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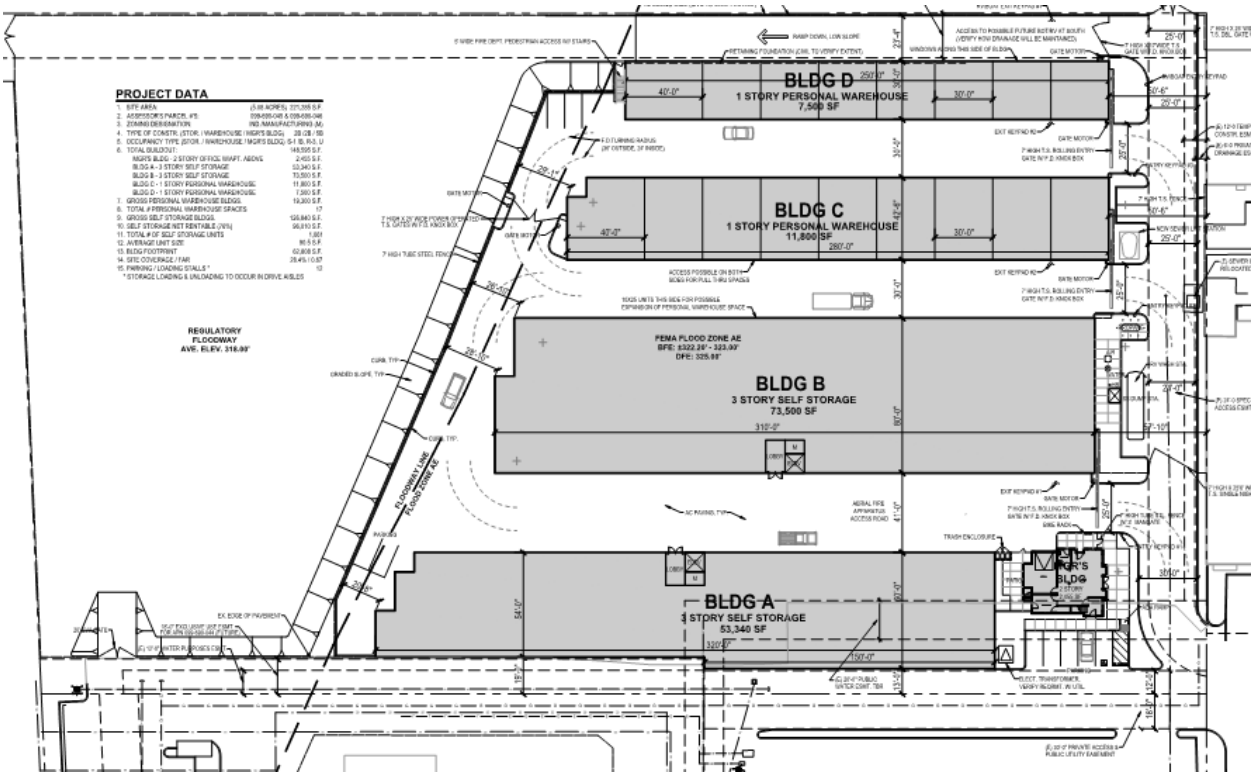
33 Industrial Way

Buellton, CA 93427

Proposed Self-Storage Facility

Water Demand & Wastewater Generation Determination Report

July 1, 2025



Prepared by: ON Design LLC

Project Description

The project site is located at 33 Industrial Way, Buellton, CA 93427 (APN 099-690-056) at the southwest end of Industrial Way. The existing 5.08 acre property is currently undeveloped with a soil stockpile located at the north end of the site. Approximately 2/5 of the site is located within a regulatory floodway and the remainder is within a floodplain.

Figure 1: Existing Site

The site is proposed to be developed with a self-storage facility on the northerly half of the property outside the regulatory floodway. The facility includes a 2,455-square foot management office with manager's apartment, 126,840-square feet of self-storage divided between two three-story buildings, and 18 condominium self-storage buildings with a combined floor area of 19,300-square feet. The facility includes 12 parking spaces.

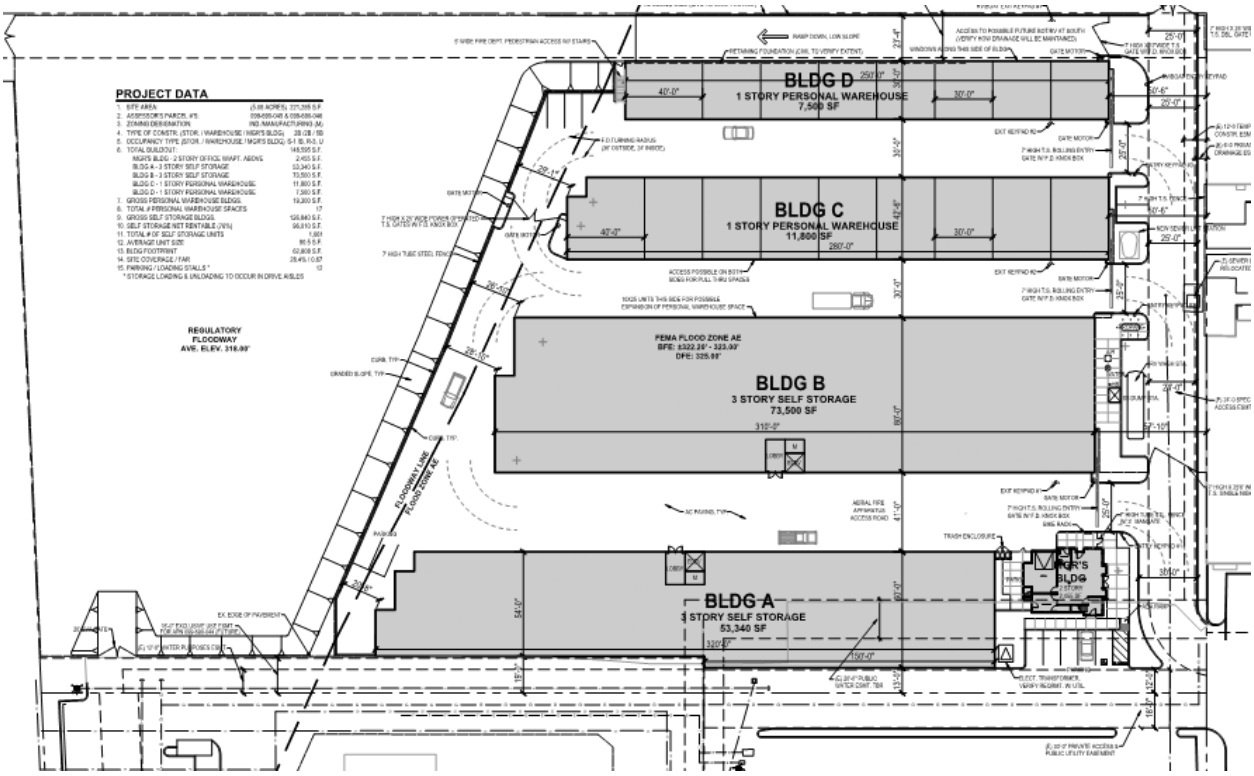


Figure 2. Proposed Site Plan

Future Development Water Demand

Domestic Water Use

The Calculations for the anticipated domestic water demand for the proposed development are based on water demand factors published in the Ventura Water Water Demand Factor Study dated April 8, 2020 prepared by Wood Rodgers.

The proposed project includes one multi-family unit, 968 square feet of office, and 146,140 square feet of self-storage on 3.22 acres.

The demand factor for multifamily are 209 gallons per day (gpd) per dwelling unit. The demand factor for office is 38 gpd per 1,000 square feet (ksf). The demand factor for self-storage is 286 gpd per acre. Utilizing these factors, it is estimated that the water demand for the facility is 1,166.70 gpd or 1.307 acre feet per year.

Use	Demand Factor	Unit/Square Feet/Acre	Estimate Daily Water Demand
Multifamily	209 gpd per unit	1	209 gpd
Office	38 gpd per ksf	0.97 ksf	36.78 gpd
Self-Storage	286 gpd per acre	3.22 acres	920.92 gpd
		TOTAL	1,166.70 gpd

Figure 3. Domestic Water Demand Calculations

Future Development Wastewater Generation

Wastewater Generation

The proposed project is expected to generate approximately 1,166.70 gallons per day of domestic water use. A typical estimate used for wastewater generation is to utilize 90 percent of the water usage as wastewater, which accounts for loss due to consumptive uses. Therefore the estimated wastewater generation is 1,296.33 gallons per day.

Prepared by:

Lonnie Roy

ATTACHMENT 1

PLANS

SITE PLAN

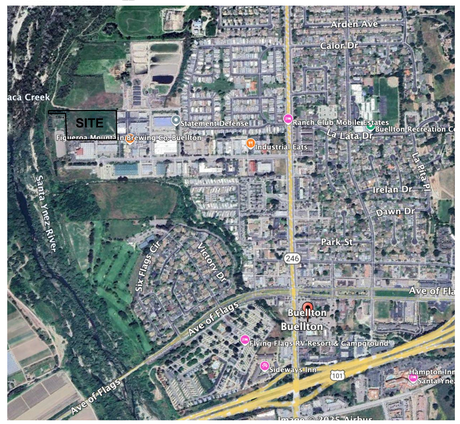
BUE 5 SELF STORAGE, BUELLTON, CA

PROJECT DATA

1.	SITE AREA:	(5.08 ACRES) 221,285 S.F.
2.	ASSESSOR'S PARCEL #'S:	099-690-045 & 099-690-046
3.	ZONING DESIGNATION:	IND./MANUFACTURING (M)
4.	TYPE OF CONSTR. (STOR. / WAREHOUSE / MGR'S BLDG)	2B /2B / 5B
5.	OCCUPANCY TYPE (STOR. / WAREHOUSE / MGR'S BLDG)	S-1 /B, R-3, U
6.	TOTAL BUILDOUT:	148,595 S.F.
	MGR'S BLDG - 2 STORY OFFICE W/APT. ABOVE	2,455 S.F.
	BLDG A - 3 STORY SELF STORAGE	53,340 S.F.
	BLDG B - 3 STORY SELF STORAGE	73,500 S.F.
	BLDG C - 1 STORY PERSONAL WAREHOUSE	11,800 S.F.
	BLDG D - 1 STORY PERSONAL WAREHOUSE	7,500 S.F.
7.	GROSS PERSONAL WAREHOUSE BLDGS.	19,300 S.F.
8.	TOTAL # PERSONAL WAREHOUSE SPACES	17
9.	GROSS SELF STORAGE BLDGS.	126,840 S.F.
10.	SELF STORAGE NET RENTABLE (76%)	96,010 S.F.
11.	TOTAL # OF SELF STORAGE UNITS	1,061
12.	AVERAGE UNIT SIZE	90.5 S.F.
13.	BLDG FOOTPRINT	62,808 S.F.
14.	SITE COVERAGE / FAR	28.4% / 0.67
15.	PARKING / LOADING STALLS *	12

* STORAGE LOADING & UNLOADING TO OCCUR IN DRIVE AISLES

VICINITY MAP



REGULATORY
FLOODWAY
AVE. ELEV. 318.00'

FEMA FLOOD ZONE AE
BFE: ±322.20' - 323.00'
DFE: 325.00'

