2020 URBAN WATER MANAGEMENT PLAN

FOR

CRESCENT CITY, CALIFORNIA

Prepared for:

The City of Crescent City
Crescent City, California 95531

June 2021

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1.0 INTRODUCTION AND LAY DESCRIPTION

This Urban Water Management Plan (UWMP) has been prepared for the City of Crescent City in compliance with requirements of the California Department of Water Resources (DWR) pursuant to the Urban Water Management Planning Act (UWMP Act) and the Water Conservation Bill of 2009. Crescent City recognizes that water planning is an essential function of water suppliers that becomes critical as California grapples with ongoing drought and expected long-term climate changes.

This update was prepared and adopted during the spring of 2021. The data used for preparing this report comes primarily from the City of Crescent City's operational records. Figures relating to watershed runoff were obtained from the United States Geological Survey. Current and projected population figures for the City of Crescent City service area are based on 2010 data acquired from the 2010 U.S. Census Bureau and the California Department of Finance.

It should be noted that Crescent City is located in a high rainfall, moderate temperature climate with abundant water supplies.

1.1 Urban Water Management Planning Act of 1983

The UWMP Act requires water agencies to develop Urban Water Management Plans (UWMPs). The UWMPs provide a framework for long term water planning and informs the public of a supplier's plans for long-term resource planning that ensures adequate water supplies for existing and future demands. The California Water Code (CWC) requires urban water suppliers to report, describe, and evaluate;

- Water deliveries and uses;
- Water supply sources;
- Efficient water uses;
- Demand management measures; and
- Water shortage contingency planning.

1.2 Water Conservation Act of 2009 (SB X7-7)

The Water Conservation Act of 2009 requires retail urban water suppliers to report the following in their UWMPs:

- Base Daily per Capita Water Use (Baseline GPCD);
- 2015 Interim Urban Water Use Target;
- 2020 Urban Water Use Target; and
- Compliance Daily per Capita Water Use.

1.3 Lay Description

The assessments contained included a review and evaluation of historic precipitation data, historic Smith River discharge (flow), and historic groundwater elevations in the Smith River Plain Groundwater Basin. Based on these assessments, the Crescent City water supply (Smith River Underflow) is not currently experiencing the impact of drought and has been reliable even during periods of record low precipitation.

It is predicted that the Crescent City water supply will be reliable even during periods of record low precipitation (single driest year and driest 5 years) into the future for the planning period (25 years).

2.0 PLAN PREPARATION

This Section provides information on the Crescent City process for developing the UWMP, including efforts in coordination and outreach.

2.1 Basis for Preparing a Plan

> ***Requirement:*** *"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems (CWC 10617).*

The City of Crescent City has greater than 3,000 water connections (customers), is an urban water supplier, and is required to prepare and submit a UWMP under CWC 10617, (Table 2-1). Crescent City operates a Public Water System (PWS). During the preparation of this updated plan contact was made with the municipalities that the City of Crescent City supplies water to including;

- Del Norte County,
- Meadowbrook;
- Church Tree Community Services District;
- Bertsch Oceanview Community Services District; and
- Pelican Bay State Prison.

2.2 Regional Planning

The PWSs that are supplied water from the City of Crescent City have been informed of the preparation of the City of Crescent City's 2020 UWMP. The City is preparing an individual UWMP, (Table 2-2).

2.3 Fiscal or Calendar Year and Units of Measure

Crescent City is reporting water data on a calendar year basis. Water volume data will be reported in millions of gallons for the entire 2020 UWMP, (Table 2-3).

2.4 Coordination and Outreach

> ***Requirement:*** *An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c). (CWC 10631).*

The City of Crescent City does not rely on a wholesale agency for a source of water and is not a wholesale provider of water (Table 2-4).

Requirement: *Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. (CWC 10620 (d)(2)).*

During the preparation of this updated plan notices were provided to, and contact was made with, the municipalities that the City of Crescent City supplies water to including;

- Del Norte County;
- Meadowbrook;
- Church Tree Community Services District;
- Bertsch Oceanview Community Services District; and
- Pelican Bay State Prison.

2.5 Notices to Cities and Counties.

Requirement*: Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. (CWC 10621 (b)).*

Crescent City provided notices of preparation of the 2020 UWMP to:

- Del Norte County;
- Meadowbrook;
- Church Tree Community Services District;
- Bertsch Oceanview Community Services District; and
- Pelican Bay State Prison.

Copies of the notification letters are included in Appendix A.

3.0 SYSTEM DESCRIPTION

This Section includes a description of the Crescent City service area, climate, Public Water System, and City organizational structure and history.

3.1 General Description

***Requirement**: Describe the service area of the supplier. (CWC 10631 (b)).*

Crescent City is located on Hwy 101 on the Northern California coast about 20 miles south of the Oregon border, and is the only incorporated city in Del Norte County. Crescent City is approximately 1.4 square miles in size. Del Norte County is characterized by rugged mountains split by meandering streams and rivers that flow to the ocean. It has a rugged, "untamed" nature about it, with sequoia/redwood forests prevalent throughout the area.

Fishing, agriculture, tourism, timber and government are the primary economic activities of the area. The economic influence of the timber and fishing industries has been dwindling, and their future is uncertain. The Department of Corrections opened Pelican Bay State Prison in the area in December 1989 and it is estimated that, when at 100% capacity, 4,000 inmates will be housed there with a staff of over 1,500. The area's largest employers are federal, state and local government agencies.

Based on the GIS analysis of 2000 US Census Bureau data at the block level, the population of the Crescent City water service area was 16,968, including the Pelican Bay State Prison population. Based on the GIS analysis of 2010 US Census data at the block level, the population of the Crescent City water service area was 17,840 including the Pelican Bay State Prison population (Figures 1 through 5).

Population from 1994-2009 and 2011-2020 are based on the persons per connection. Projections of populations from 2021-2045 are based on California Department of Finance (CA DOF) the projected population growth for the planning period (2021-2045) as indicated below:

- 2021-2025, -0.49% per year,
- 2026-2030, -0.54% per year,
- 2031-2035, -0.45% per year,
- 2036-2040, -0.36% per year, and
- 2041-2045, -0.27% per year (Table 3-1).

The City supplies water to three water districts as well as customers in the urban service area and within the City's jurisdictional area. The districts hire by contract the Crescent City crews and staff to maintain their system and to perform accounting. The districts are Meadowbrook, Church Tree Community Service District, and Bertsch Ocean View Community Service District.

The City of Crescent City's only water source is provided by Smith River underflow associated with the Smith River Plain Groundwater Basin. The Smith provides an abundant supply of high quality, fresh water. The drainage basin of the Smith River, which covers about 700 square miles, produces runoff of about 2.9 million Acre Feet per

Year (AFY), (944,265 million gallons per year (MGY)) making it the highest water-producing drainage in California based on runoff per square mile.

Improvements to the City's water distribution and supply system began in May 2000 and were completed in August 2002. The improvements, described in more detail below, were aimed at increasing water supply transmission capacity to meet future system demands, eliminating low-pressure regions within the service area, and reducing operating costs. The capacity of the upgraded transmission and storage system is about 6,700 AFY (2,181 MGY). Under Water Resources Control Board water rights permits, the appropriation from the Smith River (underflow) is specified as an average of 12.8 cubic feet per second (cfs) (8.3 million gallons per day (MGD)) with a maximum annual diversion of 3,666 AFY (1,194 MGY).

Water is supplied to the City from the Smith River via a well point type structure known and patented as a "Ranney Well." The Ranney Well, the Elevated Reservoir (a 50,000-gallon storage reservoir), and the transmission lines supplying the City's water system were constructed in 1958 (Figure 8). The well is located on the riverbank approximately 8.5 miles north of the City limits (Figures 6 and 7). The Ranney Well is capable of producing about 6,700 AFY (2,181 MGY). Water is pumped from the source to a chlorination facility off Kings Valley Road approximately one mile from the Smith River. Chlorination (disinfection) is presently the only treatment the raw water requires. The chlorination building houses dual chlorinators, chemical storage area and an emergency power generator. In approximately 1989, the Department of Corrections, in addition to upgrading the pumps at the Ranney Collector, also constructed an 18-inch transmission main parallel to the original 14-inch main, between the Ranney Collector and Pelican Bay State Prison's 12-inch service lateral. Just south of and after the chlorination facility the lateral tees from the 18-inch and interconnects by cross fitting to the 1958 14-inch transmission main, which continues to the 50,000-gallon Elevated Tank and pressure control facility near Hwy 101 and Wonderstump Road. The other section reduces to 12-inches and supplies the Pelican Bay State Prison. From the Ranney Collector and through the chlorination facility, water is pumped to the 50,000-gallon Elevated Reservoir, an equalization-storage tank located some 14,750 feet from the Ranney Well. The most recent work on the Ranney Collector pumps was done in 1989 and involved replacing two pumps and rebuilding the third. Each pump is capable of moving approximately 1,680 gallons per minute (gpm) at 235 feet of total dynamic head. Field pump flow indicated that the three pumps together produce between 6.0 and 6.2 MGD. Variable Frequency Drives were added to the pumps in 2011. A new water system control and data acquisition (SCADA) system was installed and commissioned in 2020. From the Elevated Reservoir water flows by gravity approximately two miles through a recently upgraded 24-inch water transmission main to the City's distribution system and storage reservoirs. The 12-inch and 24-inch transmission mains start at the Elevated Tank and run southwesterly along Wonder Stump Road. At the Wonder Stump Road-Elk Valley Cross Road intersection, the 24-inch main turns west on Elk Valley Cross Road and heads to Lake Earl Drive. The 12-inch main reduces to 10 inches and continues southerly along the railroad right of way. Intersection of Wonderstump and EVX-RD also branches to the east to serve Meadowbrook and Churchtree districts. At the Lake Earl Drive intersection, the alignment heads southerly along Lake Earl Drive, which turns into Northcrest Drive. At the Northcrest Drive-Washington Street intersection the pipe goes west one block and turns south at the Oregon Street intersection. At the Oregon Street-Washington Street intersection the 24-inch main interconnects with an existing 10-inch main. From this intersection the 24-inch main

alignment heads southerly to the Oregon Street-Harding Street intersection, where it then goes one block west to California Street. The main then goes south on California Street to the Cemetery. The pipe enters Cooper Street at the cemetery access entrance and runs westerly along Cooper Street until Amador Street where it turns southerly to the 1.5 million gallon tank. At the Amador St. Reservoir the 24-inch main reduces to two 16-inch supply lines: one heads westerly in Macken Avenue to Joaquin Street and then south to Pacific Avenue where it connects to the distribution grid on the westerly side of the system. The other supply line goes south along Butte Street, from the Macken-Butte intersection, turning easterly at Pacific for one block and taking a southerly heading on G Street, interconnecting to the existing distribution grid at 9th Street and G Street.

