

APPENDIX H
Water Supply Assessment

El Toro Water District

THE VILLAGE AT LAGUNA HILLS PROJECT

DRAFT WATER SUPPLY ASSESSMENT

MARCH 2020

DRAFT



**THE VILLAGE AT LAGUNA
HILLS PROJECT DRAFT
WATER SUPPLY
ASSESSMENT**

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EXECUTIVE SUMMARY

The City of Laguna Hills (Lead Agency) determined that The Village at Laguna Hills project proposed by Merlone Geier Partners (project applicant) qualified as a “project” as defined by the California Water Code § 10912 and requested El Toro Water District (Water Supplier) to prepare a Water Supply Assessment (WSA) to satisfy the requirements of Senate Bill (SB) 610. The WSA must address whether the projected water supply for the next 20 years – based on normal, single dry, and multiple dry years will meet the demand projected for the project plus existing uses.

The Village at Laguna Hills project is intended to replace the previously proposed Five Lagunas development. The revised project concept proposes to develop multi-family residential units and to redevelop Laguna Hills Mall. It will result in a net increase in water demand from ETWD’s residential, commercial, and landscape irrigation customer sectors. The project proposes to increase dwelling capacity to 1,500 multi-family residential units comprising a mixture of studios, one-, two-, and three-bedroom apartments. These residential units will generate approximately 195,340 gallons per day (gpd) or 219 acre-feet per year (AFY) of potable water demand. Commercial potable water demand is estimated to increase by 68,120 gpd (76 AFY), mainly as a result of the addition of general office space, hotels and restaurants. The Village at Laguna Hills project will result in a net increase of approximately 335,700 square feet (sq. ft.) in landscaped areas to the mall and residential areas, with an associated irrigation demand of approximately 23,080 gpd (26 AFY).

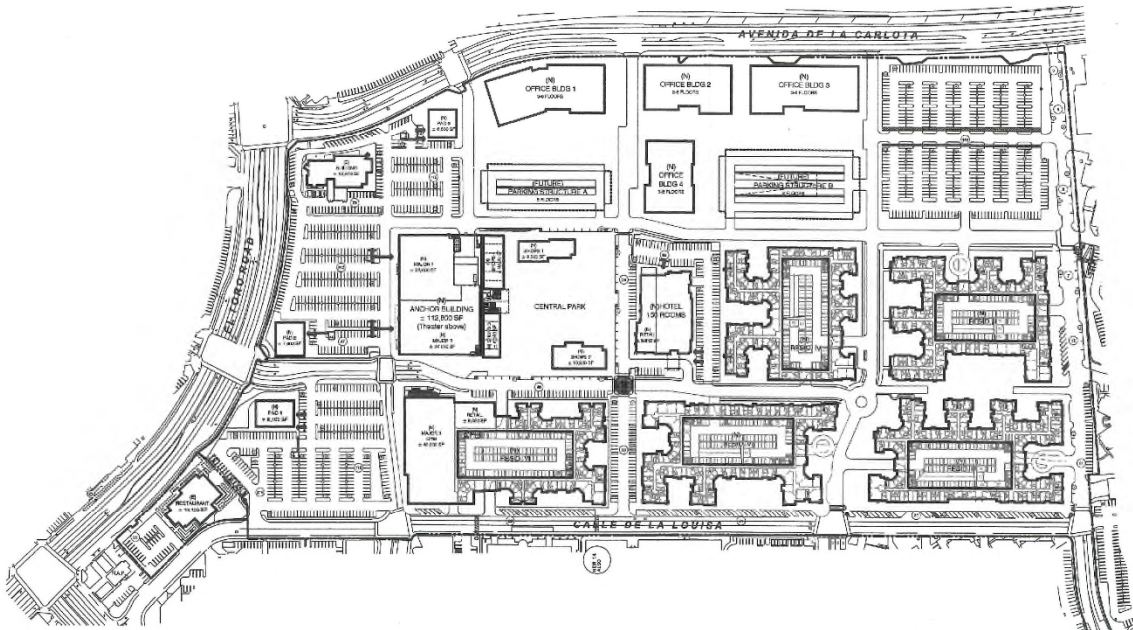
This WSA evaluates ETWD’s projected future demands with additional water demands associated with The Village at Laguna Hills project and compares to projected supplies available to ETWD through 2040. In accordance with the foregoing and the standards set forth by Water Code § 10910, this WSA concludes that the total projected water supplies available to ETWD during average, single-dry, and multiple-dry water years over the next 20 years are sufficient to meet the projected water demands for the proposed project, in addition to ETWD’s existing uses.

1. INTRODUCTION

This section provides background information on the proposed The Village at Laguna Hills project, formerly Five Llagunas under the Urban Village Specific Plan (UVSP) for developing a Water Supply Assessment (WSA) by the public water supplier. This section also provides a summary of the requirements of Senate Bill (SB) 610, and a brief overview of the El Toro Water District (ETWD), the public water supplier that will be supplying water to the proposed project.

1.1 The Village at Laguna Hills Project

In March 2016, the City of Laguna Hills (City) approved a plan to redevelop and expand the existing Laguna Hills Mall per the Urban Village Specific Plan (UVSP) to create a new mixed-use town center. The name of the development was Five Llagunas which consisted of approximately 926,000 square feet (sq. ft.) of commercial space (comprising of a movie theater, an outdoor plaza, a fitness center/health club, restaurants, shops and medical offices) and 988 residential apartment units. On November 4, 2019, Merlone-Geier Partner, submitted a new development proposal to the City. The new proposal is intended to replace the Five Llagunas and is called "The Village at Laguna Hills". The revised project concept proposes to increase dwelling capacity to 1,500 multi-family residential units comprising a mixture of studios, one-, two-, and three-bedroom apartments. The residential construction will consist of five buildings, one of which will be mixed-use retail and residential. The revision also includes an addition of 150 hotel rooms, 465,000 sq. ft of general office space, a slight increase in restaurant space and retail patio while significantly reducing indoor retail to 85,000 sq. ft. Overall, the proposed project consists of 742,400 sq. ft. of commercial gross floor area. The project conceptual site plan is shown on Figure 1-1.