FLOODWAY LINE
FLOOD ZONE AE

BLDG D
1 STORY PERSONAL WAREHOUSE
7,500 SF

BLDG C
1 STORY PERSONAL WAREHOUSE
11,800 SF

BLDG B
3 STORY SELF STORAGE
73,500 SF

BLDG A
3 STORY SELF STORAGE
53,340 SF

MGR'S BLDG
2 STORY
2,455 SF

EX. IND. BLDG
APN 099-690-044

EX. IND. BLDG
APN 099-690-043

EX. IND. BLDG
APN 099-820-001

INDUSTRIAL WAY

CUBIX ASSET MANAGEMENT
5 MEADOWBROOK LANE
DANVILLE, CA 94256

BUE 5 SELF STORAGE
INDUSTRIAL WAY, BUELLTON, CA

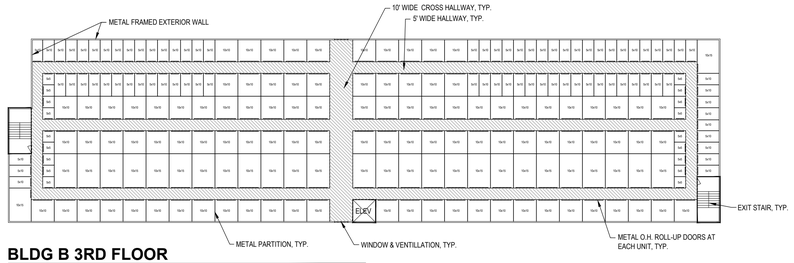
SITE PLAN

Drawn By	EJB/LTB
Date	7/1/25
Scale	1"=30'
File Name	SitePlan1
Planning File Numbers	
Sheet Number	1

Revisions	Date

FLOOR PLANS

BUE 5 SELF STORAGE, BUELLTON, CA



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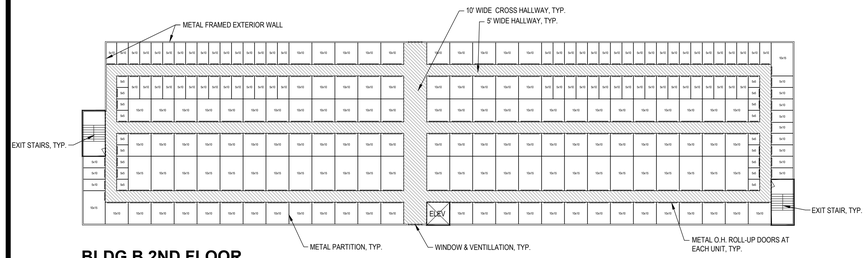

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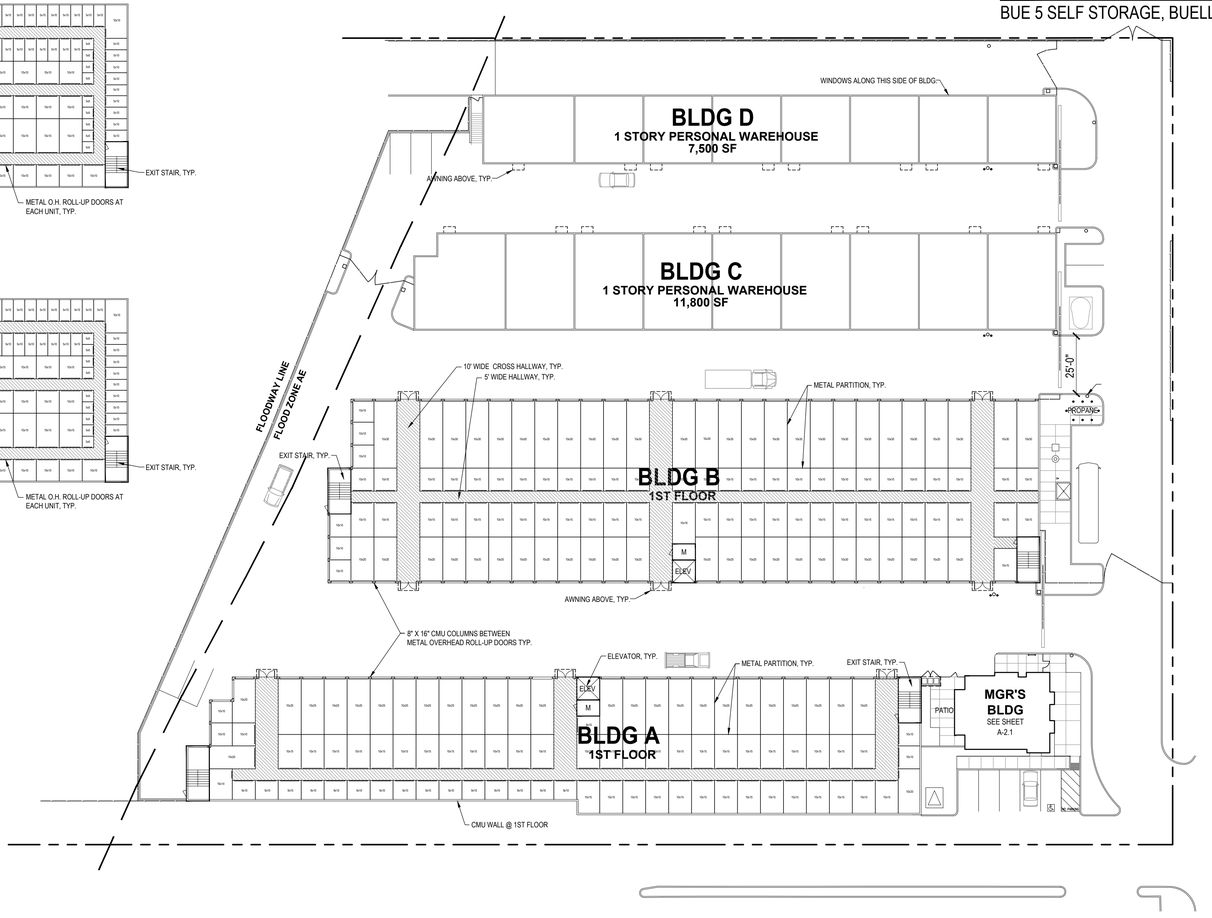

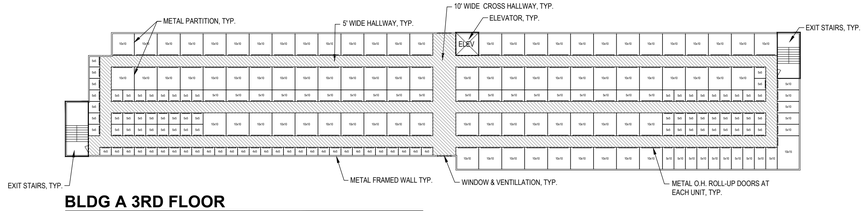

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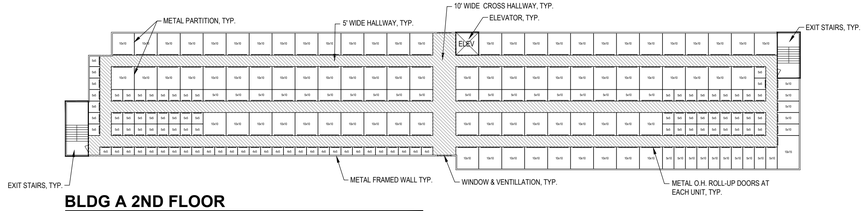

BLDG A 2ND FLOOR

Revisions	Date

CUBIX ASSET MANAGEMENT
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DANVILLE, CA 94256

BUE 5 SELF STORAGE
INDUSTRIAL WAY, BUELLTON, CA

SITE PLAN

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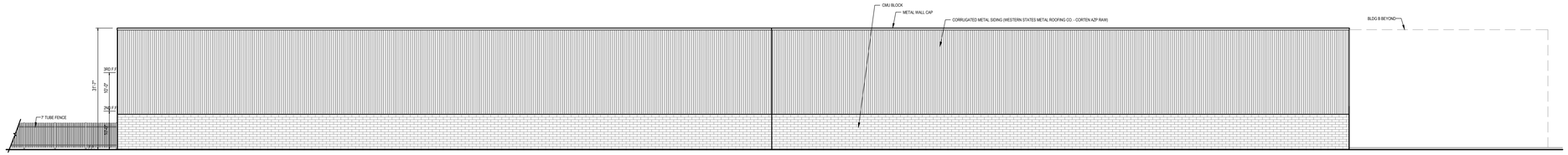
Sheet Number	2



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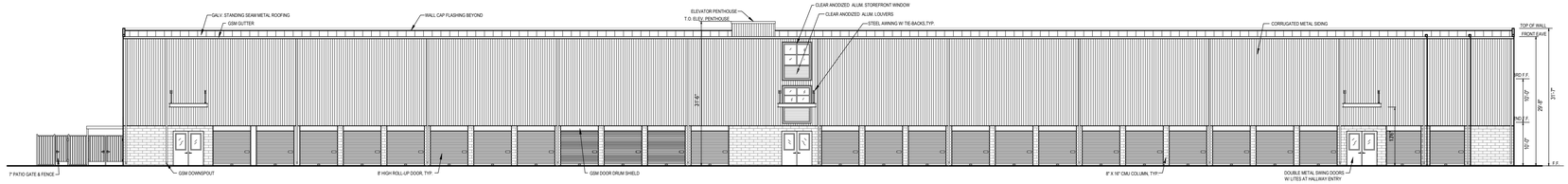

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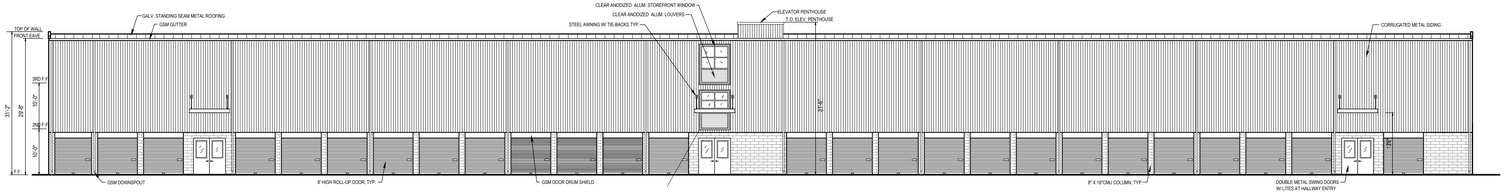

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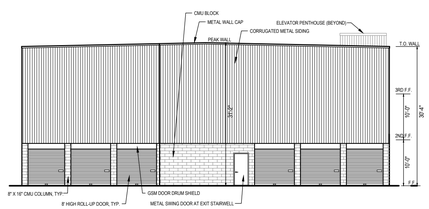

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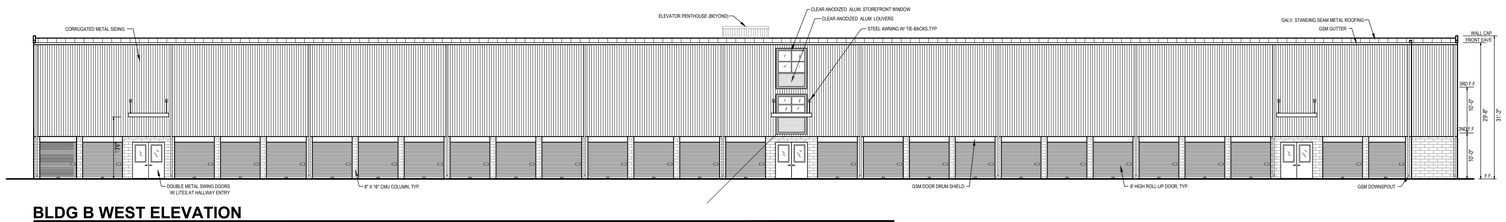

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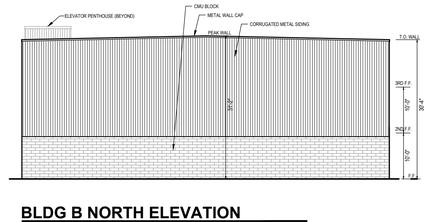

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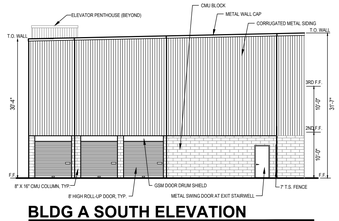

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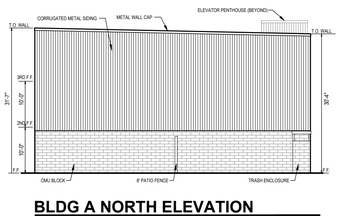

BLDG A NORTH ELEVATION

7/8" Corrugated - Corten AZP Raw®

7/8" corrugated metal roofing has deep wavy corrugations that look stunning on your metal roof. Structurally strong, incredibly impact resistant.

