provide additional recycled water supplies to the local water agencies beyond what they could utilize individually. The NSDWRC developed a project feasibility study in 2017 that documented the recycled water facilities and demands for the NSDWRC regional recycled water project that included interagency connections to increase the capacity and connectivity of the agencies' combined recycled water storage and distribution systems. The Regional Recycled Water Facilities Plan and projected recycled water demands are further covered in Section 6; however, for the purpose of total water demand projections, it is important to note that the Regional Recycled Water Facilities Plan identified recycled water demands within VWD's service area that could offset potable water use. Table 4-3 lists the existing 2020 and projected future total water demands that include both potable and recycled (non-potable) water.

**Table 4-3. Total Gross Water Use (Potable and Non-Potable)**

	Total Water Use (MG)					
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable	4,835	6,347	6,593	6,846	7,326	8,055
Recycled Water Demand	0	471	471	471	771	771
<b>Total Water Use</b>	4,835	<b>6,818</b>	<b>7,064</b>	<b>7,317</b>	<b>8,097</b>	<b>8,826</b>

Notes: Projected recycled water demands taken from the North San Diego Water Reuse Coalition's Regional Recycled Water Facilities Plan, revised on February 6, 2013.

## 4.2 Distribution System Water Losses

Table 4-4 displays VWD's estimated real and apparent water loss. These are system losses that account for the difference between actual water deliveries to VWD from its wholesaler and the actual water demands as measured from customer water meters. Based on the production and sales data for 2020, the total volume of water lost was 396 MG.

**Table 4-4. 12 Month Water Loss Audit Reporting**

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss* (MG)
01/2016	285
01/2017	454
01/2018	221
01/2019	266
01/2020	396

VWD's 2016 through 2019 water loss estimates were determined by utilizing the American Water Works Association Free Water Audit Software. A copy of the VWD 2019 validated audit can be found in Appendix E.

## 4.3 Future Water Demand Projections

### **CWC 10631.1(a)**

*The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.*

Future potable water demand projections are based on the estimates used in the VWD 2018 Water, Wastewater, and Recycled Water Master Plan and coordinated with

SDCWA’s projections for its member agencies. Future recycled water demand projections are based on the North San Diego County Regional Recycled Water Project’s Regional Recycled Water Facilities Plan, revised on February 6, 2013. Future water savings are not included in the demand projections in Table 4-1 through Table 4-3. Instead, Sections 8 and 9 will describe VWD’s approach for dealing with the projected deficiency between water demands and supplies. This approach includes the use of a water shortage contingency plan, tiered water pricing, enforcement actions, and the use of demand management efforts to reduce demands on VWD’s water supply.

VWD has obtained lower income residential (those households with an income below 80 percent of the area’s median income, adjusted for family size) locations within its service area from the general plans of the County of San Diego, the City of San Marcos, the City of Vista, the City of Carlsbad, and the City of Escondido. These lower income residential demands are included in the projections given in this section.

**Table 4-5. Inclusion in Water Use Projection**

	Yes/No
Are Future Water Savings Included in Projections?	No
Are Lower Income Residential Demands Included in Projections?	Yes

For calendar year 2020, the total estimated water use for lower income residents was 218 MG, or 4.5 percent of overall water demands. Demand projections for lower income residents is estimated as follows:

- 2025 – 286 MG
- 2030 – 297 MG
- 2035 – 308 MG
- 2040 – 330 MG
- 2045 – 362 MG

## 4.4 Wholesale Water Use

VWD coordinated with SDCWA to provide anticipated demands for wholesale supplies. Section 6 provides information about anticipated demands on supplies from the SDCWA through 2045. These values were calculated as the difference between VWD’s demands and verifiable local supplies.

## 4.5 Climate Change Considerations

### **CWC 10631(b)(1)**

*For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.*

Climate variability is expected to affect both demands and supplies across the VWD service area over the UWMP planning horizon. While climate change impacts can be expected, the extent to which the hydroclimatic changes will affect water resources is uncertain. As droughts in California increase in frequency and intensity due to climate change, water suppliers will need to implement stronger demand management strategies, including conservation mandates, to combat potential shortages. In addition to water supply availability due to drought, sea level rise and water management strategies resulting from climate change are also a concern.

Climate change is a significant ongoing issue to water utilities and state and federal legislators. The state is experiencing increased weather extremes and variability due to climate change that have led to significant deviations from historical averages impacting water supply planning on all levels. As noted in the 2019 San Diego Integrated Regional Water Management Plan, climate change may affect water supply availability because of droughts, seawater intrusion, changes in precipitation volumes and timing, altered fire and weather regimes, and potential changes in the availability of imported water supplies. Water quality degradation and sea level rise are also water management concerns attributed to climate change in the region.

VWD is a member agency within SDCWA's jurisdiction and supports initiatives that SDCWA is incorporating into its water management planning through SDCWA involvement in the Water Utility Climate Alliance and San Diego Regional Climate Collaborative. The 2019 San Diego Integrated Regional Water Management Plan also includes strategies for regional water planning and the program supports grant funding for supply projects, including the NSDWRC Project.