PROJECT INFORMATION

RETAIL/REST / ENTERTAINMENT:	
DISTRICT AREA:	2766,175 SF/ 17.4 AC
EXISTING PAD BLDGS:	23,985 SF
ANCHOR BLDG W/ THEATER:	112,000 SF
SHOPS BLDG:	34,400 SF
PAD BLDG:	22,600 SF
RETAIL AT HOTEL:	8,940 SF
RETAIL UNDER RESIDENTIAL:	8,000 SF
GYM UNDER RESIDENTIAL:	40,000 SF
TOTAL RETAIL:	248,785 SF
HOTEL:	
DISTRICT AREA:	187,300 SF/ 12.2 AC
5-STORIES:	150 ROOMS
OFFICE:	
DISTRICT AREA:	2766,175 SF/ 18.2 AC
OFFICE BLDGS (1,2,3 & 4):	465,000 SF
MIXED USE/RESIDENTIAL:	
DISTRICT AREA:	1,288,050 SF/ 93.0 AC
RESIDENTIAL COMPLEX:	1,500 UNITS
PARKING REQUIRED:	
RETAIL (151,785 SF @ 1.525 stalls/SF):	750 STALLS
THEATER (112,000 SF) @ 14 seats/10,000 SF:	310 STALLS
RETAIL UNDER RES (8,000 SF @ 1.25 stalls/SF):	40 STALLS
GYM UNDER RES (40,000 SF @ 1.725 stalls/SF):	400 STALLS
TOTAL RETAIL REQUIRED:	1,500 STALLS
HOTEL (1 hotel per guest unit):	150 STALLS
OFFICE (1 hotel per 3000 SF):	1,550 STALLS
RESIDENTIAL (Vehicle + Guest):	2,890 STALLS
TOTAL PARKING REQUIRED:	6,077 STALLS
PARKING PROVIDED:	
RETAIL PARCEL SURFACE PARKING: (110 stalls assigned for Retail Under Res)	851 STALLS
OFFICE STRUCTURE A (10 stories @ 42):	203 STALLS
OFFICE STRUCTURE B (11 stories @ 42):	260 STALLS
RESIDENTIAL PARCEL SURFACE: (271 Total Stalls @ Surface Area Parcel)	271 STALLS
TOTAL RETAIL PROVIDED:	1,566 STALLS
(RETAIL PARKING RATIO):	(6.28 / 1,500)
HOTEL PARCEL SURFACE PARKING:	150 STALLS
OFFICE STRUCTURE A:	27 STALLS
TOTAL HOTEL PROVIDED:	150 STALLS
OFFICE SURFACE PARKING:	440 STALLS
PARKING STRUCTURE A (10 stories @ 42):	203 STALLS
PARKING STRUCTURE B (11 stories @ 42):	260 STALLS
TOTAL OFFICE PROVIDED:	1,610 STALLS
RESIDENTIAL SURFACE PARKING:	0 STALLS
RESIDENTIAL STRUCTURES:	2,890 STALLS
TOTAL RESIDENTIAL PROVIDED:	2,890 STALLS
TOTAL PARKING PROVIDED:	6,193 STALLS
(115 STALL EXCESS)	

DISCLAIMER:
This subject is for reference only and is not a presentation as to site, dimensions, or location of any feature in the shopping center. All building improvements, their occupancy, and their uses as shown on the drawings are subject to modification at the architect's discretion.

NOTE:
Site plan is a study concept and subject to change based on final needs.

SCALE: 1" = 100'-0"
MCG JOB #: 18692.01



MerloneGeier Partners MASTER SITE PLAN - PHASE 3

DATE	REVISIONS
1-19-2020	CLIENT'S COMMENTS ICF
1-19-2020	RES VI UPDATE

THE VILLAGE AT LAGUNA HILLS
Laguna Hills, California

Figure 1-1: The Village at Laguna Hills Site Plan

1.2 Water Supply Assessment Requirement

Effective January 1, 2002, SB 610 was signed into law, requiring preparation of a WSA for certain types of development projects subject to CEQA review. Section 10912 of the Water Code defines a “project” for which a WSA must be prepared as any of the following:

1. A proposed residential development of more than 500 dwelling units.
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
3. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
4. A proposed hotel or motel, or both, having more than 500 rooms.
5. A proposed industrial, manufacturing, or processing plant or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor space.
6. A mixed-use project that includes one or more of the projects specified above.
7. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The City of Laguna Hills (Lead Agency) has determined that a WSA is required for this project as it proposes the type of development that constitutes a “project” under Water Code § 10912 (above). The WSA must address whether the projected water supply for the next 20 years – based on normal, single dry, and multiple dry years will meet the demand projected for the project plus existing uses.

Once the City or County (Lead Agency) determines that a proposed development project qualifies as a “project”, as defined above, it must identify the public water system that may supply water for the proposed project. ETWD is the water purveyor for the proposed The Village at Laguna Hills project. Accordingly, ETWD, through its consultant, is preparing this WSA to satisfy the requirements of SB 610 and Water Code § 10910-10914.

The Water Code requires ETWD to first determine whether the projected water demand associated with the proposed project was included as part of ETWD’s most recently adopted Urban Water Management Plan (UWMP). A review of ETWD’s most recently adopted UWMP of 2015 revealed that projected demands associated with the original UVSP were accounted. However, ETWD’s 2015 UWMP did not specifically account for subsequent revisions i.e. Five Lagunas and The Village at Laguna Hills developments where water demands from the proposed development may have increased from the original UVSP proposed in 2002.

1.3 El Toro Water District

ETWD was formed in 1960 under provisions of the California Water District Law, Division 13 of the Water Code of the State of California, for the purpose of providing water supply to its service area. ETWD is governed by a publicly elected five-member Board of Directors. Situated in the southern portion of Orange County, ETWD provides potable and recycled water services to nearly 50,000 residents. Figure 1-2 shows the service area of ETWD as well as the proposed The Village at Laguna Hills project location. ETWD's water customers include residential, commercial, institutional, and dedicated landscape customers within all of the City of Laguna Woods and portions of the cities of Lake Forest, Aliso Viejo, Laguna Hills and Mission Viejo. Historically, ETWD's potable water was primarily treated full service water imported from the Metropolitan Water District of Southern California (Metropolitan) through the Municipal Water District of Orange County (MWDOC). As of 2017, about half of the potable supply has been obtained by treating raw water imported from Metropolitan through the Santiago Lateral at the Baker Water Treatment Plant (WTP) that came online in early 2017. ETWD's recycled water program provides additional treatment to a portion of its secondary treated wastewater, and rather than discharging it to the ocean, it is used for landscape irrigation. ETWD has been expanding its recycled water distribution system in recent years. ETWD's water supplies and demands are described in more detail in Sections 2 and 3, respectively.

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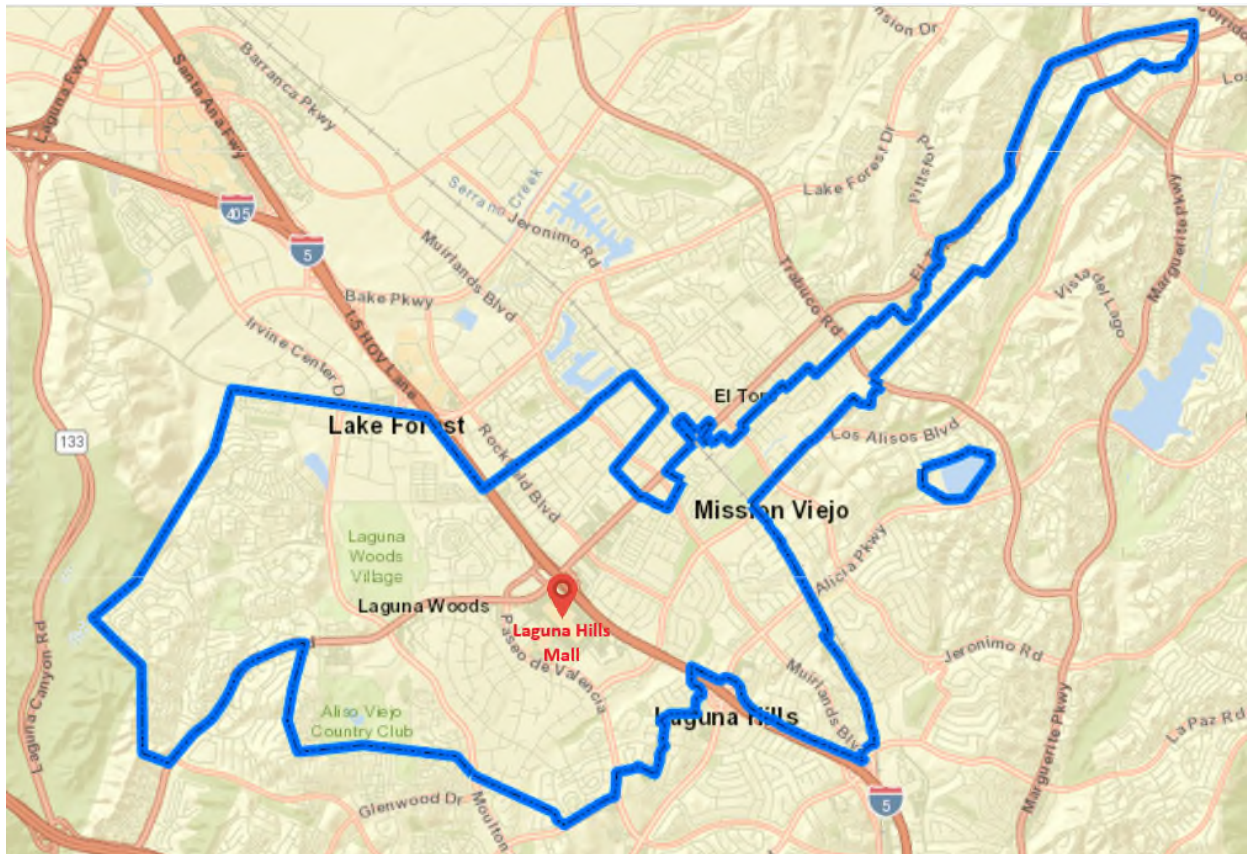