SIDING EXAMPLE

Revisions	Date

CUBIX ASSET MANAGEMENT
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INDUSTRIAL WAY, BUELLTON, CA

ELEVATIONS 1

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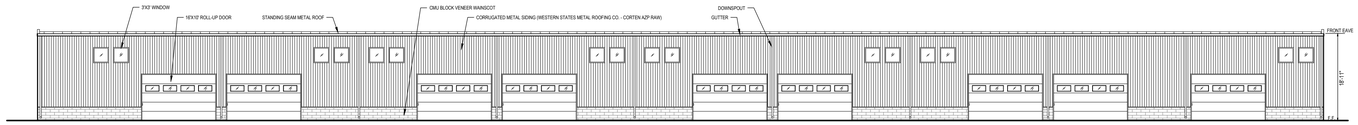
Planning File Numbers	
Sheet Number	3



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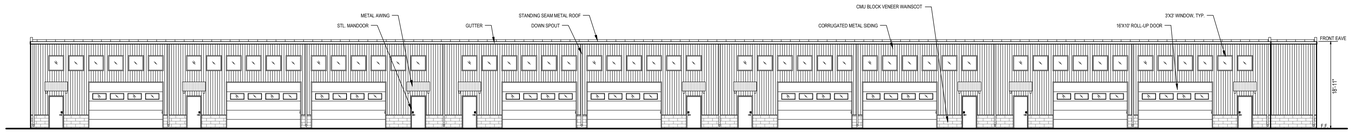

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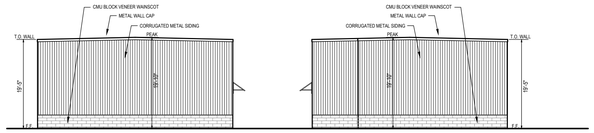
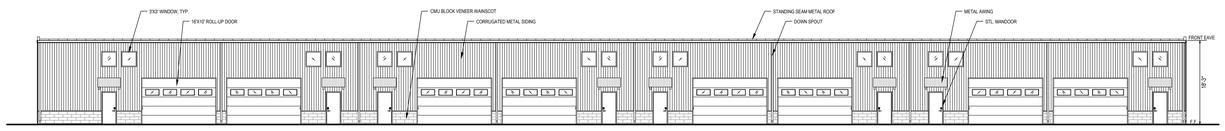


BLDG C NORTH

BLDG C SOUTH



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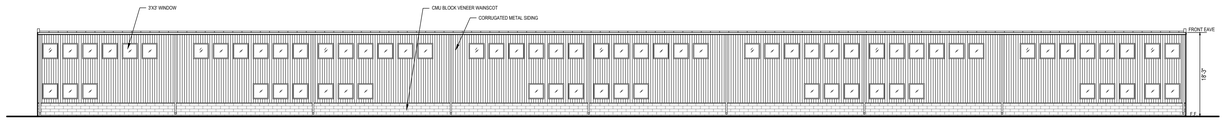

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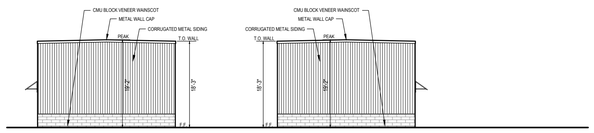

BLDG D NORTH

BLDG D SOUTH

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SIDING EXAMPLE

Revisions	Date

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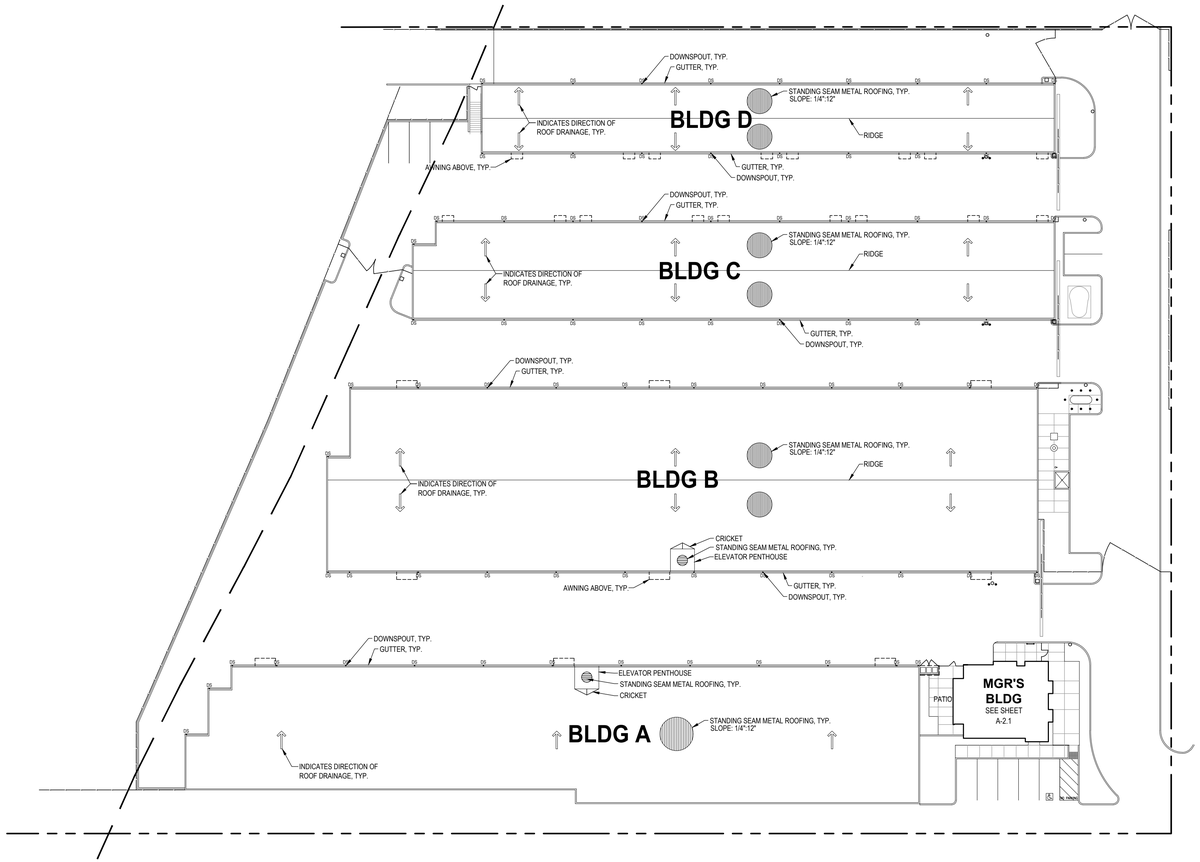
BUE 5 SELF STORAGE
INDUSTRIAL WAY, BUELLTON, CA

ELEVATIONS 2

Drawn By	EJB/LTB
Date	7/1/25
Scale	1"=30'
File Name	Elevations1
Planning File Numbers	
Sheet Number	4

ROOF PLAN

BUE 5 SELF STORAGE, BUELLTON, CA



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ROOF PLAN

Drawn By	EJB/LTB
Date	7/1/25
Scale	1"=30'
File Name	Site Plan1
Planning File Numbers	
Sheet Number	5

ATTACHMENT 2

VENTURA WATER

WATER DEMAND FACTOR STUDY

Final

Water Demand Factor Study

April 8, 2020

Prepared By:

Contact: Kevin J. Gustorf, P.E.

(916) 341-7425

TABLE OF CONTENTS

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AFY	Acre feet per year
AMI	Advanced Metering Infrastructure
AWWA	American Water Works Association
CMWD	Casitas Municipal Water District or Casitas
CWRR	Comprehensive Water Resources Report
CY	Calendar year
DU/AC	Dwelling unit per acre
DWR	California Department of Water Resources
GPCD	Gallons per capita per day
GPD	Gallons per day
GPD/DU	Gallons per day per dwelling unit
GPD/KSF	Gallons per day per 1,000 square feet
HCF	Hundred cubic feet
NO-DES	Neutral Output Discharge Elimination System
SB	Senate Bill
SWRCB	State Water Resources Control Board
UWMP	Urban Water Management Plan

I. INTRODUCTION

A. Background and Purpose

The City of San Buenaventura Water Department (Ventura Water) owns, operates and maintains a potable water distribution system that distributes treated water to the customers within its service area boundary. Ventura Water also distributes non-potable water and recycled water to select customers within its service boundary, where the infrastructure exists, to meet irrigation demands.

In 2013, Ventura Water updated its water demand factors for various land use categories based on actual water usage data available at the time. The water demand factors developed in 2013 were prepared as a part of Ventura Water's first Comprehensive Water Resources Report (CWRR). The CWRR is a comprehensive evaluation of Ventura Water's current and projected water demand and supply. The CWRR is updated annually by Ventura Water.

The water demand factors are used to calculate future demand projections based on known development plans and the ultimate build-out of the City per the City's General Plan. Water demand factors have been used in a variety of City publications, including: General Plan, Water Master Plan, Urban Water Management Plan and the Comprehensive Water Resources Report (CWRR). In addition, smaller more focused studies will reference water demand factors from these City documents, such as in the use of development water studies.

The water demand factors developed for the 2013 CWRR were based upon water consumption data from 2012. Since 2012, water demand in the City has changed due to aggressive water conservation, legislation, development, and changing land uses. In addition, the water demand factor land use categories developed for the 2013 CWRR were grouped into broad categories. These demand factors are currently used to calculate future demands for proposed development projects, and also used to determine the Water Resources Net Zero Fee for developers. Therefore, Ventura Water has determined the need to update its water demand factors to reflect current water usage behavior and define the demand factor categories in greater detail.

The primary goal of this Study is to establish water demand factors that reflect current usage patterns and can be utilized throughout the City's service area to calculate future water demand projections that can be used in all water planning efforts. An additional goal of this Study is to develop a comprehensive list of water demand factors that accurately represent water usage per land use classification that can be used for planning purposes. The water demand factors developed herein account for current trends, but also account for yearly variability based upon environmental conditions.

Not included as part of this Study is an evaluation of daily or seasonal diurnal patterns or peaking factors.

B. Source Data

The water demand factors developed as a part of this Study utilized Ventura Water billing data and production data. The billing data provided was for the calendar years 2013 through 2018. The production (supply) data was provided for the calendar years 2013 through 2018.

Also referenced for this Study were the following reports:

- 2013 Comprehensive Water Resources Report (CWRR)
- Water Master Plan (March 2011)
- 2015 Urban Water Management Plan (June 2016)
- 2005 Ventura General Plan
- Ordinance 2016-004 "Water Rights Dedication, Water Resource Net Zero Fee, and Water Resource Net Zero Requirements"

II. EXISTING WATER DEMAND FACTORS

Water demand factors are used to estimate future water use based on a land use type and unit of measurement (such as acreage, dwelling unit count, square footage, number of persons, etc.). Demand factors are typically calculated based on historical water use and trends. Ventura Water last updated its water demand factors per land use in 2013 for the Comprehensive Water Resources Report (CWRR), and its demand factor per capita in 2016 for the Urban Water Management Plan (UWMP).