The first Washington Blvd. storage reservoir and pumping facility was constructed in 1963 but was replaced In 2001 with a 4 million gallon reservoir. The upgrade equalizes supply and demand, provides sufficient supply for fire protection, and furnishes supply during periods of maintenance and repair. The station's two pumps were replaced with three 75 horse-power (HP) pumps, and a new auxiliary power system was also installed. The pumps maintain adequate pressures within the distribution system. The Washington Boulevard pump station and Amador pump station are all controlled by SCADA with operator adjustable setpoints. The Amador pumping facility was originally installed in 1982 to increase the volume of storage in Crescent City and to improve pressures, flows and fire demands within the distribution system. Three identical 75 HP pumps are provided to deliver flow volumes to the distribution system, in conjunction with the Washington Boulevard pumping system. Auxiliary power is provided for this station by a 300 kW Onan generator. The Amador Street Reservoir is a welded steel reservoir built in 1982 to increase the City's storage. It has a total capacity of 1.5 million gallons but is operated at an effective capacity of 1.0 million gallons. Amador is currently undergoing a multi-year two-phase renovation of which Phase-I (Safety Improvements) is complete. Between 2000 and 2002, approximately 4,600 linear feet of distribution lines were added with 16-inch high-pressure distribution piping. The City produces all its own water and sells to other water agencies. These are the districts of Meadowbrook, Churchtree and Bertsch Oceanview. Production from the Smith River between 2010 and 2015 is 660-936 MGY, well below the permitted amount of 1,194 MGY.

Map of the Crescent City water distribution area is included as Figures 1 through 5.

Crescent City supplies water to 4,636 active connections (2020). Approximately 4,062 residential connections, 566 connections are commercial, 7 are industrial connections, and one institutional connection for the Pelican Bay State Prison.

In 2020 a total of 832.68 million gallons of water was distributed to the City's customer base.

3.2 Service Area Boundary

The Crescent City service area boundary is shown of Figure 1.

3.3 Service Area Climate and Climate Change

> ***Requirement****: Describe the service area of the supplier, including… climate…. (CWC 10631 (b)).*

Winter snow is rare on the coast, but common at inland elevations of Del Norte County. Winter rains reflect the City's location in the Pacific Northwest. Sunshine is limited near the coast during the summer due to fog; the coastal fog clears just inland. Summer temperatures are seldom higher than 80 degrees on the coast with 60 to 70 degrees on average. Winter temperatures are typically 40 to 50 degrees. The average annual precipitation is approximately 71.3 inches, with a majority of rainfall occurring between the months of October and April.

According to:
http://www.usclimatedata.com/climate/crescent-city/california/united-states/usca1878a
the average temperatures and precipitation for Crescent City are tabulated below:

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Ave. high in °F:	54	55	56	58	60	63	65	66	65	62	57	54	
Ave. low in °F:	40	40	41	42	45	48	50	51	48	45	42	39	
Ave. precipitation in inch:	10.8	8.9	9.1	6.3	3.5	2.0	0.4	0.6	1.2	4.5	10.2	13.7	71.3

Climate change was recently discussed in a report titled "***Crescent City Climate Change Readiness Study***" prepared by Kennedy Jenks (Kennedy Jenks, March 29, 2021). According to (Kennedy Jenks, 2021, in the North Coast region of California, natural hazards are a persistent, historic, and potentially growing risk to both rural and urban communities. Fire, flooding, landslides, and coastal storm surges threaten homes, critical infrastructure, economic activity, and public health. Shifts in seasonal weather patterns are increasing stress on ecosystems, threatening forests, fish, and wildlife. The potential climate impacts include temperature, precipitation variability and extreme events, streamflow and flooding, drought, wildfire, sea level rise, and erosion. The following projections generated by Cal Adapt are contained in the report (Kennedy Jenks, March 29, 2021).

Annual Average Precipitation – Historic and Projected

RCP	Observed Historical (in) 1950 – 2005			Modeled Historical (in) 1950 - 2005			Modeled Projections (in) 2020-2030			Modeled Projections (in) 2030-2050		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
4.5	31.8	62.9	93.1	31.9	63.0	113.7	43.3	60.0	88.2	39.3	66.4	98.0
8.5	31.8	62.9	93.1	31.9	63.0	113.7	35.9	60.7	89.1	39.3	66.3	105.6

Source: CalAdapt

Extreme Precipitation Events – Historic and Projected

Storm Event	Observed Historical (in) 1961 – 1990			Modeled Projections Max (in) 2035 – 2064			Projected Increase 2035 – 2064		
Return Period	5 yr	20 yr	50 yr	5 yr	20 yr	50 yr	5 yr	20 yr	50 yr
24 hours	3.2	4.0	4.6	3.6	4.7	5.6	13%	18%	22%
48 hours	5.2	6.6	7.6	6.0	7.8	9.0	15%	18%	18%
72 hours	6.6	8.4	9.7	7.4	9.6	11.1	12%	14%	14%

Source: CalAdapt

Sea Level Rise – Probabilistic Projections for Crescent City

Feet above Mean	Median	Likely Range	1 in 20 Chance	1 in 200 Chance	H++ Scenario
Probability	50%	67%	5%	0.5%	-
2030	0.1	0.0 – 0.3	0.4	0.5	0.8
2050	0.4	0.2 – 0.7	0.9	1.5	2.3

Source: State of California Sea-Level Rise Guidance Update, 2018, Appendix 3, Table 1.

Annual Average Temperature – Historic and Projected

RCP	Observed Historical T (°F) 1950 – 2005			Modeled Historical T (°F) 1950 - 2005			Modeled Projections T (°F) 2020-2030			Modeled Projections T (°F) 2030-2050		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
4.5	58.4	60.7	62.9	58.7	60.7	63.1	60.7	62.4	63.8	61.3	63.2	65.2
8.5	58.4	60.7	62.9	58.7	60.7	63.1	60.7	62.7	65.1	61.7	63.6	66.0

Source: CalAdapt and California's 4th Climate Change Assessment.

Drought Projections for 20-Year Dry Spell

Variable	Observed Historical 1961 – 1990	Projected Early Drought 2023-2042	Projected Late Drought 2051-070
	Average	Average	Average
Maximum Temperature (°F)	60.9	63.7	66.9
Precipitation (in)	62.2	57.9	57.9
Baseflow (in)	20.1	16.8	15.7
Runoff (in)	11.5	10.8	10.6
Evapotranspiration (in)	30.5	30.3	31.6

Source: CalAdapt.

Climate change was recently in a report titled "***Crescent City Climate Change Readiness Study***" prepared by Kennedy Jenks (Kennedy Jenks, March 29, 2021). Based on the results of the climate risk evaluation calculations (Kennedy Jenks, March 29, 2021) the City is most at risk for increases in precipitation, flooding, storm surge due to climate change. Extreme precipitation events, increases in annual average precipitation, and more intense storm surge increases in precipitation, flooding, and storm surge due to climate change.

3.4 Service Area Population and Demographics and Socioeconomics

> ***Requirement****: Describe the service area of the supplier, including current and projected population …The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available . (CWC 10631).*

Based on the GIS analysis of 2000 US Census Bureau data at the block level, the population of the Crescent City water service area was 16,968, including the Pelican Bay State Prison population. Based on the GIS analysis of 2010 US Census data at the block level, the population of the Crescent City water service area was 17,840 including the Pelican Bay State Prison population (Figures 1 through 5).

Population from 1994-2009 and 2011-2020 are based on the persons per connection. Projections of populations from 2021-2045 are based on California Department of Finance (CA DOF) the projected population growth for the planning period (2021-2045) as indicated below:

- 2021-2025, -0.49% per year,
- 2026-2030, -0.54% per year,
- 2031-2035, -0.45% per year,
- 2036-2040, -0.36% per year, and
- 2041-2045, -0.27% per year (Table 3-1).

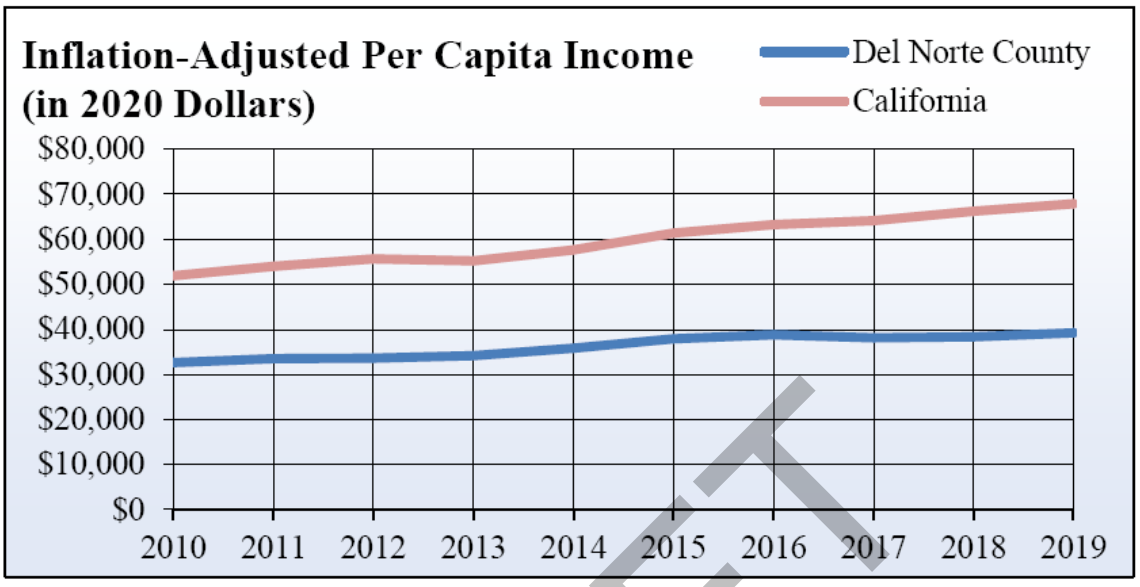
3.5 Other Demographic Factors

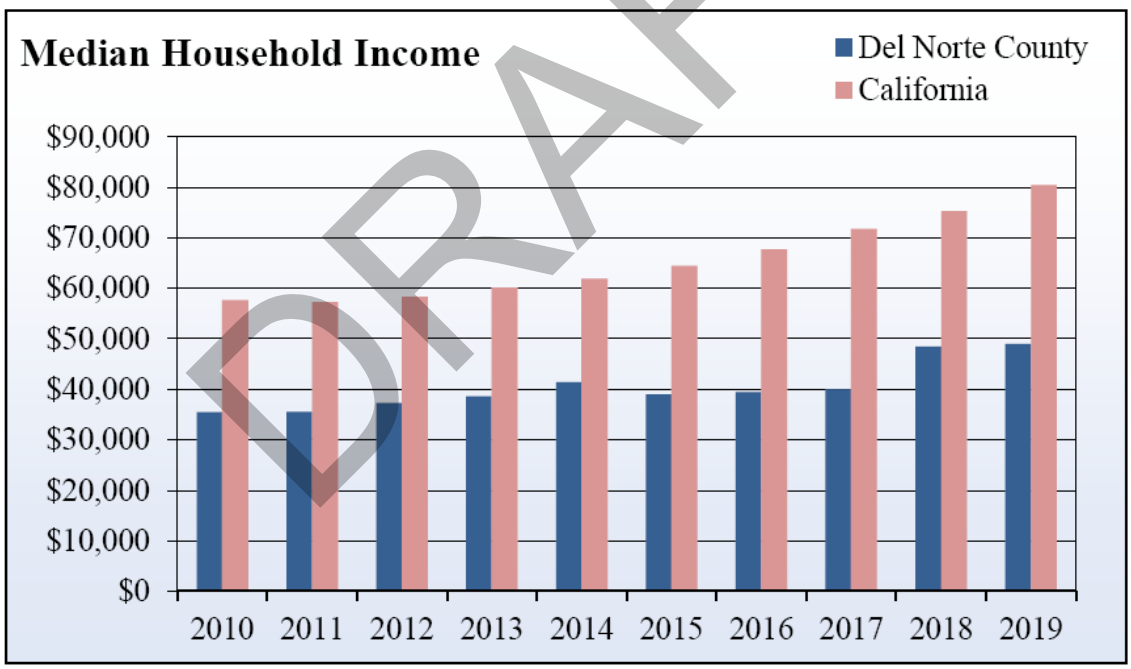
> ***Requirement****: Describe the service area of the supplier, including. . . other demographic factors affecting the supplier's water management planning. (CWC 10631).*