Figure 1-2: El Toro Water District Service Area Boundary and The Village at Laguna Hills Project Location

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2. WATER SUPPLIES

This section describes existing water supply sources and quantifies supplies available to meet ETWD’s water demands. Additionally, this section provides an overview of ETWD’s potential future supply sources and quantifies the water supplies projected to be available to ETWD in the next 20 years.

2.1 Existing Water Supplies

Prior to 2017, all of ETWD’s potable water supply was treated full service imported water from Metropolitan through MWDOCT from the Robert B. Diemer (Diemer) Filtration Plant located north of Yorba Linda. A large portion of the potable water now comes from the Baker WTP which treats raw imported water from Metropolitan. The District started the Recycled Water Expansion Project in 2012, which includes the conversion of over 260 dedicated irrigation meters to recycled water in the cities of Laguna Woods and Laguna Hills. The irrigation meter retrofits are expected to be completed around mid-2020. This is estimated to increase ETWD’s recycled water usage by about 600 acre-feet per year (AFY) from approximately 1,000 to 1,660 AFY. Groundwater sources are not available due to underlying geology and a lack of an aquifer within the service area. Table 2-1 shows ETWD’s historical water consumption from 1990 to 2015 in fiscal year (July 1 to June 30). Through 2018 calendar year (January 1 to December 31) treated, imported water represented about 38 percent of ETWD’s total water supply, 50 percent of the total supply came from Baker WTP and the remaining 12 percent is (non-potable) recycled water used for landscape irrigation. Table 2-2 shows ETWD’s water consumption for the calendar year 2018.

Table 2-1: Historical Water Supply Sources

Water Supply Sources	Fiscal Year Ending (AFY)					
	1990	1995	2000	2005	2010	2015
MWDOC (Imported Treated, Full Service)	12,279	10,351	11,868	10,317	8,574	8,649
Recycled Water	336	339	606	605	418	496
Total	12,615	10,690	12,474	10,922	8,992	9,145

Table 2-2: Current Water Supply Sources

Water Supply Sources	2018 Calendar Year (AFY)
MWDOC (Imported Treated, Full Service)	3,308
Baker WTP (Imported Untreated, Full Service) [1]	4,325
Recycled Water	1,031
Total	8,664

[1] Baker WTP supply offsets and reduces purchased Metropolitan treated water from Diemer Filtration Plant.

2.1.1 Existing Water Rights and Imported Supplies

Table 2-3 provides a summary of existing water rights and rights to import supplies available to ETWD, including supply from the Baker Water Treatment Plant described in Section 2.2.3. ETWD owns capacity rights to regional pipelines that convey imported water from Metropolitan’s facilities to ETWD. However, capacity rights in pipelines do not guarantee supply, which is subject to availability from Metropolitan and MWDOC. Additionally, as a matter of practice, Metropolitan does not provide annual estimates of the minimum supplies available to its member agencies and to the local agencies. However, historical deliveries of imported water to ETWD have been as high as 12,279 AFY. In response to potential future water shortages, Metropolitan developed a Water Supply Allocation Plan (WSAP) to allocate wholesale imported water supplies among its member agencies should demand exceed available imported supplies. Subsequently, MWDOC also developed a WSAP to allocate imported supplies at the retail level in Orange County. Under these Water Supply Allocation Plans, water allocations are based primarily on the need for imported supplies relative to the total need for imported supplies within the Metropolitan and MWDOC service areas.

Table 2-3: Existing Water Rights and Supply Sources

Supply	Amount (AFY)	Availability	Right	Contract	Ever Used
MWDOC [1]	12,279	X		X	Yes
Recycled Water [2]	4,145	X	X		Yes [4]
Baker WTP [3]	3,600	X		X	Yes

[1] Based on historical deliveries.

[2] ETWD has a maximum of 3.7 MGD (4,145 AFY) of tertiary treatment capacity from existing Water Recycling Plant (WRP) as of 2020.

[3] ETWD has capacity rights of 5 cfs (3,600 AFY) for Baker Water Treatment Plant that came online in early 2017. Baker WTP is not a “new” day-to-day water supply, it merely offsets and reduces amount of purchased Metropolitan treated water from Diemer Filtration Plant.

[4] Recycled water use has never reached the 3.7 MGD capacity.

2.1.2 Imported Water

In calendar year (CY) 2018, ETWD received 3,308 AFY of imported water from Metropolitan. Metropolitan's principal water sources originate from the Colorado River via the Colorado River Aqueduct and from Northern California through the State Water Project (SWP). These raw water sources are treated at the Diemer Filtration Plant located north of Yorba Linda. Typically, the Diemer Filtration Plant receives a blend of Colorado River water from Lake Mathews through Metropolitan's Lower Feeder and SWP water through the Yorba Linda Feeder.

ETWD has service connection agreements with Metropolitan's member agency, MWDOC. These agreements entitle ETWD to receive water from available Metropolitan sources via the regional transmission system located in Orange County. MWDOC delivers water from Metropolitan in the amount requested by ETWD, subject to capacity limitations of the service connections and the capacity limits of ETWD in the Feeder. ETWD has three service connections to the Allen-McColloch Pipeline (AMP) and one service connection to the Joint Regional Water Supply System (JRWSS) which is directly supplied from the East Orange County Feeder No.2 (EOCF #2) operated by Metropolitan. Figure 2-1 shows the Metropolitan feeders and major pipelines delivering water in ETWD.

Although pipeline capacity rights do not guarantee the availability of water, per se, pipeline capacity does guarantee the ability to convey water when it is available from Metropolitan sources to the ETWD system and, therefore, demonstrates not only water supply reliability, but also physical delivery system reliability. All imported water supplies assumed in this document are available to ETWD from existing infrastructure.