A. Existing Demand Factors (per Land Use)

The land use-based water demand factors currently being utilized by Ventura Water were developed in 2013 as a part of the first edition of the CWRR. The land use demand factors are summarized in Table 1.

Table 1 Current Water Demand Factors (from 2013 CWRR)				
Water Demand Factor Classification		**Raw Consumption Factor (CY 2012)**	**Adjustment for Water Loss (+6.5%)**	**Adjustment for Planning Purposes (+20% appx.)**
Residential	Residential (0-8 du/ac)	292 gpd/du	311 gpd/du	370 gpd/du
	Residential (9-20 du/ac)	189 gpd/du	201 gpd/du	250 gpd/du
	Residential (21+ du/ac)	189 gpd/du	201 gpd/du	250 gpd/du
Non-Residential	Commercial/Retail/Industrial/Hotel Public/Institutional	206 gpd/ksf	220 gpd/ksf	265 gpd/ksf
	Hospital/Assisted Living	424 gpd/bed	452 gpd/bed	545 gpd/bed
	Park/Landscape/Irrigation	1,566 gpd/acre	1,668 gpd/acre	2,000 gpd/acre

Source: Table 3-3 of 2013 CWRR
du/ac = dwelling unit per acre
gpd/du = gallons per day per dwelling unit
gpd/ksf = gallons per day per 1,000 square feet

B. Per Capita Water Use

California state legislators passed Senate Bill 7 (SB x7-7, also known as the Water Conservation Bill) in November 2009 requiring all municipal water suppliers to reduce per capita water consumption by 20% by Year 2020 from an established baseline. Ventura Water's Year 2020 compliance target is 142 gallons per capita per day (GPCD). As of the 2015 Urban Water Management Plan (UWMP), Ventura Water has already achieved its 2020 target, with the Year 2015 usage calculated to be 117 GPCD.

In 2018, the California Legislature passed two additional water conservation bills, Senate Bill 606 (SB 606) and Assembly Bill 1668 (AB 1668), creating the framework for additional statewide water savings mandates that will take effect in Year 2022. SB 606 and AB 1668 build on the state's ongoing efforts to make water conservation a way of life in California and create a new foundation for long-term improvements in water conservation and drought planning. SB 606 and AB 1668 establish guidelines for efficient water use and a framework for the implementation and oversight of the new standards.

In Year 2022, water suppliers will have to submit water budgets to the California Department of Water Resources (DWR) and increase water recycling projects. The

legislation establishes a residential indoor goal of 55 GPCD until Year 2025, 52.5 GPCD from Years 2025 to 2030, and 50 GPCD after Year 2030. According to Ventura Water's 2015 UWMP, Ventura Water customers used an average of 117 GPCD in 2015. The 117 GPCD was calculated using service area population and overall water use (all water including residential, commercial, municipal, irrigation, etc. excluding recycled water). However, Ventura Water reports residential use to the State. From 2016 to 2018, Ventura Water's average indoor and outdoor residential water use was 69 GPCD. Based on the DWR's 2011 California Single Family Water Use Efficiency Study, the average household uses 47% of its water indoors and 53% outdoors. Therefore, it is estimated that Ventura Water's average residential indoor use is 32 GPCD, indicating that Ventura Water is already meeting the 55 GPCD goal.

A few of the provisions that will impact Ventura Water identified in the two bills include:

- Establishing water use objectives and long-term standards for efficient water use that apply to urban retail water suppliers comprised of indoor residential water use, outdoor residential water use, commercial, industrial and institutional (CII) irrigation with dedicated meters, water loss, and other unique local uses.
- Providing incentives for water suppliers to recycle water.
- Requiring both urban and agricultural water suppliers to set annual water budgets and prepare for drought.

It should be noted that the long-term standards for efficient water use are still being developed by the State and that a report is anticipated to be completed January 2021 reviewing the 55 GPCD standard for residential indoor water use. In addition, the service area population will need to be updated, which can impact the residential GPCD calculations. These updates will be provided in the 2020 UWMP.

The implementation of SB 606 and AB 1668 may result in lower water demand factors for Ventura Water in the future. It is recommended that Ventura Water review the water demand factors after a few years of billing data has been collected after the water conservation laws are fully implemented.

III. AGENCY COMPARISON

A. Comparison

As a part of the 2013 CWRR process, the water demand factors for several local agencies were identified for comparative purposes. The water agency demand factor comparison from the 2013 CWRR is included herein as Table 2.

B. Methodology

For this Study, additional agencies were contacted to understand the methodology used to calculate its water demand factors.

- The City of Santa Barbara's demand factors were based on water consumption for calendar years 2006 (average weather) and 2007 (driest year on record) and land use data (square footage for commercial properties and lot size values for residential).

- The City of San Luis Obispo's municipal water use factors were developed in 2008. No further information was available regarding the methodology.

- Irvine Ranch Water District's demand factors were initially developed in 1999 with an update completed in 2012. The demand factors were based on 2000 to 2010 billing data with adjustments: 7% unaccounted water and 12% economic bounce back and land use information.

- The City of Oxnard's water demand factors were based on billing records from calendar year 2012. Water demand factors for the existing system were derived from a total system average by using geocoded billing records. The total system demand by land use category was divided by the total area of each land use category.

A summary of the above agencies' water demand factors is included in Table 3.

Table 2
2013 Agency Demand Factor Comparison

Water Demand Factor Classification		Southern California Agencies				
		City of Ventura	City of Thousand Oaks	VCWWD No. 8 (Simi Valley)	Santa Margarita Water District	Irvine Ranch Water District
Low Density Residential	Low Density Residential (2-4.5 du/ac)	-	405 gpd/du	840 gpd/du	-	-
	Residential (0-8 du/ac)	370 gpd/du	-	420 gpd/du	450 gpd/du	405 gpd/du
Medium Density Residential	Medium Density Residential (4.5-15 du/ac)	-	310 gpd/du	-	-	-
	Residential (9-20 du/ac)	250 gpd/du	-	-	300 gpd/du	310 gpd/du
High Density Residential	High Density Residential (15-30 du/ac)	-	180 gpd/du	-	-	-
	Condominium	-	-	259 gpd/du		-
	Multi-Family Apartment	-	-	222 gpd/du		-
	Residential (21+ du/ac)	250 gpd/du	-	-	175 gpd/du	200 gpd/du
Commercial/Industrial/Retail	Commercial/Retail/Industrial/ Hotel	265 gpd/ksf			225 gpd/ksf	
	Public/Institutional					
	Hospital/Assisted Living	545 gpd/bed	-	1.85 gpm/ac	-	230 gpd/ksf
	Commercial	-	130 gpd/ksf	2.00 gpm/ac	225 gpd/ksf	220 gpd/ksf
	Industrial	-	60 gpd/ksf	-	-	-
	Industrial - Light	-	-	2.00 gpm/ac	-	60 gpd/ksf
	Industrial - Heavy	-	-	-	-	5000 gpd/ksf
	Institutional	-	45 gpd/ksf	-	-	-
	School	-	15 gpd/ksf	1.20 gpm/ac	15 gpd/stu	15 gpd/ksf
Parks / Irrigation	Park/Landscape/Irrigation	2,000 gpd/acre	-	-	3.5 AF/ac	3,400 gpd/acre
	Parks, Golf Courses, OpenSpace, Recreation Areas	-	3,400 gpd/acre	-	-	-
	Open Space, Community Park (Passive), Recreation Facility	-	-	-	100 gpd/acre	-
	Community Park (Active)	-	-	-	200 gpd/acre	-
	Community Facility	-	-	-	2,500 gpd/acre	-

Source: Table 3-4 from 2013 CWRR

du/ac = dwelling unit per acre

gpd/du = gallons per day per dwelling unit
gpd/ksf = gallons per day per 1,000 square feet
gpd/bed = gallons per day per bed
gpm/ac = gallons per minute per acre

gpd/stu = gallons per day per student
gpd/acre = gallons per day per acre

Table 3: 2020 Agency Demand Factor Comparison

Water Demand Factor Classification	City of Santa Barbara	City of San Luis Obispo	Irvine Ranch Water District*	City of Oxnard
Single-Family	357 gpd/du	268 gpd/du	405 gpd/du	2,250 gpd/acre
Multi-Family	143 gpd/du	161 gpd/du	300 gpd/du	4,250 gpd/acre
Office	54 gpd/ksf	89 gpd/ksf	72 gpd/ksf	-
Hotel (w/restaurant)	179 gpd/room	109 gpd/room	160 gpd/ksf	-
Hotel/motel (no restaurant)	116 gpd/room			-
Public & Institutional	152 gpd/ksf	-	45 gpd/ksf	-
School	-	-	28 gpd/ksf	1,500 gpd/acre
Multi-Tenant Commercial	152 gpd/ksf	268 gpd/ksf	175 gpd/ksf	2,000 gpd/acre
Single-Use Commercial	134 gpd/ksf	-	-	-
Park/Golf Course	-	1,785 gpd/acre	2,200 gpd/acre	-

*Irvine Ranch Water District has been included in both Tables 2 and 3 since the water demand factors were updated since the 2013 CWRR.

gpd/du = gallons per day per dwelling unit
gpd/ksf = gallons per day per 1,000 square feet
gpd/acre = gallons per day per acre
gpd/room = gallons per day per room

IV. HISTORICAL WATER USE

A. Water Usage Summary

In order to establish the existing (or current) water demands, Ventura Water provided water usage (billing) data from January 2013 through December 2018. The billing data is summarized in Table 5.

It is noted that the billing records include both treated potable water and non-potable water (reclaimed water and untreated raw water). From 2013 through 2018, the average annual demand for both potable and non-potable water was 14,420 acre-feet/year (AFY). The highest water use year was 2013, and the lowest water use year was 2017.

Excluding reclaimed water and raw water, the total average annual potable water demand was 13,736 AFY (2013-2018).

Approximately 64% of all water use is residential. In order to understand the water demand breakdown between the single-family and multi-family residents, the categories are summarized in Table 6. Of the residential water use, approximately 63% is associated with single-family dwelling units. From 2013-2018, the total annual residential water demand was an average of 9,223 AFY.

Table 5
Annual Summary of Water Billing Data (AFY)

	2013	2014	2015	2016	2017	2018	Average
Total - Potable and Non-Potable Water	**16,665**	**15,978**	**13,342**	**13,456**	**13,219 164**	**13,549**	**14,359**
Total - Potable Water Only [1]	**16,003**	**15,230**	**12,668**	**12,768**	**12,495**	**12,886**	**13,675**

[1] Excludes untreated raw water and reclaimed water
AFY = acre feet per year

Table 6
Residential Water Usage Data Summary

	Gallons Per Day (GPD)						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**Average**
Single-Family	6,325,834	5,947,067	4,725,128	4,673,664	4,671,020	4,712,252	5,175,828
Multi-Family	3,450,190	3,323,991	2,899,937	2,896,490	2,867,191	2,912,382	3,058,363
Residential Subtotal (GPD)	**9,776,024**	**9,271,058**	**7,625,065**	**7,570,153**	**7,538,211**	**7,624,635**	**8,234,191**
Residential Subtotal (AFY)	**10,951**	**10,385**	**8,541**	**8,480**	**8,444**	**8,541**	**9,223**

Note: See Appendix A for back-up detail
GPD = gallons per day
AFY= acre feet per year

B. Supply / Production Summary

Ventura Water obtains potable water from three primary sources: 1) the purchase of water from the Casitas Municipal Water District (CMWD or Casitas); 2) the Ventura River; and 3) local groundwater basins. Ventura Water provided a summary of the total water production (supply) from its various potable water sources for the calendar years 2013 through 2018, as shown in Table 7.

The highest production year was 2013, with annual declines every year until 2018, which was the lowest production year. These numbers are in-line with the severe drought that occurred over these 5 years and the significant conservation that occurred.