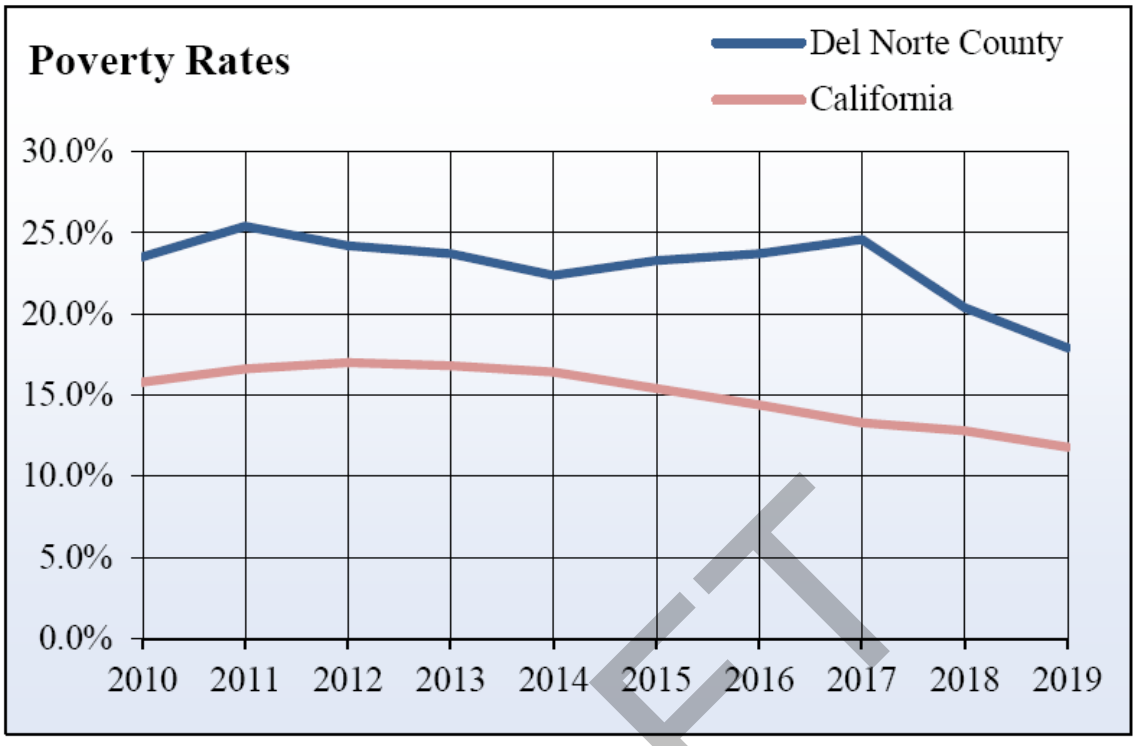
The Crescent City service area is primarily urban residential in nature, which makes up approximately 88% of total Crescent City accounts and 41% by total sales volume. Commercial and institutional accounts make up 12% of the accounts and 32% of the total sales volume. Industrial accounts make up 0.13% of the accounts and 0.01% by volume. There is a single account for Pelican Bay State Corrections Facility that represents 27% of the total sales volume.

A recent report titled "Del Norte Profile 2021" prepared by the Del Norte Transportation Commission contains additional social, economic, and demographic information.

The following tables are from the report titled “Del Norte Profile 2021” and are included to further describe the economics of the region.







3.6 Land Use within Service Area

Del Norte County Community Development was contacted regarding any large planned residential developments, buildouts, or additions to the water system anticipated, or being discussed in the next 20-25 years. Del Norte County Community Development indicated that there were no large developments or additions planned that would impact the Crescent City Water system.

4.0 WATER USE CHARACTERIZATION

This Section describes and quantifies the current and projected water uses within the Crescent City service area.

4.1 Non-Potable Versus Potable Water Use

Crescent City provides wastewater collection services in their service area. Wastewater collected within the City service area is treated at the Crescent City Wastewater Treatment Facility. Recycled wastewater is not currently being used in the Crescent City service area. All of Crescent City water demand is met with potable water. Crescent City does not distribute recycled water, raw water, or any other non-potable water.

4.2 Water Use by Sector

> ***Requirement:*** *For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:*
>
> - *(A) Single-family residential*
> - *(B) Multifamily.*
> - *(C)Commercial.*
> - *(D) Industrial.*
> - *(E) Institutional and governmental.*
> - *(F) Landscape.*
> - *(G) Sales to other agencies.*
> - *(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.*
> - *(I) Agricultural.*
> - *(I) Distribution system water loss (CWC 10631 (d)*

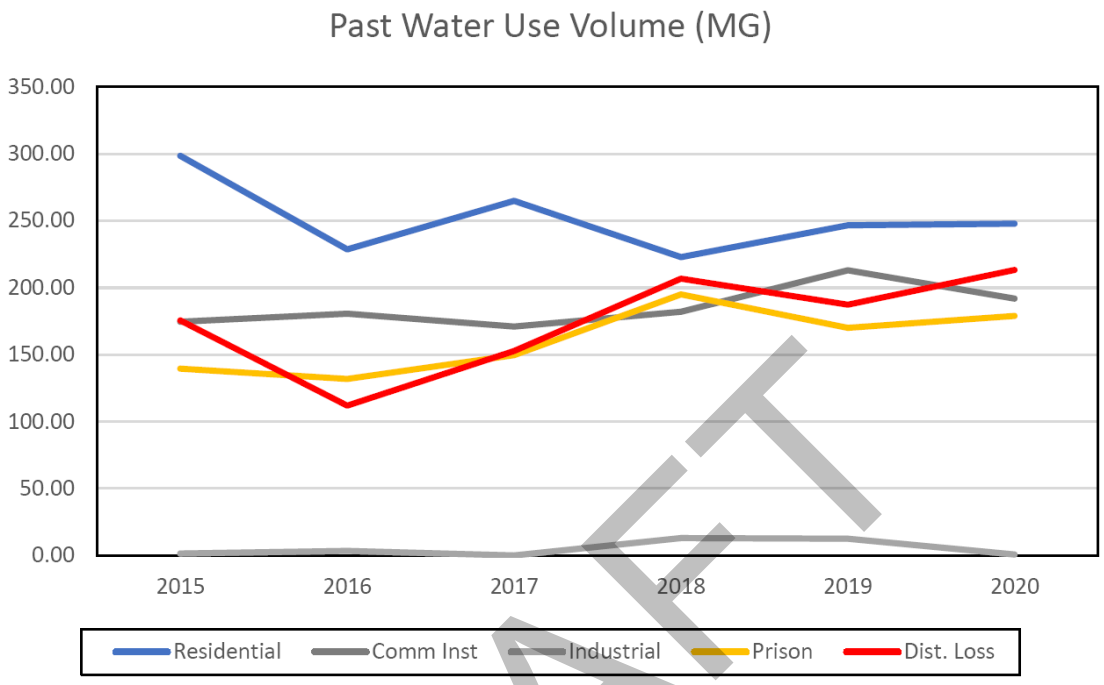
The City of Crescent City utilizes the following use sectors:

- Single Family Residential
- Commercial / Institutional (includes multi-family residential)
- Industrial, and
- A single Prison Connection.

The City does not use any water use sectors in addition to those listed in the Water Code.

4.3 Past Water Use

Water use by use sector for the past 5-years is shown in the chart below:



The 5-year average water use volume by sector is indicated in the table below:

	5-Year Average Volume MG	% of Total Volume
Residential	242	30%
Commercial Institutional	222	28%
Industrial	6	0.75%
Prison	159	20%
Distribution Loss	174	22%

4.4 Distribution System Water Losses

Crescent City has been utilizing the AWWA water loss methodology annually since 2013 to evaluate distribution system losses. Crescent City has not yet performed an AWWA water loss audit (V5.0) for the calendar year 2020. Crescent City has been working over the past three years to understand and reduce real loss. Water loss for the past 5-years including an estimate for 2020 is included in (Table R 4-4). The average water loss (production-sales) as a percentage of production is 23%.

4.5 Current Water Use

2020 retail demand for potable and raw water by use type is included in Table 4-1.
The current (2020) water use volume and connection count by sector are indicated in the tables below:

	2020 Connections	% of total Connections
Residential	4062	88%
Commercial Institutional	566	12%
Industrial	6	0.13%
Prison	1	0.02%
Total	4635	

	2020 Volume MG	% of total Volume
Residential	247	40%
Commercial Institutional	192	31%
Industrial	0.083	0.01%
Prison	179	29%
Total	618.083	

4.6 Projected Water Use

Demand projections by use sector (Table 4-2, 4-3) were estimated over the planning horizon using the following methods:

	Method for Volume Projections
Residential	5-Year average increased by annual projected % population change.
Commercial Institutional	Projected to be maintained at 5-year average (222 MGY) for the planning period.
Industrial	Projected to be maintained at 5-year average (6 MGY) for the planning period.
Prison	Projected to be maintained at 5-year average (6 MGY) for the planning period.
Distribution System Loss	Projected to be maintained at 5-year average (23% of production volume) for the planning period.

4.7 Water Use for Lower Income Households

> ***Requirement****: The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier. (CWC 10631.1 (a)).*

Low income and very low-income households have an income less than 80% of the median household income. According to the Draft Crescent City Housing Element for 2014-2019 Housing Element, 43% of the households are classified as low and very low income. Water use projections include projected water use for single-family and multi-family residential housing needed for lower income (Table 4-1 and 4-5).

4.8 Climate Change Considerations

As indicated in Section 3.3, climate change was recently evaluated in a report titled "***Crescent City Climate Change Readiness Study***" prepared by Kennedy Jenks (Kennedy Jenks, March 29, 2021).

Based on the results of the climate risk evaluation calculations (Kennedy Jenks, March 29, 2021) the City is most at risk for increases in precipitation, flooding, storm surge due to climate change. Extreme precipitation events, increases in annual average precipitation, and more intense storm surge increases in precipitation, flooding, and storm surge are due to climate change.

As a result of this evaluation, it is concluded that climate change will have very little effect on the water supply and water demand in this area. Climate change was evaluated and considered, and in the end, did not result in a change in the projected water supply or demand.