Allen-McColloch Pipeline – The AMP is the primary source of domestic water in which ETWD owns specific capacity rights. Metropolitan owns and operates the AMP. ETWD's AMP capacity ownership, expressed as rate of flow, is 26.3 cubic feet per second (cfs) or 19,040 acre-feet per year. The Agreement for Sale and Purchase of Allen-McColloch Pipeline (Metropolitan Agreement No. 4623) among Metropolitan, MWDOC, MWDOC Water Facilities Corporation and certain other identified participants, including ETWD, dated July 1, 1994 (the AMP Sale Agreement) requires Metropolitan, among other things, to meet ETWD's requests for water deliveries (subject to the availability of water from Metropolitan). The AMP Sale Agreement further requires Metropolitan to augment/increase capacity necessary to meet ETWD projected ultimate service area water demands and other undeveloped lands within ETWD.

East Orange County Feeder No. 2 – The EOCF #2 is a pipeline jointly owned by several local agencies and Metropolitan, which operates it. ETWD has 2 cfs, or 1,450 acre-feet per year of capacity rights in the JRWSS which is directly supplied from the EOCF #2 operated by Metropolitan.



Figure 2-1: Metropolitan Feeders and Transmission Mains serving in ETWD (Municipal Water District of Orange County, 2016)

2.1.3 Recycled Water

Almost all of the wastewater generated within the ETWD service area is conveyed to their Water Recycling Plant (WRP) where it is treated and either used for irrigation or disposed of through the South Orange County Wastewater Authority's (SOCWA) Effluent Transmission Main and Aliso Creek Ocean Outfall. The WRP is located in the western portion of ETWD's service area, adjacent to the Laguna Woods Village Golf Course. ETWD's WRP is one of the oldest water recycling plants in Orange County, and was designed and permitted to provide secondary-treated recycled water for restricted irrigation at the nearby golf course. A small portion of flow in the southeast portion of ETWD is conveyed directly to the Moulton Niguel Water District (MNWD) collection system.

ETWD began the expansion of its recycled water treatment facilities and recycled water distribution system in 2012. The WRP upgrade and expansion was completed in late 2014. ETWD is in the process of retrofitting dedicated irrigation meters in the cities of Laguna Woods and Laguna Hills. Prior to the WRP upgrade, ETWD supplied approximately 500 AFY of disinfected secondary-treated recycled water for irrigation use at the Laguna Woods Village Golf Course and for in plant irrigation and process water. The remaining secondary effluent is discharged to the Pacific Ocean via SOCWA's Effluent Transmission Main and Aliso Creek Ocean Outfall. Section 2.2.2 describes the Recycled Water Tertiary Treatment Plant and system expansion project.

2.2 Projected Future Supplies

While imported water from Metropolitan will continue to meet the majority of ETWD's demands over the next 20 years, ETWD's supply portfolio has continued to change to reduce reliance on imported supplies and an increase reliance on local recycled supplies as a result of the Recycled Water Expansion Project. In addition, the Baker WTP, a partnership among several local retail water agencies, has further reduced ETWD's dependence on treated imported water from the Metropolitan Diemer Filtration Plant and provides the project participants the potential to receive and treat local surface water from Irvine Lake¹ water. ETWD has an expected delivery of 3,600 AFY over the next 20 years from the Baker WTP. Construction of the Baker WTP began in February 2014 and the plant came online early 2017.

ETWD's projected water supplies from 2020 to 2040 are summarized in Table 2-4.

¹ Irvine Lake is supplied with untreated water from Metropolitan and local surface runoff.

Table 2-4: Projected Water Supply Sources

Water Supply Sources	Fiscal Year Ending (AFY)				
	2020	2025	2030	2035	2040
MWDOC (Imported Treated, Full Service) [1]	8,679	8,679	8,679	8,679	8,679
Baker WTP (Imported Untreated, Full Service) [2]	3,600	3,600	3,600	3,600	3,600
Recycled Water [3]	1,660	1,660	1,660	1,660	1,660
Total	13,939	13,939	13,939	13,939	13,939

[1] 2020 to 2040 projections reflect availability of imported water based on the highest historical deliveries per Table 2-3 less Baker WTP supply.

[2] Baker WTP supply offsets and reduces purchased Metropolitan treated water from Diemer Filtration Plant.

[3] For commercial and irrigation uses.

2.2.1 Imported Water

Metropolitan's most recent (2015) Urban Water Management Plan (UWMP) reports on its water reliability and identifies projected supplies to meet the long-term demand within its service area. It presents Metropolitan's supply capacities from 2020 through 2040 under the three hydrologic conditions specified in the UWMP Act: average year, single dry-year, and multiple dry-years.

Colorado River Aqueduct (CRA) supplies include supplies that would result from existing and committed programs and from implementation of the Quantification Settlement Agreement (QSA) and related agreements to transfer water from agricultural agencies to urban uses. Colorado River transactions are potentially available to supply additional water up to the CRA capacity of 1.2 million acre-feet (MAF) on an as-needed basis.

The 2015 SWP Delivery Capability Report presents Department of Water Resources (DWR) estimates of the amount of Metropolitan's SWP deliveries for conditions 20 years in the future. The projected supplies consider restrictions on SWP operations in accordance with the biological opinions of the U.S. Fish and Wildlife Service and National Marine Fishery Service issued on December 15, 2008 and June 4, 2009, respectively. The 2015 Integrated Water Resources Plan (IRP) Update has a goal to manage flow and export regulations in the near term and ultimately to achieve a long-term Bay-Delta solution. In dry and below-normal conditions, Metropolitan has increased the supplies received from the California Aqueduct by developing flexible Central Valley/SWP water storage and transfer programs. The goal of the storage/transfer programs is to develop additional dry-year

supplies that can be conveyed with available storage and pumping capacity to maintain deliveries through the California Aqueduct during dry hydrologic conditions and regulatory restrictions.

Because a large portion of Metropolitan's water supply comes from the SWP via the Sacramento and San Joaquin River Delta (Delta), in June 2007, Metropolitan's Board approved a Delta Action Plan that provides a framework for staff to pursue actions with other agencies and stakeholders to create a sustainable Delta and reduce water use conflicts between water supply needs and environmental needs. The Delta Action Plan aims to prioritize immediate short-term actions to stabilize the Delta while an ultimate solution is selected, and mid-term steps to maintain the Delta while a long-term solution is implemented.

In June 2019, the Bay Delta Initiatives Manager updated the Metropolitan Bay Delta Committee on the Governor's water resilience portfolio and the continuing planning efforts for Delta conveyance. The state administration is in the process of generating a statewide water resilience approach, while considering the various possible water resources impacts to climate change. The elements of the portfolio would most likely be build upon recycling, conservation, stormwater capture, groundwater recharge, and Delta conveyance. Based on the timeline of Delta conveyance planning process presented by the Bay Delta Initiatives Manager, the State is currently in the process of completing the environmental document and permits for Delta conveyance

Storage is a major component of Metropolitan's water supply capability. Stored water can be used in dry years and in times when augmented water supplies are required. Over the past two decades, Metropolitan has developed a large regional storage portfolio that includes both dry-year and emergency storage capacity. Metropolitan's likelihood of having adequate supply capability to meet projected demands, without implementing its WSAP, is dependent on its storage resources.

Metropolitan evaluated supply reliability by projecting supply and demand conditions for the single- and multi-year drought cases based on conditions affecting the SWP (Metropolitan's largest and most variable supply). For this supply source, the single driest-year was 1977 and the three-year dry period was 1990-1992². Metropolitan's analyses are illustrated in Tables 2-5, 2-6, and 2-7 which correspond to Metropolitan's 2015 UWMP's Tables 2-6, 2-4 and 2-5, respectively. These tables show that the region can provide reliable water supplies not only under normal conditions but also under both the single dry year (1977 hydrology), and the multiple dry-year hydrologies for the 20-year horizon.