The total average annual production (excluding reclaimed water) for years 2013 through 2018 was 14,962 AFY.

Table 7 Water Supply / Production Summary (AFY)							
Primary Source	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Average**
CMWD 1	2,710	2,425	3,530	1,987	913	1,383	2,158
CMWD 2	3,047	2,396	1,046	349	1,032	1,145	1,503
Casitas Direct Customers	297	279	272	298	243	188	263
Foster Park Intake Subsurface	1,076	748	449	419	1,280	897	811
Golf Course Well 5	2,527	2,197	1,819	1,352	789	356	1,507
Golf Course Well 6	2,964	2,368	1,768	2,350	1,220	561	1,872
Golf Course Well 7	0	0	0	0	1,816	2,399	703
Mound Well 1	1,717	1,147	590	805	703	910	979
Nye Well 11	0	292	0	2	119	0	69
Nye Well 2	0	0	0	0	0	0	0
Nye Well 7	856	1,064	0	414	1,277	520	689
Nye Well 8	242	1,134	850	1,014	972	459	778
Saticoy Well 2	673	629	320	0	45	31	283
Saticoy Well 3	0	0	1,998	2,898	2,549	3,065	1,752
Victoria Well 1	0	0	0	0	0	0	0
Victoria Well 2	1,596	2,073	1,734	1,866	695	1,619	1,597
TOTAL	**17,705**	**16,751**	**14,376**	**13,752**	**13,651**	**13,534**	**14,962**

AFY = acre feet per year

C. Water Loss Factor

From the source to the customer, all water systems experience some level of water loss. Water loss can be attributed to many things; most typically it is associated with leaks in the system, main breaks, and slight variations in meter accuracy. To increase efficiencies in the water distribution system, water loss audits are conducted to trace the flow of water from its source and treatment, through the water distribution system, and into customer properties. The water loss audit informs water utilities of the volume of water lost and revenue associated with that water loss. Once water loss audits are complete, improvements can be made in water resources management, financial performance, and operational performance.

Water loss is essentially the difference between the water supplied and consumption. A water loss calculation is performed by calculating the difference between the water supplied (all source water produced and supplied to the Ventura Water system including purchases from Casitas) and consumption (billing records for all metered water that is delivered to customers). This water loss calculation was performed for the years 2013 to 2018. The average water loss for 2013 to 2018 was 8.5%.

In September 2014, Senate Bill 1420 was adopted requiring urban retail water suppliers such as Ventura Water to quantify and report on distribution system water loss in the Urban Water Management Plan (UWMP). Ventura Water conducted an audit in accordance with the methods of the American Water Works Association (AWWA) and submitted the audit for calendar year 2015 with the 2015 UWMP.

In October 2015, Senate Bill 555 was adopted requiring Ventura Water to submit validated water loss audits annually to the DWR. Thus, 2016, 2017 and 2018 audits were prepared in accordance with the AWWA method, validated by a third-party technical expert, and submitted to DWR. The average water loss rate for the three years of DWR audited data was 7.0%. The water loss auditing process is still being refined by the State and the standard for allowable water loss volumes will be implemented beginning in 2023

While the AWWA method breaks water loss into multiple categories to provide additional information to the utility, it still calculates water loss as the difference between the water supplied (water that Ventura Water produces and purchases from Casitas) and authorized consumption (the water that is sold to customers). The audit uses the term “non-revenue water” to define this water loss. As shown in Table 8, water loss is variable from year to year due to the fluctuations in the number of maintenance related issues such as water main breaks and damaged hydrants. For the purposes of developing the demand factors, staff chose to average only the water loss percentages for the years that DWR audits were completed. The DWR audits for the years 2016 to 2018 are the most recent data available

and are in compliance with current and upcoming regulations for water loss. The City has also taken actions to reduce losses including operating the Neutral Output Discharge Elimination System (NO-DES) truck to recycle water used for water distribution system flushing, implementation of the Advanced Metering Infrastructure (AMI) project which includes replacement of manually-read water meters with smart meters which include advanced leak detection notification capabilities, and implementation of the City's Capital Improvement Plan which includes replacement of aging pipelines. These actions should reduce the City's water loss rate over the long-term, but year to year variability will still occur.

Table 8 Water Loss				
Year	**Metered (AFY) [1]**	**Supply (AFY) [2]**	**Water Loss (%)**	
2013	16,003	17,705	9.6%	
2014	15,230	16,751	9.1%	
2015	12,668	14,376	11.9%	
2016[3]	12,768	13,752	7.2%	
2017[3]	12,495	13,651	8.5%	
2018[3]	12,886	13,534	4.8%	
Average (Years 2013 – 2018)	**13,675**	**14,962**	**8.5%**	
DWR Audit Average (Years 2016-2018)			**7.0%**	

[1] From Table 5 - Potable Water Only

[2] From Table 7

[3] Years that Level 1 validated audits submitted to DWRAFY = acre feet per year

V. RECOMMENDED WATER DEMAND FACTORS

A. Proposed Demand Factor Categories

The primary goal of this Study is to develop water demand factors based on current water use and across a broader designation of land use types. An iterative process was used to determine which land-use types should have unique demand factors. The intent is to develop water demand factors for each land use type that may use water differently and represents a cross-section of the typical uses within the City. Through discussions and input from Ventura Water staff (including the General Manager), the land use categories that were selected to develop a unique water demand factor for are shown in Table 9.

Table 9 **Proposed Demand Factor Categories**	
Residential	
	Single-Family
	Multi-Family
Non-Residential	
	Office
	Medical/Dental Office
	Assisted Living
	Hotel (w/ restaurant)
	Hotel/Motel (no restaurant)
	Public & Institutional
	School
	Restaurant (sit-down)
	Restaurant (fast-food)
	Brewery
	Bakery/Coffee Shop
	Grocery Store
	Multi-Tenant Commercial [1]
	Single-Use Commercial
	Self-Storage
	Church
	Park/Golf Course
	Gym (w/ pool)
	Car Wash
	Gas Station (w/ car wash)
	Gas Station

[1] To use for proposed multi-tenant developments when tenants have not been specified. Includes at least one higher intensity water use such as a restaurant.

B. Demand Factor Methodology and Process

In order to develop new and updated water demand factors for the proposed land use categories, water usage records were obtained for a cross-section of typical customers within each category.

The methodology and process used to determine the demand factors was based on the following:

- Utilized water billing data from 2013 through 2018.
- Single-family residential demand factor was based on all single-family accounts.
- Multi-family residential demand factor was based on all multi-family accounts.
- Non-residential demand factors were developed by obtaining billing records for approximately 6 to 12 customers who were considered representative of the selected category, when feasible.
- The customers selected for the analysis of each category were selected based on a diverse representation of the City, and broad geographical presence across the City.
- All customers were researched to determine when the business opened, or closed, and the billing data utilized was adjusted accordingly.
- Separate demands factors for City and County were not developed. Ventura Water's service area includes customers in unincorporated Ventura County who are within the City's Sphere of Influence.
- The Thomas Fire occurred in the City in December of 2017. Due to the large (6 years) amount of data utilized, the impacts of water use during the Thomas Fire were deemed negligible for this analysis.
- Water use was classified by the year of the meter read. For example, a meter read in January of 2017 was likely for water use in November/December of 2016, however the water use was classified in the 2017 calendar year.
- Land use data, such as building square footages, acreages, etc. were obtained through City and County resources when available. Google Earth was used in instances when City or County information was not readily available.
- All data from accounts identified as a "fireline" were excluded from the calculations as the usage was negligible. Fireline accounts are for fire protection of residential, commercial, school, and municipal properties.
- Dedicated irrigation meters were included in the demand factor calculations.
- For each customer selected, the billing data was analyzed to determine if there were any anomalies in the data. Anomalies such as a monthly water demand that was multiple times the normal (due to a customer water leaks or high irrigation use) were included in the calculations to account for the variability in water usage.

- If data from a selected customer appeared questionable, the customer was removed from the calculation.
- Data from industrial customers was analyzed and included in Appendix B, but due to extreme variability in water use between customers and the uncertainty of which kind of industrial activities may be proposed in the future, a demand factor for industrial use is not included in this report. The water demands of any proposed industrial use will be assessed on a case by case basis.
- The raw demand factors for each category was based on the average of all customers in that specific category.
- The raw demand factors for each category were an average of the data over the years 2013 through 2018.
- The DWR audited water loss factor of 7% was applied to the raw factor.
- A planning-level contingency factor was applied to the raw factor and the water loss. The methodology used to develop the planning-level contingency is discussed in Section V.C.

C. Demand Factor Contingency

Water consumption varies from year to year depending upon a number of factors, primarily weather and drought. The water demand factors developed herein were based on the average annual water usage from years 2013 through 2018. California experienced a significant drought that spanned the five years from 2012 to 2017. Beginning in 2014, statewide mandates to reduce water consumption were put into place, and water agencies observed significant reductions in water demand, including Ventura Water. In 2014, the State Water Resources Control Board adopted an emergency regulation calling on all Californians to reduce their water by 20%. Therefore, the City of Ventura City Council declared a water shortage emergency in September 2014. In June 2015, the City Council confirmed that the City was in a Stage 3 shortage event with 20% mandatory conservation. Former Governor Brown declared that the drought officially ended in 2017 for the state of California; however, the City of Ventura remained in a shortage event. As of February 2020, the City remains in a Stage 3 shortage event. While many of the state's water consumption reduction mandates have remained in place, water demands in the City and the state have started to move higher again. As shown in Tables 5 and 6, overall water use in 2018 has increased from water use in 2016 and 2017. Since the water demands factors developed herein were calculated based on actual water usage during a significant drought period, it is prudent to account for likely increases in water demand in future years.

In order to determine the appropriate planning-level contingency to apply to the raw demand factor, the water consumption data from 2013 through 2018 was evaluated in a few different ways:

- Between 2013 and 2018, the difference between the high demand year and the low demand year was 22%.
- Between 2013 and 2018, the difference between the high demand year and the average annual demand was 17%.
- Between 2013 and 2018, the difference between the high demand year for all residential customers and the average annual demand for all residential customers was 19%.
- Between 2013 and 2018, the median increase in water demand for the 158 non-residential customers evaluated in this study between the high demand year and the annual average year was 27%.

Based upon the analysis summarized above, it is recommended to apply a planning-level contingency of 20% to the raw factor plus water loss to account for the annual demand variations that are likely to occur.

D. Proposed Demand Factors

Based upon the description of the process detailed above, the proposed water demand factors for Ventura Water are shown in Table 10. The details of the analysis for the multi-family and non-residential customers used to determine the raw demand factors are included in Appendices.

These demand factors will be used to calculate future demands for proposed development projects and also to determine the Water Resources Net Zero Fee for developers. The methodology by which these factors will be utilized to calculate estimated water demands will be detailed in other City reports including the annual Comprehensive Water Resources Report (CWRR) and in the Net Zero Administrative Policies and Procedures document. Demand factors will be reviewed periodically (at least every 5 years) for consistency with current demand patterns and will be updated as necessary.