4.9 Energy Use

> ***Requirement****: Water Code Section 10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain: (1) An estimate of the amount of energy used to extract or divert water supplies. (2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems. (3) An estimate of the amount of energy used to treat water supplies. (4) An estimate of the amount of energy used to distribute water supplies through its distribution systems. (5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies. (6) An estimate of the amount of energy used to place water into or withdraw from storage. Any other energy-related information the urban water supplier deems appropriate.*

Crescent City energy consumption information for 2020 is included in Table 0-1A. For the calendar year 2020 it took 1,134 kWh/MG to extract groundwater, 102 kWh/MG to place water into storage, and 148 kWh/MG to distribute water.

5.0 SBX7-7 BASELINE AND TARGETS

This Section describes Crescent City's methods for calculating their baseline and target water consumption. Crescent City will demonstrate that they have achieved their 2020 water use target.

5.1 Definitions

Daily per Capita Water Use - the amount of water used per person per day. In the UWMP calculations, this is total water use within a service area, divided by population and is measured in gallons.

Gallons per Capita per Day (GPCD) – This is the "Daily per Capita Water Use" measured in gallons. Therefore, the term commonly used when referring to "Daily per Capita Water Use" is "Gallons Per Capita per Day" or "GPCD."

GPCD - The total water use within a service area (residential, commercial, institutional, etc…) minus allowable exclusions, divided by the population. This is used in UWMPs for purposes of the Water Conservation Act of 2009.

R-GPCD - The estimated residential water use in a service area divided by population. R-GPCD is used in drought reporting to SWRCB for purposes of complying with the Governor's drought declarations and executive orders in 2014 and 2015.

5.2 Updating Calculations from 2015 UWMP to the 2020 UWMP

> ***Requirement****: An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6. (CWC 10610.20 (g)).*

Population estimates and projections used in the 2020 UWMP are based on 2010 US Census data in combination with historic persons per connections data. Crescent City updated their 2020 GPCD goal in the 2015 UWMP to 116 GPCD. Crescent City is not updating the calculations from the 2015 UWMP. SBX7-7 tables used to calculate the GPCD baselines and goals are include in Appendix B.

5.3 Baseline Periods

> ***Requirement****: (e) An urban retail water supplier shall include in its urban water management plan due in 2010. . . the baseline daily per capita water use…along with the bases for determining those estimates, including references to supporting data. (CWC 10608.20 (e)).*
>
> *An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610). (CWC 10608.20 (g)).*

In 2008, Crescent City did not have at least 10% of its 2008 measured retail water demand met through recycled water and therefore used a 10-year baseline. The first base period (10-year continuous period) was selected from 1995 to 2004. The average gallons/capita day (GPCD) for the 10-year base period was 148 GPCD. Using Method # 1 (80% of the 10-year base period GPCD) to calculate the 2020 GPCD goal for Crescent City results in 116 GPCD.

The second baseline (5-year continuous period) was selected from 2003 to 2007. The average GPCD for the 5-year baseline was 133 GPCD. Since 95% of the 5-year baseline is 126 GPCD and is more than the 2020 GPCD goal using Method # 1 (116 GPCD) the adjusted 2020 GPCD goal is 116 GPCD. The interim target goal for 2015 was 131 GPCD which was met in the 2015 UWMP.

5.4 Service Area Population

> ***Requirement:*** *Water Code Section 10608.20(e) An urban retail water supplier shall include in its urban water management plan due in 2010…the baseline per capita water use…along with the bases for determining those estimates, including references to supporting data.*
>
> *(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.*
> *Water Code Section 10644.*

Based on the GIS analysis of 2000 US Census Bureau data at the block level, the population of the Crescent City water service area was 16,968, including the Pelican Bay State Prison population. Based on the GIS analysis of 2010 US Census data at the block level, the population of the Crescent City water service area was 17,840 including the Pelican Bay State Prison population (Figures 1 through 5).

Population from 1994-2009 and 2011-2020 are based on the persons per connection. Projections of populations from 2021-2045 are based on California Department of Finance (CA DOF) the projected population growth for the planning period (2021-2045) as indicated below:

- 2021-2025, -0.49% per year,
- 2026-2030, -0.54% per year,
- 2031-2035, -0.45% per year,
- 2036-2040, -0.36% per year, and
- 2041-2045, -0.27% per year (Table 3-1).

5.5 Gross Water Use

> ***Requirement:*** *Water Code Section 10608.12*
> *(h) "Gross Water Use" means the total volume of water, whether treated or untreated, entering the distribution (1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier system of an urban retail water supplier, excluding all of the following:*
> *(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier*
> *(2) The net volume of water that the urban retail water supplier places into long term storage*
> *(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier*
> *(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.*
> *California Code of Regulations Title 23 Division 2 Chapter 5.1 Article 1 Section 596*

(a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.

Gross water use was calculated for each year in the baseline periods as well as 2020, the compliance year. The gross water use for Crescent City was the total volume of water entering the distribution system.

5.6 Baseline and Targets Summary

Baseline daily per capita water use was calculated by dividing the gross water use (Section 5.5) by the service area population (Section 5.4) for each year of the baseline periods as seen below.

Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	16,842	911	148
Year 2	1996	17,043	977	157
Year 3	1997	17,047	966	155
Year 4	1998	16,800	964	157
Year 5	1999	17,238	980	156
Year 6	2000	16,968	832	134
Year 7	2001	17,368	912	144
Year 8	2002	17,421	862	136
Year 9	2003	17,555	844	132
Year 10	2004	17,912	879	134
Year 11	0	0	0	
Year 12	0	0	0	
Year 13	0	0	0	
Year 14	0	0	0	
Year 15	0	0	0	
10-15 Year Average Baseline GPCD				**145**

5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	17,555	844	132
Year 2	2004	17,912	879	134

Year 3	2005	18,950	834	121
Year 4	2006	17,915	828	127
Year 5	2007	18,402	832	124
5 Year Average Baseline GPCD				**127**

5.7 Baseline and Target Summary

SB X7-7 verification tables are included as Appendix B.

Summary of Updated GPCD Goals

10-year Base GPCD	145
80% (10-year Base GPCD)	116
North Coast Region Statewide Target by 2020	130
5-year Base Daily Per Capita Water Use	127
95% of 5-year Base GPCD/ adjusted 2020 Urban Water Use Target	121
Crescent City's Interim (2015) Goal	**131**
Crescent City's 2020 Target	**116**
2015 GPCD (met the interim goal)	**97**

5.8 2020 Compliance Daily per Capita Water Use (GPCD)

Requirement: Water Code Section 10608.12
(f) "Compliance daily per-capita water use" means the gross water use during the final year of the reporting period….
(e) An urban retail water supplier shall include in its urban water management plan due in 2010 . . . compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

Crescent City's 2020 GPCD target is 116 GPCD. Crescent City's 2020 GPCD was actually 112. Crescent City has achieved compliance with daily per-capita water use for 2020 (Table 5-1, and 5-2). Verification of compliance is documented in the SB X7-7 Compliance form included as Appendix B.

6.0 WATER SUPPLY CHARACTERIZATION

This Section describes and quantifies the current and projected sources of water available to the agency including supplies from other agencies, surface water, groundwater, recycled water, desalinated water, transfers and exchanges, and any other source water the supplier considers part of its supply portfolio.

The City of Crescent City's only existing water source is provided by groundwater from the Smith River underflow associated with the Smith River Plain Groundwater Basin. The Smith River provides an abundant supply of high-quality fresh water. The drainage basin of the Smith River, which covers about 700 square miles, produces runoff of about 2.9 million AFY (944,265 MGY), making it the highest water-producing drainage in California based on runoff per square mile. In the planning period there are no plans to acquire water from any wholesalers or other sources.

The City of Crescent City currently extracts water from the Smith River (underflow) under the City of Crescent City Water Resources Control Board water rights permit # 11475, and under the California Department of Corrections (CDC) Water Resources Control Board water rights permit # 20210 for Pelican Bay State Prison. Both permits have the same point of diversion. The place of use for the CDC permit appears to be contained within the place of use for the City of Crescent City Permit. A summary of the permit limits for pumping rate and total annual production is included in the table below.

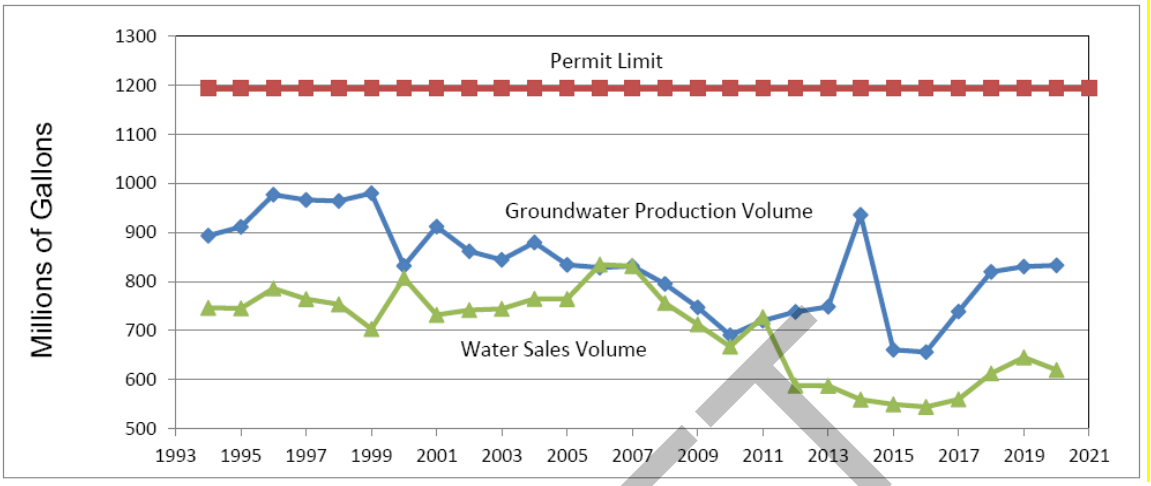
Maximum Permitted Pumping Rate			
Entity	**Permit Number**	**Cubic Feet per Second**	**Million Gallons /Day**
City of Crescent City	11475	9.8	6.3
State Department of Corrections	20210	3	1.9
Total		**12.80 cubic feet per second**	**8.2 MGD**

Maximum Permitted Annual Production			
Entity	**Permit Number**	**Acre Feet / Year**	**Million Gallons /Year**
City of Crescent City	11475	2,600	847
State Department of Corrections	20210	1,066	347
Total		**3,666**	**1,194**

Currently the City of Crescent City has water rights to divert a combined maximum 8.2 MGD and maximum 1,194 MGY from the Smith River.

The historic volumes of water produced by the City of Crescent City from the Smith River are noted in the graph below in MGY.

Total Crescent City Groundwater Production



In the planning period there are no plans to acquire water from any wholesalers or other sources.

6.1 Purchased or Imported Water

The City of Crescent City does not purchase or import water. Within the planning horizon there is no intent to utilize purchased or imported water.

6.2 Groundwater

The City of Crescent City's only water source is provided by groundwater from the Smith River Plain Groundwater Basin. The Smith River provides an abundant supply of high-quality fresh water. The drainage basin of the Smith River, which covers about 700 square miles, produces runoff of about 2.9 million AFY (944,265 MGY), making it the highest water-producing drainage in California based on runoff per square mile.