² This analysis is based on Metropolitan's most recent (2015) UWMP.

Table 2-5: Metropolitan Average Year Projected Supply Capability and Demands for 2020 to 2040

(Metropolitan, June 2016)

Table 2-6
Average Year
Supply Capability¹ and Projected Demands
Average of 1922-2012 Hydrologies
(Acre-feet per year)

Forecast Year	2020	2025	2030	2035	2040
Current Programs					
In-Region Supplies and Programs	693,000	774,000	852,000	956,000	992,000
California Aqueduct ²	1,555,000	1,576,000	1,606,000	1,632,000	1,632,000
Colorado River Aqueduct					
Total Supply Available ³	1,468,000	1,488,000	1,484,000	1,471,000	1,460,000
Aqueduct Capacity Limit ⁴	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Colorado River Aqueduct Capability	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Capability of Current Programs	3,448,000	3,550,000	3,658,000	3,788,000	3,824,000
Demands					
Total Demands on Metropolitan	1,586,000	1,636,000	1,677,000	1,726,000	1,765,000
IID-SDCWA Transfers and Canal Linings	274,000	282,000	282,000	282,000	282,000
Total Metropolitan Deliveries⁵	1,860,000	1,918,000	1,959,000	2,008,000	2,047,000
Surplus	1,588,000	1,632,000	1,699,000	1,780,000	1,777,000
Programs Under Development					
In-Region Supplies and Programs	43,000	80,000	118,000	160,000	200,000
California Aqueduct	20,000	20,000	268,000	268,000	268,000
Colorado River Aqueduct					
Total Supply Available ³	5,000	25,000	25,000	25,000	25,000
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	63,000	100,000	386,000	428,000	468,000
Potential Surplus	1,651,000	1,732,000	2,085,000	2,208,000	2,245,000

¹ Represents Supply Capability for resource programs under listed year type.

² California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

³ Colorado River Aqueduct includes programs, IID-SDCWA transfer and exchange and canal linings conveyed by the aqueduct.

⁴ Maximum CRA deliveries limited to 1.20 MAF including IID-SDCWA transfer and exchange and canal linings.

⁵ Total demands are adjusted to include IID-SDCWA transfer and exchange and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

Table 2-6: Metropolitan Single Dry Year Projected Supply Capability and Demands for 2020 to 2040
(Metropolitan, June 2016)

Table 2-4
Single Dry-Year
Supply Capability¹ and Projected Demands
Repeat of 1977 Hydrology
(Acre-feet per year)

Forecast Year	2020	2025	2030	2035	2040
Current Programs					
In-Region Supplies and Programs	693,000	774,000	852,000	956,000	992,000
California Aqueduct ²	691,000	712,000	723,000	749,000	749,000
Colorado River Aqueduct					
Total Supply Available ³	1,451,000	1,457,000	1,456,000	1,455,000	1,454,000
Aqueduct Capacity Limit ⁴	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Colorado River Aqueduct Capability	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Capability of Current Programs	2,584,000	2,686,000	2,775,000	2,905,000	2,941,000
Demands					
Total Demands on Metropolitan	1,731,000	1,784,000	1,826,000	1,878,000	1,919,000
IID-SDCWA Transfers and Canal Linings	274,000	282,000	282,000	282,000	282,000
Total Metropolitan Deliveries⁵	2,005,000	2,066,000	2,108,000	2,160,000	2,201,000
Surplus	579,000	620,000	667,000	745,000	740,000
Programs Under Development					
In-Region Supplies and Programs	43,000	80,000	118,000	160,000	200,000
California Aqueduct	20,000	20,000	198,000	198,000	198,000
Colorado River Aqueduct					
Total Supply Available ³	155,000	125,000	75,000	25,000	25,000
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	63,000	100,000	316,000	358,000	398,000
Potential Surplus	642,000	720,000	983,000	1,103,000	1,138,000

¹ Represents Supply Capability for resource programs under listed year type.

² California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

³ Colorado River Aqueduct includes programs, IID-SDCWA transfer and exchange and canal linings conveyed by the aqueduct.

⁴ Maximum CRA deliveries limited to 1.20 MAF including IID-SDCWA transfer and exchange and canal linings.

⁵ Total demands are adjusted to include IID-SDCWA transfer and exchange and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

Table 2-7: Metropolitan Multiple Dry Year Projected Supply Capability and Demands for 2020 to 2040
(Metropolitan, June 2016)

Table 2-5
Multiple Dry-Year
Supply Capability¹ and Projected Demands
Repeat of 1990-1992 Hydrology
(Acre-feet per year)

Forecast Year	2020	2025	2030	2035	2040
Current Programs					
In-Region Supplies and Programs	239,000	272,000	303,000	346,000	364,000
California Aqueduct ²	664,000	682,000	687,000	696,000	696,000
Colorado River Aqueduct					
Total Supply Available ³	1,403,000	1,691,000	1,690,000	1,689,000	1,605,000
Aqueduct Capacity Limit ⁴	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Colorado River Aqueduct Capability	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Capability of Current Programs	2,103,000	2,154,000	2,190,000	2,242,000	2,260,000
Demands					
Total Demands on Metropolitan	1,727,000	1,836,000	1,889,000	1,934,000	1,976,000
IID-SDCWA Transfers and Canal Linings	274,000	282,000	282,000	282,000	282,000
Total Metropolitan Deliveries⁵	2,001,000	2,118,000	2,171,000	2,216,000	2,258,000
Surplus	102,000	36,000	19,000	26,000	2,000
Programs Under Development					
In-Region Supplies and Programs	36,000	73,000	110,000	151,000	192,000
California Aqueduct	7,000	7,000	94,000	94,000	94,000
Colorado River Aqueduct					
Total Supply Available ³	80,000	75,000	50,000	25,000	25,000
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	43,000	80,000	204,000	245,000	286,000
Potential Surplus	145,000	116,000	223,000	271,000	288,000

¹ Represents Supply Capability for resource programs under listed year type.

² California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

³ Colorado River Aqueduct includes programs, IID-SDCWA transfer and exchange and canal linings conveyed by the aqueduct.

⁴ Maximum CRA deliveries limited to 1.20 MAF including IID-SDCWA transfer and exchange and canal linings.

⁵ Total demands are adjusted to include IID-SDCWA transfer and exchange and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

2.2.2 Recycled Water

ETWD completed the construction of a tertiary treatment facility at the existing Water Recycling Plant (WRP) in late 2014. The uses of tertiary-treated water are less restrictive than secondary-treated water, thus allowing recycled water to be used more extensively for commercial and public applications. The Tertiary Treatment Plant (TTP) is located within ETWD's WRP site at the northeast corner of the Laguna Woods Village Golf Course. Local access to the project site is via Moulton Parkway and Ridge Route Drive (Dudek, March 2012).

The TTP is designed to produce 3.7 MGD of recycled water, based on projected maximum day non-potable demand with the ability to expand to 4.0 MGD with the addition of more cloth media disc filters. Simultaneous to the TTP construction, 140,000 feet of recycled water distribution system pipelines were constructed to deliver tertiary treated recycled water to irrigation users in the ETWD service area. The recycled water distribution system expansion is complete. It consists of approximately 19.5 miles of pipeline (4-20 inch diameter) within existing public rights-of-way and private roads in residential neighborhoods within the Cities of Laguna Woods and Laguna Hills.