Table 10 Proposed Demand Factors							
		Raw Factor (gpd)		Water Loss 7.0%	Contingency 20%	Proposed Factor (gpd)	
Residential [1]							
	Single-Family	229.0	/du	16.0	49.0	294	/du
	Multi-Family	163.0	/du	11.4	34.9	209	/du
Non-Residential [2]							
	Office	29.7	/ksf	2.1	6.4	38	/ksf
	Medical/Dental Office	130.7	/ksf	9.1	28.0	168	/ksf
	Assisted Living	70.8	/bed	4.9	15.1	91	/bed
	Hotel (w/ restaurant)	134.2	/room	9.3	28.7	172	/room
	Hotel/Motel (no restaurant)	104.2	/room	7.3	22.3	134	/room
	Public & Institutional	52.6	/ksf	3.7	11.3	68	/ksf
	School	15.4	/student	1.1	3.3	20	/student
	Restaurant (sit-down)	524.6	/ksf	36.5	112.2	673	/ksf
	Restaurant (fast-food)	677.9	/ksf	47.2	145.0	870	/ksf
	Brewery	338.6	/ksf	23.6	72.4	435	/ksf
	Bakery/Coffee Shop	116.4	/ksf	8.1	24.9	149	/ksf
	Grocery Store	121.2	/ksf	8.4	25.9	156	/ksf
	Multi-Tenant Commercial	120.8	/ksf	8.4	25.8	155	/ksf
	Single-Use Commercial	81.9	/ksf	5.7	17.5	105	/ksf
	Self-Storage	223.2	/acre	15.5	47.7	286	/acre
	Church	71.7	/ksf	5.0	15.3	92	/ksf
	Park/Golf Course	1,339.7	/acre	93.3	286.6	1,720	/acre
	Gym (w/ pool)	165.6	/ksf	11.5	35.4	213	/ksf
	Car Wash	841.8	/ksf	58.6	180.1	1,081	/ksf
	Gas Station (w/ car wash)	1,824.4	/ksf	127.1	390.3	2,342	/ksf
	Gas Station	198.5	/ksf	13.8	42.5	255	/ksf

[1] Based on actual water billing data from Years 2013-2018. See Appendix A for details.

[2] Based on actual water billing data from Years 2013-2018. See Appendix B for details.

gpd = gallons per day

du = dwelling unit

ksf = 1,000 square feet

APPENDICES

APPENDIX A

Single-Family Total Units by Year

	Building & Safety	Remove SCC Homes	Remove Thomas Fire Homes	**Total SF Units**
2012	22,577	67	-	**22,510**
2013	22,589	69	-	**22,520**
2014	22,607	69	-	**22,538**
2015	22,660	70	-	**22,590**
2016	22,698	70	-	**22,628**
2017	22,734	71	-	**22,663**
2018	22,889	71	466	**22,818**

Multi-Family Total Units by Year

	Building & Safety	Remove Thomas Fire Apts	**Total MF Units**
2012	18,511	-	**18,511**
2013	18,552	-	**18,552**
2014	18,652	-	**18,652**
2015	18,794	-	**18,794**
2016	18,951	-	**18,951**
2017	18,968	-	**18,968**
2018	19,041	56	**18,985**

Single-Family Total Usage by Year

	Billing Data (HCF)	Remove SCC (HCF) [1]	Remove Thomas Fire (HCF)	Add Assessment District (HCF) [2]	Total Usage (HCF)	**Total Usage (GPD)**
2012	3,118,335	30,025	-	28,001	3,116,311	6,386,303
2013	3,085,754	29,821	-	30,871	3,086,804	6,325,834
2014	2,906,732	33,928	-	29,174	2,901,978	5,947,067
2015	2,313,418	25,895	-	18,188	2,305,711	4,725,128
2016	2,284,926	22,810	-	18,482	2,280,598	4,673,664
2017	2,282,594	22,669	-	19,383	2,279,308	4,671,020
2018	2,312,130	24,824	9,644	21,766	2,299,428	4,712,252

Multi-Family Total Usage by Year

	Billing Data (HCF)	Remove Thomas Fire (HCF)	Total Usage (HCF)	**Total Usage (GPD)**
2012	1,801,182	-	1,801,182	3,691,189
2013	1,683,582	-	1,683,582	3,450,190
2014	1,622,001	-	1,622,001	3,323,991
2015	1,415,076	-	1,415,076	2,899,937
2016	1,413,394	-	1,413,394	2,896,490
2017	1,399,097	-	1,399,097	2,867,191
2018	1,421,340	191	1,421,149	2,912,382

Demand Factors (GPD/DU)

	Single-Family	Multi-Family
2012	284	199
2013	281	186
2014	264	178
2015	209	154
2016	207	153
2017	206	151
2018	207	153

Notes:

[1] Saticoy Country Club (SCC) homes and usage were removed since they are served by a separate water system.

[2] Assessment District (SC 24) usage was added since this is irrigation water used for developments with common areas.

APPENDIX B

		Land Use Units						Water Use (GPD)							Raw Factor / Year (gpd/xx)							Totals (HCF)					
Land Use Category	**User (REDACTED)**	**DU**	**SF**	**Bed**	**Students**	**Room**	**Acres**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Avg.**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Avg.**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Office	Office 1		10,128				0.56	326	340	215	336	301	340	310	32.2	33.6	21.2	33.2	29.7	33.6	30.6	159	166	105	164	147	166
	Office 2		15,129				1.00	547	549	498	488	627	613	554	36.2	36.3	32.9	32.2	41.4	40.5	36.6	267	268	243	238	306	299
	Office 3		16,369				0.42	664	943	914	928	1025	742	869	40.6	57.6	55.8	56.7	62.6	45.3	53.1	324	460	446	453	500	362
	Multi-tenant Offices 1		39,146					1408	1781	1322	1590	1316	1611	1505	36.0	45.5	33.8	40.6	33.6	41.1	38.4	687	869	645	776	642	786
	Multi-tenant Offices 2		22,491					219	248	252	287	332	305	274	9.7	11.0	11.2	12.8	14.8	13.6	12.2	107	121	123	140	162	149
	Chiropractic Office		1,877					39	41	37	20	18	16	29	20.7	21.8	19.7	10.9	9.8	8.7	15.3	19	20	18	10	9	8
	Office and Massage		9,434					186	217	299	562	287	330	314	19.8	23.0	31.7	59.5	30.4	35.0	33.2	91	106	146	274	140	161
	Office 4		19,427					375	367	412	322	320	318	352	19.3	18.9	21.2	16.6	16.5	16.4	18.1	183	179	201	157	156	155
																					29.7						
Medical/Dental Office	Medical Office 1		31,234				2.40	3691	2951	2326	2603	2451	2664	2781	118.2	94.5	74.5	83.3	78.5	85.3	89.0	1801	1440	1135	1270	1196	1300
	Medical Office 2		11,661					594	580	600	611	711	742	640	51.0	49.7	51.5	52.4	61.0	63.6	54.9	290	283	293	298	347	362
	Medical Office 3		4,191					352	350	1100	404	338	371	486	84.1	83.6	262.6	96.3	80.7	88.5	116.0	172	171	537	197	165	181
	Medical and Dental Offices 1		3,224					262	205	217	244	242	246	236	81.4	63.6	67.4	75.6	75.0	76.3	73.2	128	100	106	119	118	120
	Medical and Dental Offices 2		3,188					592	750	736	832	687	666	710	185.8	235.3	230.8	261.0	215.3	208.9	222.8	289	366	359	406	335	325
	Dental Office		5,876					1510	1244	1338	1320	1348	1285	1341	257.0	211.7	227.7	224.6	229.5	218.7	228.2	737	607	653	644	658	627
																					130.7						
Hotel w/ dining	Hotel w/ dining 1					235		36166	28701	27145	24952	22987	23196	27191	153.9	122.1	115.5	106.2	97.8	98.7	115.7	17648	14005	13246	12176	11217	11319
	Hotel w/ dining 2					285		37607	33617	31203	32592	31184	18005	30701	132.0	118.0	109.5	114.4	109.4	63.2	107.7	18351	16404	15226	15904	15217	8786
	Hotel w/ dining 3					82		12105	12626	11693	11595	12296	12163	12080	147.6	154.0	142.6	141.4	149.9	148.3	147.3	5907	6161	5706	5658	6000	5935
	Hotel w/ dining 4					50		12029	10413	3654	9146	6257	5619	7853	240.6	208.3	73.1	182.9	125.1	112.4	157.1	5870	5081	1783	4463	3053	2742
	Hotel w/ dining 5					106		22223	22797	18155	18882	20710	21337	20684	209.6	215.1	171.3	178.1	195.4	201.3	195.1	10844	11124	8859	9214	10106	10412
	Hotel w/ dining 6					119		9251	11866	11482	10083	8999	7253	9822	77.7	99.7	96.5	84.7	75.6	60.9	82.5	4514	5790	5603	4920	4391	3539
																					134.2						
Hotel/Motel w/o dining	Hotel/motel w/o dining 1					42		3461	3627	3681	3560	3519	4113	3660	82.4	86.4	87.6	84.8	83.8	97.9	87.1	1689	1770	1796	1737	1717	2007
	Hotel/motel w/o dining 2					18		2420	2207	1662	2080	1535	2074	1996	134.5	122.6	92.3	115.6	85.3	115.2	110.9	1181	1077	811	1015	749	1012
	Hotel/motel w/o dining 3					200		18561	17405	17044	16563	17417	15946	17156	92.8	87.0	85.2	82.8	87.1	79.7	85.8	9057	8493	8317	8082	8499	7781