Crescent City's drinking water is acquired from groundwater (underflow). Water is supplied to the City from the Smith River Plain Groundwater Basin via a well point type structure known and patented as a "Ranney Well." Groundwater is being produced from the Smith River Plain Groundwater Basin (Figure 6). The geology of the Smith River Plain Groundwater Basin is shown on Figure 7. The general location of the Crescent City Ranney Well is shown on Figures 5 and 6.

The following sections describing the Smith River Plain Groundwater Basin are from California's Groundwater Bulletin 118, 2003 update, (State of California, Department of Water Resources, 2003).

Basin Description

The Smith River Plain Groundwater Basin is located in Del Norte County in the extreme northwest corner of California. The plain is irregular in shape narrowing to the south against the steep scarp of the faulted mountain headland. The major structural feature in the basin is the inferred Del Norte fault which constitutes the basin boundary to the

north and east (USBR 1960). The north end of the plain narrows at the mouth of the Smith River to a marine terrace less than one mile wide that continues into Oregon (DWR 1987). The basin is bounded to the north, east, and south by Mesozoic Franciscan Formation (Strand 1963).

The Smith River crosses the northern portion of the plain near the Town of Smith River and is the major watercourse responsible for most of the floodplain deposits in the area. Lake Earl and Talawa are shallow brackish lakes in the west central part of the plain and form collection basins for runoff from several minor streams (Back 1957). Annual precipitation in the basin ranges from 65- to 77-inches, increasing to the northeast.

Hydrogeologic Information
The Smith River Plain Groundwater Basin is an emerged low-relief marine terrace. The surface of the plain is comprised of sand dunes, floodplain deposits, unconsolidated river terrace deposits, and surface exposures of the marine Battery Formation. Underlying the terrace deposits are the marine Battery Formation and the St. George Formation. Beneath the St. George Formation is basement rock of the Jurassic-Cretaceous Franciscan Complex.

Water-Bearing Formations
Quaternary alluvial fan, flood-plain, terrace, and Battery Formation deposits from the primary water-bearing formations in the basin. The St. George Formation and basement rock of the Franciscan formation yield very little water to wells.

Holocene Floodplain Deposits. *Floodplain deposits underlie the present floodplain of the Smith River and its tributaries. These deposits rest on either basement rock or the Battery Formation and overlie river terrace deposits along the edge of the floodplain. The overlying deposits consist of unconsolidated clay, sand, and gravel and range in thickness from about 40-to 95-feet. The deposits are commonly covered with a shallow, silty soil 2- to 3-feet in thickness. The sands and gravels are well-rounded and poorly sorted. Boulders and cobbles are common where the Smith River flows out of the mountains. As the floodplain spreads west over the plain, the alluvial deposits generally become finer (DWR 1987). The deposits contain large amounts of unconfined water and are the most productive aquifers in the Smith River Plain Groundwater Basin. Most of the irrigation wells in the area obtain water from this zone. Yields to wells range from about 200- to 800-gpm and permeabilities range from about 6,000- to 10,000-gpd per square foot (DWR 1987).*

Pleistocene Terrace Deposits. *The Pleistocene age terrace deposits are associated with Smith River and Rowdy Creek and serve as the major aquifer in the northern part of the basin and also provide recharge to adjacent formations. These deposits contain poorly-sorted silt, sand, and gravel and include some clay - predominantly in the upper portion. Generally, these deposits become coarser with depth and large boulders are often encountered at the base. Thickness of the deposits generally range from about 30- to 55- feet, but may exceed 75 feet in the area south of the community of Smith River (DWR 1987). These deposits are underlain by basement rocks, but locally they may rest on the Battery or St. George Formations. The river terrace deposits are moderate to highly permeable, with permeabilities ranging from 1,000- to 2,000-gpd per square foot (DWR 1987). Generally, well yields are not high due to the limited saturated thickness. Several irrigation wells in the Fort Dick and Rowdy Creek areas yield 140- to 400- gpm. Some of the smaller terraces may not have enough storage-carryover capabilities to*

provide adequate water supplies throughout the summer and fall months because of limited areal extents.

***Groundwater Storage Capacity**. Storage capacity in the basin is estimated to be 99,350 acre-feet based a surface area of 31,070 acres, a depth interval of 10- to 35-feet below ground surface, and an average specific yield of 12.8 percent (Back 1957)..*

Groundwater Budget (Type B)
Estimates of groundwater extraction are based on a survey conducted by the California Department of Water Resources in 1996. The survey included land use and sources of water. Estimates of groundwater extraction for agricultural and municipal/industrial uses are 12,000 and 990 acre-feet respectively. Deep percolation from applied water is estimated to be 3,100 acre-feet.

Groundwater Quality

***Characterization.** Groundwater in the basin consists of magnesium bicarbonate and magnesium-sodium bicarbonate type waters. Increasing proportions of sodium and chloride are found in waters from the southern half of the basin (Back 1957). Total dissolved solids (TDS) range from 50-to 500-mg/L, averaging 100 mg/L (DWR unpublished data).*

***Impairments**. High levels of iron are found in some areas. Locally high chloride, calcium, and TDS are also found.*

A Groundwater Management Plan has not been developed for the Smith River Plain Groundwater Basin. The groundwater basin is ranked as a **very low priority**.

Overdraft is the condition of a groundwater basin in which the amount of water withdrawn by pumping over the long term exceeds the amount of water that recharges the basin. Overdraft is characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years.

The Smith River Plain Groundwater Basin has not been identified as being over-drafted based upon extraction rates, cone of depression, recharge rate, and water surface elevation. The basin has not been identified as likely to become over-drafted if present management conditions continue.

The volume of groundwater pumped from 2016 through 2020 is included in Table 6-1. During 2016-2020 there were no limitations or challenges obtaining groundwater.

6.3 Surface Water

Crescent City does not use, or plan to use, self-supplied surface water as part of its water supply.

6.4 Stormwater

Crescent City does not currently or plan to intentionally divert stormwater for beneficial reuse.

6.5 Wastewater and Recycled Water

The City WWTF was designed to, and is capable of producing, tertiary-treated recycled water in compliance with Water Recycling Criteria in Title 22 of the California Code of Regulations. The City has not acquired the necessary permits and approval to use the recycled water.

The capacity of the reclamation system is 0.6 MGD; however, the membrane bioreactor can treat up to 1.6 MGD. Effluent that is not recycled is discharged to the Pacific Ocean (Table 6-4, 6-5 and 6-6).

The 24-inch diameter ductile iron pipe outfall discharges into a rocky slot in the surf zone adjacent to the Battery Point Lighthouse and has an effluent conveyance capacity up to 13 MGD.

The City owns and operates a wastewater collection, treatment, and disposal facility with a design average dry weather treatment capacity of 1.86 MGD for treating domestic, commercial, and industrial wastewater. The collection system service area includes the City of Crescent City and the County Service Area (Figure 2), which includes a total population of 20,365 (2020). Treatment processes at the Crescent City WWTF consist of headworks, including a mechanically cleaned screen, a Parshall flume, and a wet well; primary treatment, including two grit removal tanks and two clarifiers; and secondary treatment. Secondary treatment is provided by operating rotating biological contactors and a membrane bioreactor in parallel. Flows from the rotating biological contactors and any flow from the membrane bioreactor that is not used for recycled water use are commingled, disinfected and dechlorinated. Flow from the membrane bioreactor that can be used for recycled water is UV disinfected.

Effluent that is not recycled is discharged to the Pacific Ocean. The 24-inch diameter ductile iron pipe outfall discharges into a rocky slot in the surf zone adjacent to the Battery Point Lighthouse and has an effluent conveyance capacity up to 13 MGD. Solids handling consists of gravity thickening of primary sludge, rotary drum thickening of secondary sludge, and anaerobic digestion of thickened sludge. Dewatered solids are placed in a landfill.

The amount of wastewater collected in 2020 in the Crescent City system is 472 million gallons (Table 6.3). Wastewater flow is metered.

Although the Crescent City Wastewater Treatment Facility is capable of generating recycled water, use of recycled water is not currently permitted. No plans exist to acquire the necessary permits and approvals to generate and use recycled water in the planning horizon.

6.6 Desalinated Water

Crescent City is not currently using or considering or desalinated water.

6.7 Water Exchanges or Transfers

Crescent City is not currently using or considering exchanges or transfers of water because there are no other water agencies in the near region.

6.8 Future Water Projects

Crescent City has an adequate water supply with sufficient permit limits. There are no future plans for projects to increase the water supply available (Table 6-7, 6-8, and 6-9).

6.9 Summary of Existing and Planned Sources of Water

The City of Crescent City's only existing water source is provided by groundwater from the Smith River underflow associated with the Smith River Plain Groundwater Basin. The Smith River provides an abundant supply of high-quality fresh water. The drainage basin of the Smith River, which covers about 700 square miles, produces runoff of about 2.9 million AFY (944,265 MGY), making it the highest water-producing drainage in California based on runoff per square mile. In the planning period there are no plans to acquire water from any wholesalers or other sources.

6.10 Special Conditions-Climate Change Impacts

As indicated in Section 3.3, climate change was recently evaluated in a report titled "***Crescent City Climate Change Readiness Study***" prepared by Kennedy Jenks (Kennedy Jenks, March 29, 2021).

Based on the results of the climate risk evaluation calculations (Kennedy Jenks, March 29, 2021) the City is most at risk for increases in precipitation, flooding, storm surge due to climate change. Extreme precipitation events, increases in annual average precipitation, and more intense storm surge increases in precipitation, and flooding, are due to climate change.

As a result of this evaluation, it is concluded that climate change will have very little effect on the water supply and water demand in this area. Climate change was evaluated and considered, and in the end, did not result in a change in the projected water supply or demand.

6.11 Special Conditions-Regulatory Conditions

At this time there are no foreseeable regulatory conditions or changes that would affect the water supply.

7.0 WATER SYSTEM RELIABILITY AND DROUGHT RISK ASSESSMENT

This Section describes the reliability of Crescent City's water supply and projects the reliability out 25 years. This description will be provided for normal, single dry years and multiple dry years.

Assessing water service reliability is the fundamental purpose for preparing a UWMP. Water service reliability reflects the City's ability to meet the water needs of its customers, including end-use customers and Retail Suppliers, with water supplies under varying conditions. The City's UWMP will consider the reliability of meeting customer water use by analyzing plausible hydrological variability, regulatory variability, climate conditions, and other factors that affect a Supplier's water supply and its customers' water uses.

7.1 Water Service Reliability Assessment

> ***Requirement:*** *Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier. CWC* 10635(a)

Crescent City relies on groundwater from City owned groundwater wells in the Smith River Plain Groundwater Basin. Groundwater production is limited by a water rights permit which limits annual production to 1,194 MGY. Projected water production demand in 2045 is 786 MGY which is well within the limits of the water rights permit. Analysis of precipitation and Smith River flow data indicate that climatic variations (wet and dry years) affect the monthly average flow during the wet season but have little or no effect on dry weather flows. Based on the above information, the groundwater source for Crescent City is available at a consistent level over the 25-year planning period.