The distribution system expansion consists of two main portions, one on the east side of Moulton Parkway and one on the west side of Moulton Parkway. The eastern portion is adjacent to the east side of the Laguna Woods Village Golf Course and extends east towards Interstate 5. The western portion extends from Lake Forest Drive in the north to El Toro Road in the south and west to the western limits of the Cities of Laguna Hills and Laguna Woods (Dudek, March 2012). Over 260 dedicated irrigation meters are being converted to recycled water in the cities of Laguna Woods and Laguna Hills. As of early 2020, 47 meters remain to be retrofitted, with 33 of those in active construction. Meter retrofitting is estimated to be complete by mid-2020. The conversion will replace over 900 AFY previously served by potable water, bringing the recycled water supply to approximately 1,660 AFY after the completion of the Phase 2 meter retrofits.

2.2.3 Baker Water Treatment Plant

The Baker WTP is a new 28.1 MGD plant at the site of the former Irvine Ranch Water District's (IRWD) Baker Filtration Plant in the City of Lake Forest. The Baker WTP treats raw imported water from Metropolitan and Irvine Lake water. Given that the facility primarily relies on imported raw water from Metropolitan, it does not create a day-to-day new supply but provides increased water reliability to southern Orange County by providing locally treated water to customers of IRWD, ETWD, MNWD, Santa Margarita Water District (SMWD) and Trabuco Canyon Water District (TCWD). It provides a reliable water supply in the event of emergency conditions or scheduled maintenance on the Metropolitan delivery system such as the Diemer Filtration Plant, Lower Feeder Pipeline or AMP. Additionally, the potential exists for the project participants to receive and treat Irvine Lake water when available. Irvine Lake is supplied by untreated water from Metropolitan and local surface runoff. The Baker WTP came online in early 2017 and has supplied water to ETWD since. ETWD has a capacity

right of approximately 3.2 MGD (3,600 AFY) from the Baker WTP and expects to maintain a supply of 3,600 AFY through 2040.

2.2.4 Huntington Beach Desalination Project

Poseidon Water (Poseidon) is proposing to construct a Huntington Beach Desalination Project (HBDP), a potential source of water for ETWD, which would be co-located adjacent to the existing Huntington Beach Generating Station (HBGS) on a 12-acre parcel. The HBDP is a proposed 50 MGD facility, with an assumed delivery of about 33 MGD to the Orange County (Municipal Water District of Orange County, 2018). In the December 2018 MWDOC's water-needs forecast report, the project was ranked lowest in the cost effectiveness in a ranked comparison of five key Orange County water project proposals. On December 6, 2019 the Santa Ana Regional Water Quality Control Board called a meeting to review a draft of the last permit necessary to authorize the construction of the project and solicit public comment before the scheduled April 3, 2020 vote on the final permit. Potential supply from this ocean desalination project is not included in the analysis of this WSA.

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3. WATER DEMANDS

This section provides an overview of ETWD’s current and projected population and climate conditions which are the main drivers affecting water demand. This section also presents the water demand projected for The Village at Laguna Hills project over the next 20 years.

3.1 ETWD Service Area

ETWD provides water to a population of approximately 50,000 customers throughout its 5,350 acre service area. ETWD service area is almost entirely developed encompassing all of the City of Laguna Woods and portions of four other cities: Lake Forest, Aliso Viejo, Laguna Hills and Mission Viejo.

The ETWD service area ranges in elevation between 230 feet above sea level at its lowest point to 904 feet at its highest. In general, elevations increase from west to east. Interstate 5 bisects ETWD’s service area from north to south, with the higher elevations located on the east side. ETWD is bordered by IRWD to the north, the Laguna Beach County Water District (LBCWD) to the west, MNWD to the west and south, and SMWD to the south and east. ETWD also shares a small border with TCWD in the northern part of its service area.

3.1.1 Population

Based on the 2010 census, the Center for Demographic Research (CDR) at California State University Fullerton estimated a population of 47,861 in 2010 within ETWD’s service area and the projected population for 2020 is 52,743. This represents a 10% increase in population in the last decade. Table 3-1 shows historical population in five-year increments.

Table 3-1: Historical Service Area Population

	1990	1995	2000	2005	2010	2015
Population	43,602	46,262	49,796	48,890	47,861	48,797

Source: Center for Demographic Research (CDR) at California State University, Fullerton, September 2015

The 2020 to 2040 projections shown in Table 3-2 are based on the 2010 census. It is expected that the population within ETWD service area will remain relatively stable until 2025, with a nearly 1 percent decrease over the next five years and then tapering off to minimal change through 2040.

Table 3-2: Projected Service Area Population

	2020	2025	2030	2035	2040
Population	52,743	52,750	53,225	53,245	53,196

Source: Center for Demographic Research (CDR) at California State University, Fullerton, September 2015

3.1.2 Climate Conditions

The ETWD service area encompasses portions of south Orange County located in an area known as the South Coast Air Basin (SCAB). The SCAB climate is characterized by a “Mediterranean” climate: a semi-arid environment with mild winters, warm summers and moderate rainfall. Table 3-3 below shows climate data for ETWD service area. The service area’s average temperature ranges from 44.4°F in December to 83.4°F in August. The average annual rainfall is 12.32 inches, and the average evapotranspiration (ET₀) is 49.85 inches, which is over four times the annual average rainfall. This translates to a high demand for landscape irrigation for homes, commercial properties, parks, and golf courses. Moreover, a region with low rainfall like Southern California is also more prone to drought conditions.

Table 3-3: Average Climate Conditions

Month	Standard Monthly Average ET ₀ (inches) [1]	Total Rainfall (inches) [2]	Air Temperature (°F) [3]	
			Max	Min
Jan	2.34	2.09	67.4	44.9
Feb	2.61	3.52	67.0	45.1
Mar	3.82	1.62	69.0	47.1
Apr	4.82	0.68	71.1	49.4
May	5.21	0.34	73.2	54.0
Jun	5.73	0.12	76.7	57.0
Jul	6.21	0.07	81.8	60.6
Aug	6.00	0.04	83.4	60.4
Sep	4.77	0.24	82.3	58.7
Oct	3.64	0.59	77.6	54.6
Nov	2.63	0.86	72.3	48.6
Dec	2.07	2.15	66.4	44.4
Annual	49.85	12.32	74.0	52.1

[1] CIMIS Station #75, Irvine, California from October 1987 to March 2020.

[2], [3] CIMIS Station #75, Irvine, California from October 1987 to February 2020.

3.2 Existing Water Demands

ETWD has maintained approximately 10,000 customer connections to its potable water distribution system since 2005. The current number of connections is 10,051. All connections in the service area are metered. Slightly less than 60 percent of ETWD's water demand is residential. Commercial/industrial and dedicated landscape sectors represent approximately 40 percent of ETWD's water demand. A small portion of ETWD's demand is from government/institutional establishments such as municipal buildings and hospitals (approximately 1 percent of total demand).

Table 3-4 summarizes ETWD's existing water demand for CY 2018.

Table 3-4: Current Water Demand

Water Supply Sources	2018 Calendar Year (AFY)
Potable Water	7,256
Recycled Water	1,031
Total	8,287

3.3 Projected Water Demands

As noted previously, ETWD's most recently adopted 2015 UWMP did not include projected demands associated with The Village at Laguna Hills project. Since the adoption of the 2015 UWMP, ETWD has not developed new water demand projections for its service area. The water demand analysis of this WSA will use the 2015 UWMP water demand as a basis and add the net increase from The Village at Laguna Hills project to those demands.