	Hotel/motel w/o dining 4					151		20698	19499	18054	13993	12427	13150	16304	137.1	129.1	119.6	92.7	82.3	87.1	108.0	10100	9515	8810	6828	6064	6417
	Hotel/motel w/o dining 5					37		4658	3781	3635	4586	5306	5525	4582	125.9	102.2	98.3	124.0	143.4	149.3	123.8	2273	1845	1774	2238	2589	2696
	Hotel/motel w/o dining 6					142		17870	17575	13325	15761	15874	12991	15566	125.8	123.8	93.8	111.0	111.8	91.5	109.6	8720	8576	6502	7691	7746	6339
																					104.2						
Public & Institutional	Public & Institutional 1		10,300				2.08	689	486	795	465	488	666	598	66.9	47.2	77.2	45.2	47.4	64.7	58.1	336	237	388	227	238	325
	Public & Institutional 2		52,931				1.33	3560	2762	996	1187	1215	1121	1807	67.3	52.2	18.8	22.4	23.0	21.2	34.1	1737	1348	486	579	593	547
	Public & Institutional 3		37,675					4443	2933	2750	2633	3357	3693	3301	117.9	77.8	73.0	69.9	89.1	98.0	87.6	2168	1431	1342	1285	1638	1802
	Fire Station 1		4,550					381	361	303	283	365	385	346	83.8	79.3	66.7	62.2	80.2	84.7	76.1	186	176	148	138	178	188
	Fire Station 2		3,725					117	107	86	90	102	105	101	31.4	28.6	23.1	24.2	27.5	28.1	27.1	57	52	42	44	50	51
	Fire Station 3		7,680					279	320	135	234	518	158	274	36.3	41.6	17.6	30.4	67.5	20.5	35.7	136	156	66	114	253	77
	Library		41,900					703	748	1867	3183	2578	1387	1744	16.8	17.9	44.6	76.0	61.5	33.1	41.6	343	365	911	1553	1258	677
	Public & Institutional 4		11,575					1041	975	828	449	416	475	697	89.9	84.3	71.5	38.8	35.9	41.1	60.3	508	476	404	219	203	232
																					52.6						
School	College				11,727			88625	95152	29022	72681	50596	94131	71701	7.6	8.1	2.5	6.2	4.3	8.0	6.1	43246	46431	14162	35466	24689	45933
	High School 1				1,715			35220	28502	19948	26321	19743	21838	25262	20.5	16.6	11.6	15.3	11.5	12.7	14.7	17186	13908	9734	12844	9634	10656
	High School 2				962			3554	4086	3658	4568	3545	4767	4030	3.7	4.2	3.8	4.7	3.7	5.0	4.2	1734	1994	1785	2229	1730	2326
	High School 3				1,980			31623	32100	19282	27112	21139	19934	25198	16.0	16.2	9.7	13.7	10.7	10.1	12.7	15431	15664	9409	13230	10315	9727
	Middle School 1				892			19026	22784	8054	11249	9849	9208	13362	21.3	25.5	9.0	12.6	11.0	10.3	15.0	9284	11118	3930	5489	4806	4493
	Middle School 2				887			17007	18350	10488	12226	10697	15401	14028	19.2	20.7	11.8	13.8	12.1	17.4	15.8	8299	8954	5118	5966	5220	7515
	Middle School 3				1,107			26379	21368	11318	12933	10017	10880	15483	23.8	19.3	10.2	11.7	9.0	9.8	14.0	12872	10427	5523	6311	4888	5309
	Elementary School 1				432			7808	8505	4404	6408	6252	4963	6390	18.1	19.7	10.2	14.8	14.5	11.5	14.8	3810	4150	2149	3127	3051	2422
	Elementary School 2				211			6732	6148	4750	5002	6293	5677	5767	31.9	29.1	22.5	23.7	29.8	26.9	27.3	3285	3000	2318	2441	3071	2770
	Elementary School 3				547			15048	10345	7468	11544	8591	13655	11108	27.5	18.9	13.7	21.1	15.7	25.0	20.3	7343	5048	3644	5633	4192	6663
	Elementary School 4				431			11050	10499	9140	8644	8179	14396	10318	25.6	24.4	21.2	20.1	19.0	33.4	23.9	5392	5123	4460	4218	3991	7025
																					15.4						
Assisted Living	Assisted Living 1		55,910	60				10531	4556	4799	4799	2371	5088	5358	175.5	75.9	80.0	80.0	39.5	84.8	89.3	5139	2223	2342	2342	1157	2483
	Assisted Living 2		10,450	54				2451	2586	2943	2428	2334	2791	2589	45.4	47.9	54.5	45.0	43.2	51.7	47.9	1196	1262	1436	1185	1139	1362
	Assisted Living 3		8,000	43				1902	1894	1967	1900	1982	2019	1944	44.2	44.0	45.8	44.2	46.1	46.9	45.2	928	924	960	927	967	985
	Assisted Living 4		15,120	49				1873	2068	1857	1551	1666	1820	1806	38.2	42.2	37.9	31.7	34.0	37.1	36.9	914	1009	906	757	813	888
	Assisted Living 5		69,600	100				7220	8320	7619	7876	8527	8162	7954	72.2	83.2	76.2	78.8	85.3	81.6	79.5	3523	4060	3718	3843	4161	3983
	Assisted Living 6		14,607	49				2902	3127	2410	2133	2371	1814	2460	59.2	63.8	49.2	43.5	48.4	37.0	50.2	1416	1526	1176	1041	1157	885
	Assisted Living 7		93,486	121				17925	18749	15481	15899	15577	14374	16334	148.1	155.0	127.9	131.4	128.7	118.8	135.0	8747	9149	7554	7758	7601	7014
	Assisted Living 8		139,050	313				32625	34922	33523	29102	27381	30996	31425	104.2	111.6	107.1	93.0	87.5	99.0	100.4	15920	17041	16358	14201	13361	15125
	Assisted Living 9		26,275	96				4549	4914	5310	4949	5785	5080	5098	47.4	51.2	55.3	51.6	60.3	52.9	53.1	2220	2398	2591	2415	2823	2479
																					70.8						
Brewery	Brewery 1		13,820								2646	2685	4586	3306				191.4	194.3	331.9	239.2				1291	1310	2238
	Brewery 2		4,357								1777	2631	2826	2411				407.8	603.9	648.6	553.4				867	1284	1379
	Brewery 3		5,599									912	1297	1105					162.9	231.7	197.3					445	633
	Brewery 4		5,312					2240	2390	1736	1721	1980	1553	1937	421.7	449.8	326.8	324.1	372.7	292.4	364.6	1093	1166	847	840	966	758
																					338.6						
Restaurant (sit down)	Restaurant (sit down) 1		3,750					1064	1312	1504	996	805	430	1019	283.6	349.7	401.1	265.6	214.8	114.8	271.6	519	640	734	486	393	210
	Restaurant (sit down) 2		2,340					650	650	658	904	678	785	721	277.6	277.6	281.1	386.2	289.9	335.4	308.0	317	317	321	441	331	383
	Restaurant (sit down) 3		10,199					4181	4535	4468	5078	4814	4746	4637	409.9	444.7	438.0	497.9	472.0	465.4	454.6	2040	2213	2180	2478	2349	2316
	Restaurant (sit down) 4		9,344					6119	6070	5943	7025	7404	6279	6473	654.9	649.6	636.0	751.8	792.4	672.0	692.8	2986	2962	2900	3428	3613	3064
	Restaurant (sit down) 5		4,612					2765	3060	3375	3609	3648	3941	3399	599.4	663.4	731.8	782.5	790.9	854.5	737.1	1349	1493	1647	1761	1780	1923
	Restaurant (sit down) 6		4,000					2910	3053	2535	3365	3480	2197	2923	727.5	763.4	633.8	841.2	869.9	549.2	730.8	1420	1490	1237	1642	1698	1072
	Restaurant (sit down) 7		5,902					2566	2344	1892	2025	2197	2164	2198	434.7	397.2	320.5	343.1	372.2	366.7	372.4	1252	1144	923	988	1072	1056
	Restaurant (sit down) 8		2,829					2025	2068	1764	1699	1523	1603	1780	715.7	730.9	623.7	600.5	538.2	566.5	629.3	988	1009	861	829	743	782
																					524.6						
Restaurant (fast food)	Restaurant (fast food) 1		5,250					2687	2205	1832	1855	1853	1816	2041	511.7	420.0	349.0	353.3	352.9	345.8	388.8	1311	1076	894	905	904	886
	Restaurant (fast food) 2		3,132					2201	2060	1963	2295	2213	1527	2043	702.7	657.6	626.8	732.8	706.7	487.5	652.4	1074	1005	958	1120	1080	745
	Restaurant (fast food) 3		3,275					1703	1906	1590	1490	1494	1344	1588	520.0	581.9	485.6	454.9	456.2	410.5	484.8	831	930	776	727	729	656
	Restaurant (fast food) 4		3,320					1523	1508	1260	1141	1023	984	1240	458.6	454.3	379.6	343.8	308.0	296.3	373.4	743	736	615	557	499	480
	Restaurant (fast food) 5		2,666					4808	5023	4806	5468	5593	4672	5061	1803.3	1884.0	1802.6	2050.9	2097.7	1752.6	1898.5	2346	2451	2345	2668	2729	2280
	Restaurant (fast food) 6		2,418					1652	2506	1293	1275	1457	1590	1629	683.1	1036.5	534.8	527.2	602.6	657.7	673.6	806	1223	631	622	711	776
	Restaurant (fast food) 7		2,955					2221	2014	1629	1410	1131	2519	1821	751.8	681.7	551.3	477.1	382.8	852.3	616.2	1084	983	795	688	552	1229
	Restaurant (fast food) 8		3,500					1039	1162	1271	1361	1207	1010	1175	296.9	332.0	363.0	388.8	344.9	288.7	335.7	507	567	620	664	589	493
																					677.9						