7.2 Service Reliability – Constraints on Water Sources

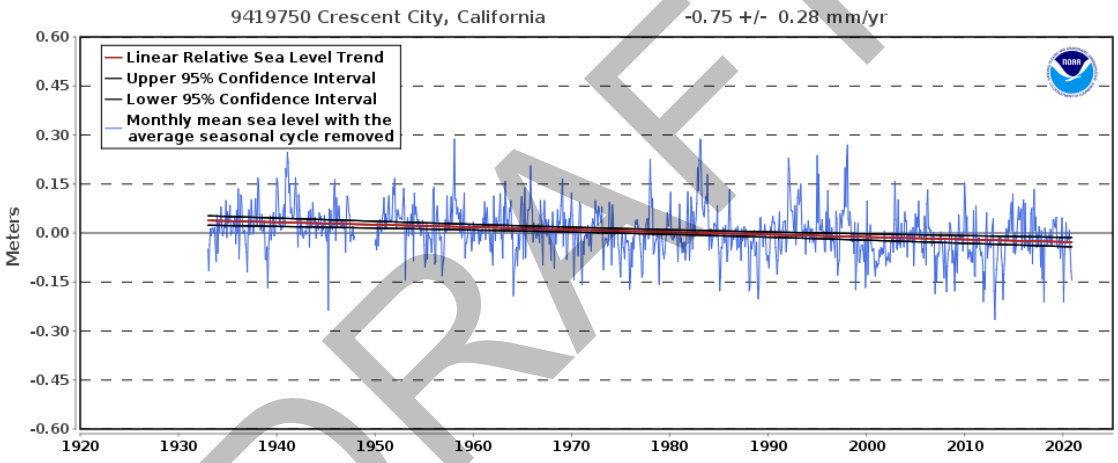
Potential constraints on the City's water source include, legal, environmental, or climate factors. Groundwater production is limited by a water rights permit which limits annual production to 1,194 MGY. Projected water production demand in 2045 is 786 MGY which is well within the limits of the water rights permit. Foreseeable legal constraints are not considered a limitation within the 25-year planning period. Currently and within the planning period the only foreseeable environmental issues that could limit the City's water supply would be a chemical or fuel spill within the watershed. Given the limited number of roads and lack of industrial development upgradient of the City wells constraint on the water supply due to environmental issues is limited.

Constraints due to climate change are discussed in Section 3.3 and 4.8. As a result of this evaluation, it is concluded that climate change will affect the water supply and water demand very little in this area. Based on the results of the climate risk evaluation

calculations (Kennedy Jenks, March 29, 2021) the City is most at risk for increases in precipitation, flooding, and storm surge due to climate change. Extreme precipitation events, increases in annual average precipitation, and more intense storm surge increases in precipitation, and flooding due to climate change are not likely constrains on the City's water supply. Climate change was evaluated and considered, and in the end, did not result in a change in the projected water supply or demand.

Future constraints on water supplies, due to declining groundwater levels is not anticipated based on the historic response (lack of response) of groundwater levels to changes in precipitation as shown later in this section.

Constraints on water supply due to sea level rise (SLR) is unlikely. According to (Kennedy Jenks, 2021): "Projections of sea-level rise (SLR) in the North Coast region are complicated by different rates of vertical land motion and large interseismic tectonic motions along the southern Cascadia subduction zone. Crescent City is uplifting faster than long-term global SLR due to this interseismic uplift, resulting in a negative or decreasing local SLR rate (North Coast Fourth Assessment, 2018).



Source: National Oceanic and Atmospheric Administration, Center for Operational Oceanographic Products and Services. *Relative Sea Level Trend, 9419750 Crescent City, California.* Accessed February 9, 2021 via https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=9419750

Due to projected increases in annual precipitation (Kennedy Jenks, 2021), constraints of water supply due to decreased snowpack is unlikely.

Current water management strategies include:

- Identification and correction of water loss causes; and
- Continued monitoring of precipitation, Smith River discharge, and groundwater elevations in the Smith River Plain Groundwater Basin.

Currently there are no plans to supplement or replace the current water source.

7.3 Service Reliability - Year Type Characterization

This Section describes the reliability of Crescent City's water supply and projects the reliability out 25 years. This description will be provided for normal, single dry years and multiple dry years. A description of the year types is included below:

- **Normal Year.** This condition represents the water supplies a Supplier considers available during normal conditions. This could be a single year or averaged range of years that most closely represents the average water supply available to the Supplier. The DWR uses the terms average and normal interchangeably when addressing the water year type.

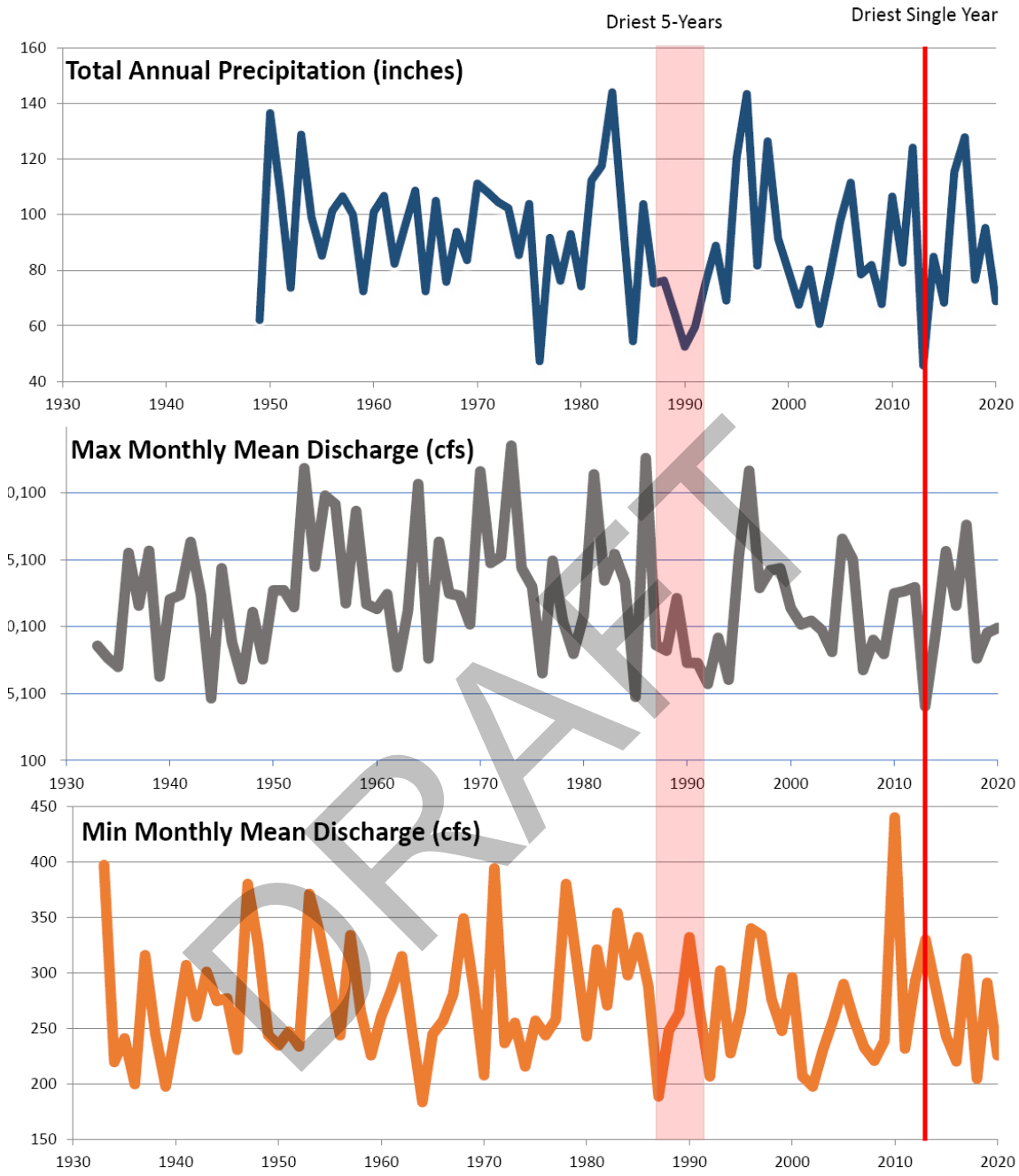
- **Single Dry Year.** As defined in the 2015 UWMP Guidebook, the single dry year is recommended to be the year that represents the lowest water supply available to the Supplier.

- **Five-Consecutive-Year Drought.** The five-consecutive year drought for the DRA would be the driest five-year historical sequence for the Supplier (Water Code Section 10612.

Crescent City performed an analysis of annual precipitation totals from the nearest weather station with a continuous historic record 1949-2020, (Gasquet, California). A summary of the analysis is included in the table below:

Type of Year(s)	Year(s)	Annual Total Precipitation (inches)	% Normal
Average Year	1999	91	100%
Single Driest Year	2013	46	51%
Driest Five Years	1987-1991	65.7	72%

To look for the impact of the various year types on the Smith River discharge, the Smith River average monthly discharge (cubic feet per second) for the wettest and driest months were plotted with total annual precipitation (inches) as shown below;



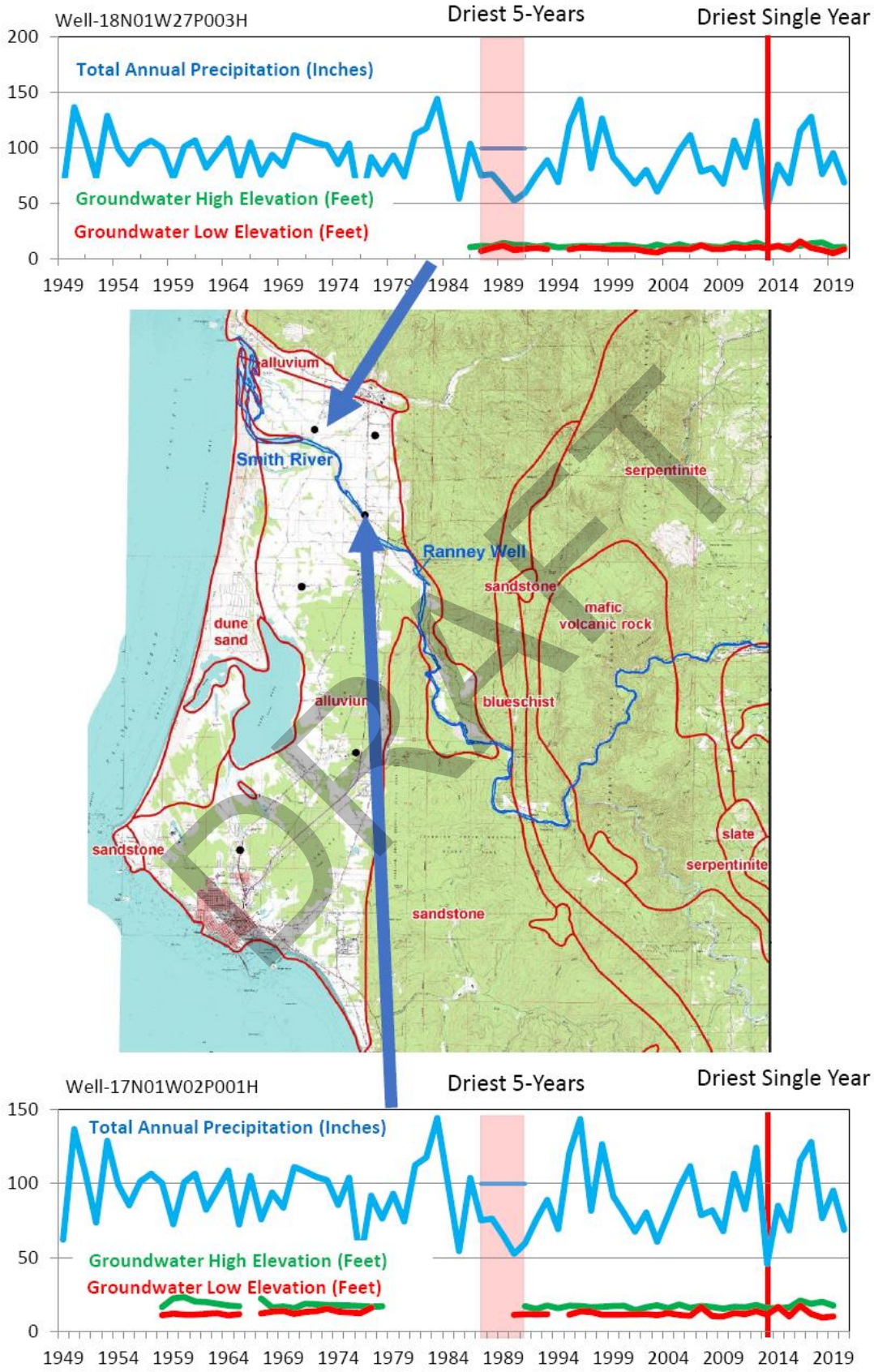
The above plot shows that during the single driest year the average monthly flow of the Smith River during the dry season was unaffected and was actually higher than years before and after the driest year (2013).