3.3.1 Projected Water Demands without The Village at Laguna Hills Project

Table 3-5 presents the 20-year projected water demand without demands from The Village at Laguna Hills. The total demand by year in five-year increments are based on ETWD's 2015 UWMP.

Table 3-5: Projected Water Demands without The Village at Laguna Hills Project Demand

Water Supply Sources	Fiscal Year Ending (AFY)				
	2020	2025	2030	2035	2040
MWDOC (Imported Treated, Full Service)	3,061	3,794	3,823	3,715	3,685
Baker WTP (Imported Untreated, Full Service) [1]	3,600	3,600	3,600	3,600	3,600
Recycled Water	1,660	1,660	1,660	1,660	1,660
Total	8,321	9,054	9,083	8,975	8,945

[1] Baker WTP supply offsets and reduces purchased Metropolitan treated water from Diemer Filtration Plant.

3.3.2 Projected Water Demands from The Village at Laguna Hills Project

The Village at Laguna Hills project proposes 512 residential units in addition to the Five Lagunas project and the redevelopment of Laguna Hills Mall accompanied by a net increase in water demand for ETWD’s residential, commercial, and landscape irrigation customer sectors. The project proposes a total of 1500 multi-family residential units comprising a mixture of studios, one-, two-, and three-bedroom apartments. These residential units will generate approximately 195,340 gallons per day (gpd) or 219 AFY of potable (indoor) water demands (Table 3-6), which is about 72 AFY greater than the residential demands estimated for the Five Lagunas project. Commercial potable (indoor) water demand for The Village at Laguna Hills is estimated to increase by about 36 AFY in addition to that of the Five Lagunas project. The total commercial potable demand is estimated to be 68,120 gpd (76 AFY), mainly as a result of the addition of general office space, hotels and restaurants (Table 3-7). The Village at Laguna Hills project will result in a net increase of approximately 335,700 sq. ft. in landscaped areas to the mall and residential areas, with an associated irrigation demand of approximately 23,080 gpd (26 AFY) (Table 3-8). This is about 9 AFY higher than the estimated irrigation demand for the landscaped area proposed in the Five Lagunas project.

Table 3-6: The Village at Laguna Hills Project's Residential Water Demands Projection

Use Category	Dwelling Units (DU)	Sewer Generation Factor (gpd/DU)	Sewer Demand [1] (gpd)	Water Demand [2] (gpd)
Studio	90	75	6,750	7,105
One bedroom	835	110	91,850	96,684
Two bedroom	557	150	83,550	87,947
Three bedroom	18	190	3,420	3,600
Total Residential	1,500		185,570	195,337

[1] Sewer demand is 95% of water demand per [City of Los Angeles/Los Angeles County Sanitation Districts' Characteristics Sewage Generation Factors](#).

[2] Assume sewer demand is 95% of water demand.

Table 3-7: The Village at Laguna Hills Project's Commercial Water Demands Projection

Use Category	Sewer Generation Factor (gpd/ksf) [1], [2]	Existing Gross Floor Area (sq. ft)	Existing Sewer Demand (gpd)	Total Future Gross Floor Area (sq. ft.)	Total Future Sewer Demand (gpd)	Change in Sewer Demand [3] (gpd)	Change in Water Demand [4] (gpd)
Restaurant	300	78,795	23,639	125,000	37,500	13,862	14,591
Restaurant patio	300	4,603	1,381	20,000	6,000	4,619	4,862
Retail	50	873,551	43,678	85,000	4,250	-39,428	-41,503
Retail Patio	50	1,512	76	5,000	250	174	184
Fitness	200	0	0	40,000	8,000	8,000	8,421
Cinema	3	1,020	3,060	2,250	6,750	3,690	3,884
Flex Retail/Med Office	50	0	0	0	0	0	0
Hotel	120	0	0	150	18,000	18,000	18,947
General Office	120	0	0	465,000	55,800	55,800	58,737
Total Commercial		959,481	71,833	742,400	136,550	64,717	68,124

[1] Sewer generation factor for cinema is in gpd/seat, existing and proposed number of seats are 1,020 and 2,250, respectively.

[2] Sewer generation factor for hotel is in gpd/room, existing and proposed number of seats are 0 and 150, respectively.

[3] Sewer demand is 95% of water demand per [City of Los Angeles/Los Angeles County Sanitation Districts' Characteristics Sewage Generation Factors](#).

[4] Assume sewer demand is 95% of water demand.

Table 3-8: The Village at Laguna Hills Project's Landscape Water Demands Projection

Existing Area [1] (sq. ft.)	Water Use Factor (gpm/ac)	Existing Water Demand (gpd)	Total Future Area [2] (sq. ft.)	Water Use Factor (gpm/ac)	Total Future Water Demand (gpd)	Change in Water Demand (gpd)
173,690	2.08	11,943	509,394	2.08	35,026	23,083

[1] This area also includes existing Laguna Hills Mall landscape that will become part of the residential landscape.

[2] Source: [Overall Landscape Plan in Plan set of The Village at Laguna Hills project](#).

Table 3-9 summarizes the 20-year estimated water demands from The Village at Laguna Hills development, which is planned to be constructed in three phases. The construction will begin after 2020, with all three phases expected to be completed by 2025.

Table 3-9: The Village at Laguna Hills Project's Total Water Demands Projection

Demand by Sector	Fiscal Year Ending (AFY)				
	2020	2025	2030	2035	2040
Residential (indoor)	0	219	219	219	219
Commercial (indoor)	0	76	76	76	76
Dedicated Landscape	0	26	26	26	26
Total	0	321	321	321	321

[1] It is assumed that the project will be constructed in phases. The construction will start after 2020 and the first phase is expected to be completed in 2021.

3.3.3 Projected Water Demands with The Village at Laguna Hills Project

Table 3-10 summarizes the 20-year estimated water demands for ETWD service area, including demand from The Village at Laguna Hills development. It is assumed that all 321 AFY of water demand generated by The Village at Laguna Hills project will result in an increase in treated full-service imported demand from MWDOC.

Table 3-10: Projected Water Demands with The Village at Laguna Hills Project Demands

Water Supply Sources	Fiscal Year Ending (AFY)				
	2020	2025	2030	2035	2040
MWDOC (Imported Treated, Full Service)	3,061	4,115	4,144	4,036	4,006
Baker WTP (Imported Untreated, Full Service) [1]	3,600	3,600	3,600	3,600	3,600
Recycled Water	1,660	1,660	1,660	1,660	1,660
Total	8,321	9,375	9,404	9,296	9,266

[1] Baker WTP supply offsets and reduces purchased Metropolitan treated water from Diemer Filtration Plant.

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4. SUPPLY AND DEMAND COMPARISON

4.1 Average Year

The average year represents average hydrologic conditions. The total demand presented in Table 4-1 represents the sum of ETWD’s demand projections without The Village at Laguna Hills demands and the demand projections for The Village at Laguna Hills project which imposes a 321 AFY net increase in potable water, 26 AFY of which are dedicated irrigation demand.

ETWD has written contracts to receive imported water from Metropolitan via the regional distribution system. All imported water supplies assumed in this section are available to ETWD from existing water transmission facilities. Table 4-1 shows supply and demand under normal year conditions. Additional water supplies are projected to be available from Metropolitan, but are not included here since projected supplies meet or exceed projected demands.