APPENDIX B

		Land Use Units						Water Use (GPD)							Raw Factor / Year (gpd/xx)							Totals (HCF)					
Land Use Category	**User (REDACTED)**	**DU**	**SF**	**Bed**	**Students**	**Room**	**Acres**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Avg.**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Avg.**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Bakery/Coffee Shop	Bakery 1		2,100					111	135	133	197	268	141	164	52.7	64.4	63.4	93.7	127.8	67.3	78.2	54	66	65	96	131	69
	Bakery/Coffee Shop		3,000					424	451	465	725	430	373	478	141.4	150.3	155.1	241.8	143.5	124.3	159.4	207	220	227	354	210	182
	Bakery 2		2,550					98	107	113	113	98	107	106	38.6	41.8	44.2	44.2	38.6	41.8	41.5	48	52	55	55	48	52
	Coffee Shop 1		2,100					807	643	611	693	650	758	694	384.5	306.4	290.8	329.8	309.3	361.1	330.3	394	314	298	338	317	370
	Coffee Shop 2		1,500							92	98	109	115	103			61.5	65.6	72.4	76.5	69.0			45	48	53	56
	Bakery 3		2,100					119	131	115	94	94	115	111	56.6	62.5	54.6	44.9	44.9	54.6	53.0	58	64	56	46	46	56
	Bakery 4		2,100								162	164	201	176				77.1	78.1	95.6	83.6				79	80	98
																					116.4						
Grocery Store	Grocery Store 1		23,000					1662	1986	2693	2295	2250	1469	2059	72.3	86.3	117.1	99.8	97.8	63.9	89.5	811	969	1314	1120	1098	717
	Grocery Store 2		42,655					6363	6707	5478	5943	6740	6298	6255	149.2	157.2	128.4	139.3	158.0	147.6	146.6	3105	3273	2673	2900	3289	3073
	Grocery Store 3		78,410					14714	17487	12282	16659	17186	9351	14613	187.7	223.0	156.6	212.5	219.2	119.3	186.4	7180	8533	5993	8129	8386	4563
	Grocery Store 4		8,232					363	346	342	402	447	449	391	44.1	42.1	41.6	48.8	54.3	54.5	47.5	177	169	167	196	218	219
	Grocery Store 5		46,507					6748	7853	8740	7355	9531	13099	8888	145.1	168.9	187.9	158.1	204.9	281.7	191.1	3293	3832	4265	3589	4651	6392
	Grocery Store 6		51,078					2426	2394	3191	4191	4445	2519	3194	47.5	46.9	62.5	82.0	87.0	49.3	62.5	1184	1168	1557	2045	2169	1229
	Grocery Store 7		15,236					2113	2027	1752	2025	1484	1988	1898	138.7	133.0	115.0	132.9	97.4	130.5	124.6	1031	989	855	988	724	970
																					121.2						
Multi-Tenant Commercial*	Multi-tenant Commercial (w/ food) 1		13,978					844	906	1080	816	789	801	873	60.4	64.8	77.3	58.4	56.4	57.3	62.4	412	442	527	398	385	391
	Multi-tenant Commercial (w/ food) 2		16,519					1795	1926	2717	3711	2197	2830	2530	108.7	116.6	164.5	224.7	133.0	171.3	153.1	876	940	1326	1811	1072	1381
	Multi-tenant Commercial (w/ food) 3		246,928					34961	31402	29951	27772	27307	26908	29717	141.6	127.2	121.3	112.5	110.6	109.0	120.3	17060	15323	14615	13552	13325	13130
	Multi-tenant Commercial (w/ food) 4		9,278					762	791	744	1195	676	1141	885	82.2	85.3	80.2	128.8	72.9	123.0	95.4	372	386	363	583	330	557
	Multi-tenant Commercial (w/ food) 5		14,248					3320	2760	2992	2963	2826	2383	2874	233.0	193.7	210.0	208.0	198.3	167.3	201.7	1620	1347	1460	1446	1379	1163
	Multi-tenant Commercial (w/ food) 6		62,354					7554	7953	7515	6550	6476	7794	7307	121.1	127.6	120.5	105.0	103.9	125.0	117.2	3686	3881	3667	3196	3160	3803
	Multi-tenant Commercial (w/ food) 7		9,701					1588	838	627	574	637	1303	928	163.7	86.4	64.6	59.1	65.7	134.4	95.7	775	409	306	280	311	636
																					120.8						
Single-Use Commercial	Bike Shop		7,000					1137	1682	512	689	734	664	903	162.5	240.4	73.2	98.4	104.8	94.9	129.0	555	821	250	336	358	324
	Drug Store		28,140					850	830	881	785	205	506	676	30.2	29.5	31.3	27.9	7.3	18.0	24.0	415	405	430	383	100	247
	Retail 1		37,430					7433	5890	6009	5925	3576	3529	5393	198.6	157.4	160.5	158.3	95.5	94.3	144.1	3627	2874	2932	2891	1745	1722
	Retail 2		46,455					2500	2801	2492	1406	1797	1230	2038	53.8	60.3	53.6	30.3	38.7	26.5	43.9	1220	1367	1216	686	877	600
	Auto Parts Retail		6,785					684	1098	1744	2308	1516	1059	1402	100.9	161.9	257.0	340.1	223.5	156.2	206.6	334	536	851	1126	740	517
	Thrift Store		12,075					115	322	148	117	139	90	155	9.5	26.6	12.2	9.7	11.5	7.5	12.8	56	157	72	57	68	44
	Retail 3		134,625					4468	6619	3248	4381	4595	4660	4662	33.2	49.2	24.1	32.5	34.1	34.6	34.6	2180	3230	1585	2138	2242	2274
	Retail 4		16,400					1221	1496	1621	918	1131	1412	1300	74.5	91.2	98.8	56.0	69.0	86.1	79.3	596	730	791	448	552	689
	Retail 5		30,000					701	740	668	840	508	588	674	23.4	24.7	22.3	28.0	16.9	19.6	22.5	342	361	326	410	248	287
	Retail 6		7,707					580	527	889	932	1287	1447	944	75.3	68.3	115.4	121.0	167.0	187.7	122.4	283	257	434	455	628	706
																					81.9						
Industrial	Industrial 1		169,644					42988	47337	36060	31971	29797	34053	37035	253.4	279.0	212.6	188.5	175.6	200.7	218.3	20977	23099	17596	15601	14540	16617
	Industrial 2		131,495						2734	2578	2449	2084	3502	2669		20.8	19.6	18.6	15.8	26.6	20.3		1334	1258	1195	1017	1709
	Industrial 3		97,238					114819	123365	136378	144456	149705	133046	133628	1180.8	1268.7	1402.5	1485.6	1539.6	1368.2	1374.2	56028	60198	66548	70490	73051	64922
	Industrial 4		25,795				4.29	4570	9652	3722	7876	6052	6548	6403	177.2	374.2	144.3	305.3	234.6	253.8	248.2	2230	4710	1816	3843	2953	3195
	Industrial 5		19,227				1.14	785	1100	1055	1234	687	609	912	40.8	57.2	54.9	64.2	35.7	31.7	47.4	383	537	515	602	335	297
	Industrial 6		71,864					1754	2047	1760	1627	1223	1103	1586	24.4	28.5	24.5	22.6	17.0	15.3	22.1	856	999	859	794	597	538
	Industrial 7		14,070					1023	1344	1340	1842	1900	2447	1649	72.7	95.5	95.3	130.9	135.0	173.9	117.2	499	656	654	899	927	1194
	Industrial 8		8,125					4228	3043	2443	2019	1654	1836	2537	520.3	374.6	300.7	248.4	203.5	226.0	312.3	2063	1485	1192	985	807	896
	Industrial 9		85,770					9515	9263	8583	10318	15378	16798	11643	110.9	108.0	100.1	120.3	179.3	195.9	135.7	4643	4520	4188	5035	7504	8197
	Industrial 10		14,690					20188	14571	13099	13064	10497	11734	13859	1374.3	991.9	891.7	889.3	714.5	798.8	943.4	9851	7110	6392	6375	5122	5726
																					343.9						
Self Storage	Self-Storage 1		72,394			600	3.31	273	152	227	350	297	316	269	82.3	45.8	68.7	105.9	89.8	95.3	81.3	133	74	111	171	145	154
	Self-Storage 2		61,265				3.04	633	598	514	260	303	328	440	208.3	196.8	169.2	85.6	99.8	107.9	144.6	309	292	251	127	148	160
	Self-Storage 3					545	2.66	404	326	416	277	240	316	330	151.8	122.5	156.4	104.0	90.1	118.6	123.9	197	159	203	135	117	154
	Self-Storage 4					671	4.05	2896	2201	1230	1045	1221	611	1534	715.0	543.4	303.6	258.1	301.6	150.8	378.7	1413	1074	600	510	596	298
	Self-Storage 5					697	3.05	1439	1580	1154	748	1082	820	1137	471.7	518.0	378.3	245.2	354.8	268.8	372.8	702	771	563	365	528	400
	Self-Storage 6						8.79	5095	2941	1297	646	609	1953	2090	579.6	334.6	147.6	73.4	69.2	222.2	237.8	2486	1435	633	315	297	953
																					223.2						
Church	Church 1		60,320					3988	4322	3652	4062	4127	4496	4108	66.1	71.7	60.5	67.3	68.4	74.5	68.1	1946	2109	1782	1982	2014	2194
	Church 2		27,375					1498	1473	1238	984	1521	1350	1344	54.7	53.8	45.2	35.9	55.5	49.3	49.1	731	719	604	480	742	659
	Church 3		75,120					2652	2361	1010	484	318	418	1207	35.3	31.4	13.4	6.4	4.2	5.6	16.1	1294	1152	493	236	155	204
	Church 4		33,300					1355	1289	1000	951	922	898	1069	40.7	38.7	30.0	28.6	27.7	27.0	32.1	661	629	488	464	450	438
	Church 5		18,950					742	449	279	562	361	680	512	39.1	23.7	14.7	29.6	19.0	35.9	27.0	362	219	136	274	176	332
	Church 6		11,500					1459	1049	768	824	605	1582	1048	126.9	91.2	66.8	71.6	52.6	137.6	91.1	712	512	375	402	295	772
	Church 7		16,175					4127	3617	2627	4174	5093	1562	3533	255.2	223.6	162.4	258.1	314.8	96.5	218.4	2014	1765	1282	2037	2485	762
																					71.7						
Park/Golf Course	Park 1						3.58	5244	3545	2592	3242	3439	4092	3693	1464.9	990.3	724.1	905.6	960.5	1143.2	1031.4	2559	1730	1265	1582	1678	1997
	Park 2						7.18	14665	10911	6517	8746	5209	9589	9273	2042.5	1519.6	907.6	1218.2	725.5	1335.5	1291.5	7156	5324	3180	4268	2542	4679
	Park 3						3.35	5183	3652	3236	2746	2172	2435	3237	1547.1	1090.1	965.9	819.7	648.4	726.7	966.3	2529	1782	1579	1340	1060	1188
	Park 4						30.33	32848	32555	33928	32924	30307	34691	32876	1083.0	1073.4	1118.6	1085.5	999.3	1143.8	1083.9	16029	15886	16556	16066	14789	16928
	Park 5						18.31	39900	36689	38474	36295	38757	36668	37797	2179.1	2003.8	2101.2	1982.3	2116.7	2002.6	2064.3	19470	17903	18774	17711	18912	17893
	Park 6						89.70	81255	79319	86430	80897	76081	81378	80893	905.9	884.3	963.5	901.9	848.2	907.2	901.8	39650	38705	42175	39475	37125	39710
	Park 7						4.99	12616	10523	6134	7810	9855	9238	9363	2528.2	2108.9	1229.2	1565.1	1975.0	1851.4	1876.3	6156	5135	2993	3811	4809	4508
	Park 8						4.99	5468	3476	4330	4043	4039	3066	4070	1095.7	696.5	867.8	810.3	809.5	614.4	815.7	2668	1696	2113	1973	1971	1496
	Park 9						7.11	9890	6318	6882	8697	8814	9369	8328	1391.0	888.6	967.9	1223.2	1239.7	1317.8	1171.4	4826	3083	3358	4244	4301	4572
	Golf Course 1						253.50	253754	275198	270850	276123	265214	265306	267741	1001.0	1085.6	1068.4	1089.2	1046.2	1046.6	1056.2	123824	134288	132166	134739	129416	129461
	Golf Course 2						92.00	213682	252676	231302	223320	220785	226140	227984	2322.6	2746.5	2514.2	2427.4	2399.8	2458.0	2478.1	104270	123298	112868	108973	107736	110349
																					1339.7						
Gyms w/ pools	Gym w/ pool 1		114,625					11228	9421	9527	9855	8994	9638	9777	98.0	82.2	83.1	86.0	78.5	84.1	85.3	5479	4597	4649	4809	4389	4703
	Gym w/ pool 2		23,000					7435	7736	5240	6154	6236	6285	6514	323.3	336.4	227.8	267.6	271.1	273.3	283.2	3628	3775	2557	3003	3043	3067
	Gym w/ pool 3		42,000					4972	5420	4812	5142	6015	5947	5385	118.4	129.1	114.6	122.4	143.2	141.6	128.2	2426	2645	2348	2509	2935	2902
																					165.6						
Car Wash (only)	Car wash 1		1,462				0.18	1615	1082	1068	1215	1103	1062	1191	1104.6	740.1	730.3	831.2	754.1	726.1	814.4	788	528	521	593	538	518
	Car wash 2		3,555				0.60	6361	7523	8175	8140	7859	7617	7613	1789.3	2116.2	2299.5	2289.7	2210.7	2142.7	2141.4	3104	3671	3989	3972	3835	3717
	Car wash 3		3,225				0.36	357	293	191	232	361	1096	421	110.6	90.9	59.1	71.8	111.8	340.0	130.7	174	143	93	113	176	535
	Car wash 4		6,050				0.19	1371	1516	1795	2096	1842	1564	1698	226.6	250.7	296.7	346.5	304.5	258.5	280.6	669	740	876	1023	899	763
																					841.8						
Gas Station w/ Car Wash	Gas Station w/ Car Wash 1		9,973				1.16	8818	11650	9976	10564	11921	13062	10999	884.2	1168.2	1000.3	1059.3	1195.3	1309.8	1102.8	4303	5685	4868	5155	5817	6374
	Gas Station w/ Car Wash 2		2,854				0.54	1793	1541	1908	2246	3285	2961	2289	628.3	540.0	668.5	787.0	1151.0	1037.6	802.1	875	752	931	1096	1603	1445
	Gas Station w/ Car Wash 3		1,377				0.72	758	762	646	1633	1685	1926	1235	550.7	553.6	468.8	1186.1	1223.3	1399.0	896.9	370	372	315	797	822	940
	Gas Station w/ Car Wash 4		3,125				1.66	5578	6502	5933	6738	6402	7068	6370	1785.0	2080.8	1898.5	2156.2	2048.7	2261.8	2038.5	2722	3173	2895	3288	3124	3449
	Gas Station w/ Car Wash 5		2,602				0.51	2769	4170	3705	3160	1496	3381	3114	1064.0	1602.8	1424.0	1214.5	574.9	1299.5	1196.6	1351	2035	1808	1542	730	1650
	Gas Station w/ Car Wash 6		1,157				0.51	5576	5810	6252	6453	4968	5023	5680	4819.5	5021.4	5404.0	5577.6	4293.5	4341.3	4909.6	2721	2835	3051	3149	2424	2451
Gas Station	Gas Station 1		1,274				0.25	64	195	78	64	70	68	89	49.9	152.8	61.1	49.9	54.7	53.1	70.2	31	95	38	31	34	33
	Gas Station 2		3,517				0.60	1164	898	1326	2084	1603	1078	1359	331.0	255.2	377.0	592.6	455.7	306.5	386.3	568	438	647	1017	782	526
	Gas Station 3		644				0.23	74	94	33	23	27	31	47	114.6	146.4	50.9	35.0	41.4	47.7	72.7	36	46	16	11	13	15
	Gas Station 4		1,848				0.51	391	445	244	201	205	201	281	211.8	240.6	132.0	108.7	110.9	108.7	152.1	191	217	119	98	100	98
	Gas Station 5		1,595				0.49	617	469	453	400	371	398	451	386.7	294.2	283.9	250.5	232.6	249.3	282.9	301	229	221	195	181	194
	Gas Station 6		1,596				0.28	482	299	324	318	346	406	362	301.7	187.5	202.9	199.0	217.0	254.2	227.1	235	146	158	155	169	198
																					198.5						