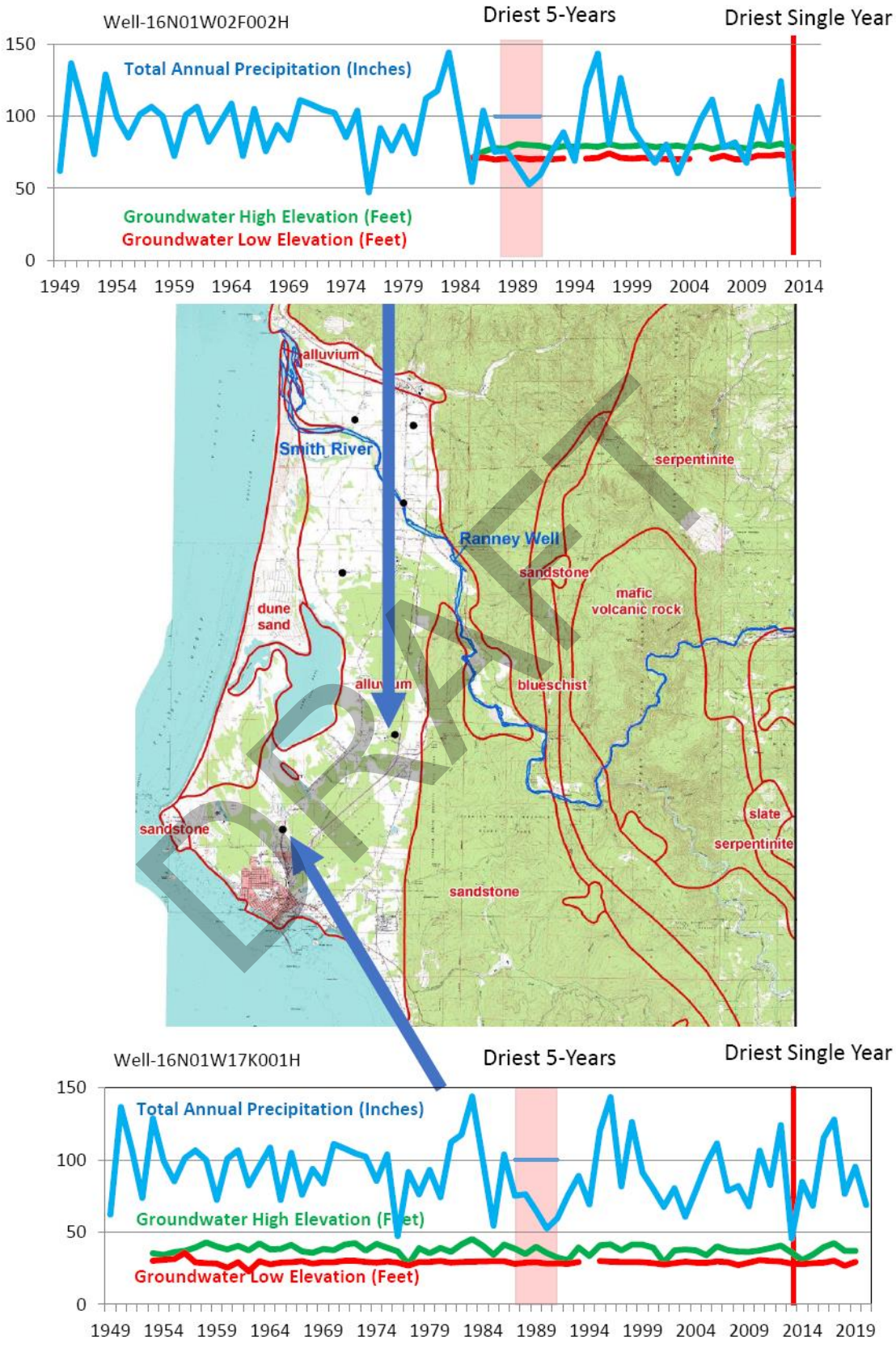
The above plot shows that during the driest 5 consecutive years the average monthly flow of the Smith River during the dry season actually increased during the 5 driest year(s).

The Smith River is sustained by groundwater during periods of low precipitation which buffers the impact of dry periods. The record highest production rate for Crescent City

was 2.70 MGD. The lowest annual monthly mean Smith River discharge is 184 cubic feet per second (119 MGD). The City's highest recorded daily volume is only 2.3% of the recorded lowest annual mean monthly discharge rate.

Groundwater annual high and low elevations were plotted with annual precipitation for several groundwater wells used to monitor conditions of the Smith Groundwater Plain Groundwater Basin. The wells are located in different locations within the groundwater basin. The driest single year and driest 5-years are noted to show the impact of precipitation extremes on Smith River Plain Groundwater Basin water levels.


Well-18N01W27P003H
Driest 5-Years
Driest Single Year
Total Annual Precipitation (Inches)
Groundwater High Elevation (Feet)
Groundwater Low Elevation (Feet)
200
150
100
50
0
1949 1954 1959 1964 1969 1974 1979 1984 1989 1994 1999 2004 2009 2014 2019
alluvium
Smith River
serpentinite
Ranney Well
sandstone
mafic volcanic rock
dune sand
alluvium
blueschist
slate
serpentinite
sandstone
sandstone
Well-17N01W02P001H
Driest 5-Years
Driest Single Year
Total Annual Precipitation (Inches)
Groundwater High Elevation (Feet)
Groundwater Low Elevation (Feet)
150
100
50
0
1949 1954 1959 1964 1969 1974 1979 1984 1989 1994 1999 2004 2009 2014 2019


Well-16N01W02F002H
Driest 5-Years
Driest Single Year
150
100
50
0
Total Annual Precipitation (Inches)
Groundwater High Elevation (Feet)
Groundwater Low Elevation (Feet)
1949 1954 1959 1964 1969 1974 1979 1984 1989 1994 1999 2004 2009 2014
alluvium
Smith River
serpentinite
Ranney Well
sandstone
mafic
volcanic rock
dune
sand
alluvium
blueschist
slate
serpentinite
sandstone
sandstone
Well-16N01W17K001H
Driest 5-Years
Driest Single Year
150
100
50
0
Total Annual Precipitation (Inches)
Groundwater High Elevation (Feet)
Groundwater Low Elevation (Feet)
1949 1954 1959 1964 1969 1974 1979 1984 1989 1994 1999 2004 2009 2014 2019

The plots on the previous pages indicate the following:

- Groundwater elevations within the Smith River Plain Groundwater Basin have been stable throughout the time of available data (1950's to 2020).

- At some locations, wet weather groundwater elevations appear to be somewhat responsive to more or less precipitation. At other locations, the wet weather groundwater elevations appear to be non-responsive to more or less precipitation; and

- The single driest and multiple driest 5 years on record did not have an impact on the dry weather groundwater elevations. Dry season groundwater elevations appear to be steady throughout the time interval covered by the available data.

Conclusions regarding water source reliability include:

- Historic periods of dry weather appear to have had an impact on the seasonally high Smith River discharge volumes and on seasonally high groundwater elevations;

- Historic periods of dry weather do not appear to have significantly impacted the seasonally low Smith River discharge volumes due to recharge from the surrounding Smith River Plain Groundwater Basin;

- Historic periods of dry weather do not appear to have had an impact on seasonally low groundwater elevations in the Smith River Plain Groundwater basin: and

- The Crescent City water supply is not currently experiencing the impact of drought and has been reliable even during periods of record low precipitation.

Reliability of the water supply is reflected in Tables 7-1, 7-2, 7-3, and 7-4.

7.4 Service Reliability - Supply and Demand Comparison

> ***Requirement****: Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*

The Crescent City water supply is reliable and consistent as indicated in the above section. Demand projections, based on projected population growth, will be met with the supply for all of the drought scenarios as indicated in Tables 7-1, 7-2, 7-3, and 7-4.

7.4.1 Water Service Reliability – Normal Year

The Crescent City water supply is reliable and consistent as indicated in the above section. Demand projections, based on projected population growth, will be met with the supply for the normal year scenario as indicated in Table 7-2.

7.4.2 Water Service Reliability – Single Dry Year

The Crescent City water supply is reliable and consistent as indicated in the above section. Demand projections, based on projected population growth, will be met with the supply for the single dry year scenario as indicated in Table 7-3.

7.4.3 Water Service Reliability – Five Consecutive Dry Years

The Crescent City water supply is reliable and consistent as indicated in the above section. Demand projections, based on projected population growth, will be met with the supply for the five consecutive dry year scenario as indicated in Table 7-4 and 7-5.

7.4.4 Description of Management Tools and Options

> ***Requirement:*** *An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

Current water management strategies include:

- Identification and correction of water loss causes; and
- Continued monitoring of precipitation, Smith River discharge, and groundwater elevations in the Smith River Plain Groundwater Basin.

7.5 Drought Risk Assessment

> ***Requirement****: Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update.*

Information regarding the Crescent City DRA is contained is the following sections.

7.5.1 DRA Data, Methods, and Basis for Water Shortage Conditions

The primary sources of data used in the DRA include:

- Crescent City performed an analysis of annual precipitation totals from the nearest weather station with a continuous historic record 1949-2020, (Gasquet, California).
- USGS Gauging Station data Smith River (USGS gauging station 11532500), and
- Groundwater elevation from wells in the Smith River Plain Groundwater Basin (data from CASGEM wells).