Table 4-1: Projected Average Year Supply and Demand

	Fiscal Year Ending (AFY)				
	2020	2025	2030	2035	2040
Total Demand [1]	8,321	9,375	9,404	9,296	9,266
Potable	6,661	7,715	7,744	7,636	7,606
Recycled Water	1,660	1,660	1,660	1,660	1,660
Total Supply	8,321	9,375	9,404	9,296	9,266
Potable	6,661	7,715	7,744	7,636	7,606
Recycled Water	1,660	1,660	1,660	1,660	1,660

[1] Includes projected demands associated with The Village at Laguna Hills project.

4.2 Single Dry Year

The impacts of single dry-year conditions on water demands in this WSA were determined by the same methodology provided by MWDOC employed in ETWD’s 2015 UWMP. MWDOC used a water demand forecasting model in the 2016 Orange County Reliability Study that provided demand projections for three regions within Orange County- Brea/La Habra, Orange County Groundwater Basin, and South County. The ETWD’s portion was estimated as the percentage of the ETWD’s five year (FY 2010-11 to FY 2014-15) average usage compared to the South County region total demand for the same period. The model reflects the impacts of hot/dry weather condition as a percentage increase in water demands from the average condition (1990-2014). For a single dry year condition (FY2013-14), the model projects a 9 percent increase in demand from normal conditions for the South County area where the ETWD’s service area is located.

Table 4-2 compiles supply and demand projections for a single dry water year. The available imported supply is greater than shown; however, it is not included because all demands are met.

Table 4-2: Projected Single Dry-Year Supply and Demand

	Fiscal Year Ending (AFY)				
	2020	2025	2030	2035	2040
Total Demand [1]	9,070	10,219	10,250	10,133	10,100
Imported	7,410	8,559	8,590	8,473	8,440
Recycled Water	1,660	1,660	1,660	1,660	1,660
Total Supply	9,070	10,219	10,250	10,133	10,100
Imported	7,410	8,559	8,590	8,473	8,440
Recycled Water	1,660	1,660	1,660	1,660	1,660

[1] Includes projected demands associated with The Village at Laguna Hills project.

4.3 Multiple Dry Years

MWDOC conservatively assumed that a three-year multi dry year scenario is a repeat of the single dry year over three consecutive years with a demand increase of 9 percent from normal demand. This means having three highest-demand years in a row. ETWD, in its 2015 UWMP projects that it will be capable of providing its customers all their demands with significant reserves in multiple dry years from 2020 through 2040 with a demand increase of 9 percent from normal in each of the three years.

Table 4-3 shows supply and demand projections under multiple dry year conditions.

Table 4-3: Projected Multiple Dry-Years Supply and Demand

		Fiscal Year Ending (AFY)				
		2020	2025	2030	2035	2040
First Year Supply	Total Demand [1]	9,070	10,219	10,250	10,133	10,100
	Imported	7,410	8,559	8,590	8,473	8,440
	Recycled Water	1,660	1,660	1,660	1,660	1,660
	Total Supply	9,070	10,219	10,250	10,133	10,100
Second Year Supply	Total Demand	9,070	10,219	10,250	10,133	10,100
	Imported [1]	7,410	8,559	8,590	8,473	8,440
	Recycled Water [2]	1,660	1,660	1,660	1,660	1,660
	Total Supply	9,070	10,219	10,250	10,133	10,100
Third Year Supply	Total Demand	9,070	10,219	10,250	10,133	10,100
	Imported [1]	7,410	8,559	8,590	8,473	8,440
	Recycled Water [2]	1,660	1,660	1,660	1,660	1,660
	Total Supply	9,070	10,219	10,250	10,133	10,100

[1] Includes projected demands associated with The Village at Laguna Hills project.

4.4 Conclusions

This WSA has evaluated ETWD’s projected future demands and the potential additional water demands associated with The Village at Laguna Hills project and compared those demands to projected supplies available to ETWD through 2040. In accordance with the foregoing and the standards set forth by Water Code § 10910, this WSA concludes that the total projected water supplies available to ETWD during average, single-dry, and multiple-dry water years over the next 20 years are sufficient to meet the projected water demands for the proposed project, in addition to ETWD’s existing uses.

Based on Metropolitan’s 2015 UWMP supply projections, MWDOC concludes in its 2015 UWMP that it will be able to meet full service demands of its retail agencies under average, single-dry, and multiple-dry year conditions.

REFERENCES

ARCADIS. *El Toro Water District: 2015 Five Lagunas Project Water Supply Assessment*. December 2015.

ARCADIS. *El Toro Water District: 2015 Urban Water Management Plan*. May 2016.

ARCADIS. *Municipal Water District of Orange County: 2015 Urban Water Management Plan*. May 2016.

California Irrigation Management Information System (CIMIS) *Station #75 Irvine, California* <
<https://cimis.water.ca.gov/WSNReportCriteria.aspx>>

CDM Smith Inc. *Municipal Water District of Orange County: 2018 Orange County Water Reliability Study*.
December 12, 2018

Center for Demographic Research (CDR) at California State University, Fullerton, September 2015

Dudek. *Recycled Water Distribution System Expansion*. March 2012.

Dudek. *Recycled Water Tertiary Treatment Plant*. March 2012.

El Toro Water District. *About Us*. March 2020 < <https://etwd.com/about-us/>>

Irvine Ranch Water District. *Baker Water Treatment Plant*. March 2020
<<https://www.irwd.com/construction/baker-water-treatment-plant>>

Maven. *METROPOLITAN BAY DELTA COMMITTEE: Update on Governor's water resilience portfolio and Delta conveyance planning efforts*. July 2, 2019 < <https://mavensnotebook.com/2019/07/02/metropolitan-bay-delta-committee-update-on-governors-water-resilience-portfolio-and-delta-conveyance-planning-efforts/>>

Merlone Geier Partners. *City of Laguna Hills: The Village at Laguna Hills Master Site Plan-Phase 3*. January 13, 2020.

Merlone Geier Partners. *City of Laguna Hills: The Village at Laguna Hills Plan Set*. February 7, 2020.

Merlone Geier Partners. *Five Lagunas Conceptual Site Plan*. October 1, 2015

Metropolitan Water District of Southern California. *2015 Urban Water Management Plan*. June 2016

M. Wisckol. *Huntington Beach desalination plant eyes approval, but foes turn out in force*. December 9, 2019 <<https://www.ocregister.com/2019/12/06/huntington-beach-desalination-plant-eyes-approval-but-foes-turn-out-in-force/>>

M. Wisckol. *Orange County water study updated, Poseidon desalination plant still scores low*. December 24, 2018 <<https://www.ocregister.com/2019/12/06/huntington-beach-desalination-plant-eyes-approval-but-foes-turn-out-in-force/>>

Poseidon. *Coastal Commission to Consider Proposed Huntington Beach Desalination Project*, Press Release September 2, 2015 <<http://hbfreshwater.com/news/press-release/coastal-commission-to-consider-proposed-huntington-beach-desalination-project>>

U.S. Bureau of Reclamation, California Department of Water Resources, U.S. Fish and Wildlife Service, National Marine Fisheries Service, California Department of Fish and Wildlife, State Water Resources Control Board. *Central Valley Project and State Water Project: Drought Operations Plan and Operational Forecast*. April 8, 2014

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