The method that was used for the DRA was initiated by reviewing the historical precipitation records for the area and determine the annual total precipitation for the

area. The annual total precipitation was analyzed to determine the average precipitation for the "normal year". The year with the least precipitation was designated as the "single driest year". The annual total precipitation data was also analyzed to determine the 5-year interval with the lowest average precipitation "driest 5 years" as shown below:

Type of Year(s)	Year(s)	Annual Total Precipitation (inches)	% Normal
Normal Year	1999	91	100%
Single Driest Year	2013	46	51%
Driest Five Years	1987-1991	65.7	72%

The Smith River discharge (cubic feet/second) was then plotted over the same historical time period to see the effect of the single driest year and the driest 5 years on discharge volume. The final step was to evaluate groundwater elevations in several wells that have been monitored within the Smith River Plain Groundwater Basin to see the effect of the single driest year and the driest 5 years on groundwater elevations.

The results of these evaluations are presented as graphs contained in the previous Section of this plan (Section 7) and conclusions from the DRA are included below:

- Historic periods of dry weather appear to have had an impact on the seasonally high Smith River discharge volumes and on seasonally high groundwater elevations;

- Historic periods of dry weather (including the single driest year and driest 5 years) do not appear to have significantly impacted the seasonally low Smith River discharge volumes due to recharge from the surrounding Smith River Plain Groundwater Basin;

- Historic periods of dry weather do not appear to have had an impact on seasonally low groundwater elevations in the Smith River Plain Groundwater basin: and

- The Crescent City water supply is not currently experiencing the impact of drought and has been reliable even during periods of record low precipitation.

7.5.2 DRA Individual Water Source Reliability

The DRA was performed for the single source of water used by Crescent City, groundwater from the Smith River Plain Groundwater Basin.

7.5.3 DRA Total Water Supply and Use Comparison

The DRA total water supply and demand are compared and are presented in tables 7-1 through 7.5 These tables indicate that the Crescent City water supply is not currently experiencing the impact of drought and has been reliable even during periods of record low precipitation.

It is predicted that the Crescent City water supply will be reliable even during periods of record low precipitation (single driest year and driest 5 years) into the future for the planning period (25 years).

8.0 WATER SHORTAGE CONTINGENCY PLANNING

This Section describes Crescent City's staged plan for dealing with water shortages, including a catastrophic supply interruption.

The Crescent City Water Shortage Contingency Plan contains the following prescriptive elements:

- Key attributes of its Water Supply Reliability Analysis conducted pursuant to Water Code Section 10635. [Water Code Section 10632(a)(1)]

- Six standard water shortage levels corresponding to progressive ranges of up to 10-, 20-, 30-, 40-, and 50-percent shortages and greater than 50-percent shortage. [Water Code Section 10632 (a)(3)(A)]

- Locally appropriate "shortage response actions" for each shortage level, with a corresponding estimate of the extent the action will address the gap between supplies and demands. [Water Code Section 10632 (a)(4)]

- Procedures for conducting an annual water supply and demand assessment with prescribed elements. Under Water Code Section 10632.1, urban water Suppliers are required to submit, by July 1 of each year, beginning in the year following adoption of the 2020 UWMP, an annual water shortage assessment report to DWR. [Water Code Section 10632 (a)(2)]Water Shortage Contingency Plan UWMP Guidebook 2020 8-5

- Communication protocols and procedures to inform customers, the public, and government entities of any current or predicted water shortages and associated response actions. [Water Code Section 10632 (a)(5)]

- Monitoring and reporting procedures to assure appropriate data is collected to monitor customer compliance and to respond to any state reporting requirements. [Water Code Section 10632(a)(9)]

- A reevaluation and improvement process to assess the functionality of its WSCP and to make appropriate adjustments as may be warranted. [Water Code Section 10632(a)(10)]

Crescent City has a Water Shortage Contingency Plan (WSCP) (Appendix C) that governs their actions during a water shortage emergency and under various specific conditions authorized by Crescent City Municipal Code Section 13.17 (contained in Appendix D). The water shortage contingency plan provides a range of water use restrictions to reduce water consumption. Crescent City Municipal Code Section 13.17 provides enforcement authority and penalties for violation of the water use restrictions. Crescent City's Municipal Code Section 13.17 was designed to be flexible and able to be implemented in a wide range of water shortage situations. The Crescent City WSCP meets the 2020 UWMP requirements. Table 8-1 contains the water shortage contingency levels and Table 8-2 contains demand reduction measures.

9.0 DEMAND MANAGEMENT MEASURE

This Section will describe Crescent City's efforts to promote conservation and to reduce demand on their water supply and will specifically address several demand management measures (DMMs).

9.1 Demand Management Measures for Retail Agencies

***Requirement**: (A) The narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

- ***(i)*** *Water waste prevention ordinances.*
- ***(ii)*** *Metering.*
- ***(iii)*** *Conservation pricing.*
- ***(iv)*** *Public education and outreach.*
- ***(v)*** *Programs to assess and manage distribution system real loss.*
- ***(vi)*** *Water conservation program coordination and staffing support.*
- ***(vii)*** *Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented. (CWC 10631 (f))*

Water Waste Prevention Ordinance – Crescent City Municipal Code Section 13.17 prohibits the waste of water. "No water furnished by the City may be wasted" (13.17.028).

Metering - All Crescent City customer sectors are metered including separate meters for single-family residential, commercial, industrial and educational facilities. All customers are on meters and are billed by volume used.

Conservation Pricing - The City of Crescent City completed a rate study in September 2013 and approved a new rate structure in 2013. The new rate structure utilizes a uniform rate and results in conservation pricing. City is currently undergoing a new rate study which is anticipated to be completed in 2021. Intent is to enhance the current conservation pricing.

Public Education and Outreach – Crescent City supports initiatives to inform the public about water conservation. In the future, Crescent City will continue these efforts to raise public awareness of water conservation issues in a similar manner.

Crescent City has a link on its web page to promote water use awareness and water conservation. Annual Consumer Confidence Reports include information about water conservation. Water users have access to a web application that allows water users to review water use over the past 12 months which promotes awareness and water conservation.

Programs to Assess and Manage Distribution System Real Loss – Crescent City has meters on all services and sources. Due to the water distribution system's age and the areas seismic events, Crescent City routinely monitors for leaks, conducts distribution system repair and meter calibration activities. Totalizers connected to the Crescent

City's control system measure and record production rates, receiving rates, as well as delivery rates. These readings are taken continuously and are monitored at all times by Crescent City staff. Crescent City will measure the effectiveness of this DMM by ongoing monitoring of system loss.

Water Conservation Program Coordination and Staffing Support - The Utilities Supervisor has been assigned as the City Conservation Coordinator and has overall responsibility for oversight and implementation of the water conservation program(s).

9.2 Implementation over the Past Five Years

> ***Requirement****: Provide a description of the supplier's water demand management measures. This description shall include all of the following:*
> *(1)(A) … a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. (CWC 10631(f)(2))*

Over the past five years Crescent City has focused water conservation efforts on public education and outreach and programs to assess and manage distribution system real loss.

Public Education and Outreach - In the past five years Crescent City has conducted public education and outreach including:

- Public announcements and discussions at public meetings,
- Flyers are available at City Hall which promote water conservation,
- The City website has a link to water conservations tips and tools,
- Annual conservation message is placed in the Consumer Confidence Report, and
- Each water user has access to a website that reports their monthly water use for the past 12 months.

Programs to Assess and Manage Distribution System Real Loss – Crescent City has completed AWWA Water Loss Audits for calendar years 2013 through 2019. Based on results of the audits Crescent City has focused efforts on leak repair. Crescent City has also been working continuously with the water billing software and software provider to be able to generate meaningful reliable monthly water distribution volumes.

9.3 Planned Implementation to Achieve Water Use Targets

> ***Requirement****: Provide a description of the supplier's water demand management measures. This description shall include all of the following:*
> *(1)(A) …The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20. (CWC 10631(f))*

To maintain water conservation, Crescent City will continue to emphasize public education and outreach and programs to assess and manage distribution real loss.

10.0 PLAN ADOPTION, SUBMITAL AND IMPLEMENTATION

The following steps will be used for the WSCP adoption, submittal, and to make it available to the public:

- Notification of public hearing – Crescent City will notify cities, counties, and the public that they will be reviewing its WSCP and considering changes or amendments - At least 60 days prior to public hearing (Table 10-1).

- Notification to the public – Crescent City will provide two notifications - Published in a local newspaper at least once a week for two successive weeks prior to the City Council meeting (public hearing) (Appendix E).

- Public hearing and optional adoption – The City will allow for community input, considering economic impacts, and can be combined with the adoption meeting as long as the public hearing is on the agenda before the adoption.

- Adoption – The adoption hearing is for the City Council to formally adopt the UWMPP. Resolution 21-__ is contained in Appendix F.

- Plan submittal – Crescent City will update and submit its 2020 WSCP to DWR by July 1, 2021.

- Plan availability - No later than 30 days after adoption – Crescent City will submit the WSCP to the California State Library and all cities and counties within which the City provides water.

- Amending an adopted WSCP – If the City amends an adopted WSCP, each of the steps for notification, public hearing, adoption, and submittal must also be followed for the amended plan.

Notice to the public was provided per the above guidelines prior to the public hearing. A copy of the notice to the public is included in Appendix E.

References

(Kennedy Jenks, 2021). *Crescent City Climate Change Readiness Study*. 2021

(North Coast Fourth Assessment, 2018). Graham, Theodore (University of California, Berkeley). *North Coast Summary Report: California's Fourth Climate Change Assessment*. 2018.

TABLES

Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
Add additional rows as needed			
CA0810001	City of Crescent City	4,636	833
	TOTAL	4,636	833
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES:			

Submittal Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* (select from drop down list)
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	MG
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

Submittal Table 2-4 Retail: Water Supplier Information Exchange
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name
Add additional rows as needed
NOTES: There are no wholesale suppliers in Del Norte County.

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045*(opt)*
	20,365	19,960	19,548	19,215	18,956	18,756
NOTES: California Department of Finance, Report P-1A: Total Estimated and Projected Population for California and Counties: July 1, 2010 to 2060.						

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable[1] Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume[2]
Add additional rows as needed			
Single Family		Drinking Water	247
Commercial		Drinking Water	192
Industrial		Drinking Water	1
Institutional/Governmental		Drinking Water	179
Losses		Drinking Water	213
		TOTAL	831

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

[2]

NOTES:

Submittal Table 4-2 Retail: Use for Potable and Non-Potable[1] Water - Projected

Use Type	Additional Description (as needed)	Projected Water Use[2] *Report To the Extent that Records are Available*				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family		236	230	225	221	218
Commercial		222	222	222	222	222
Industrial		6	6	6	6	6
Institutional/Governmental		159	159	159	159	159
Losses		186	184	183	182	181
	TOTAL	809	801	795	790	786

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.* [2] *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Single Family demand is projected based on projeccted population growth. Other sectors are projected at the 5-year average demand.

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable *From Tables 4-1R and 4-2 R*	831	809	801	795	790	786
Recycled Water Demand[1] *From Table 6-4*	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage[2]						
TOTAL WATER USE	831	809	801	795	790	786

[1] Recycled water demand fields will be blank until Table 6-4 is complete *[2] Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier **may** deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.*

NOTES:

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss [1,2]
01/2016	110.2
01/2017	152.02
01/2018	179.74
01/2019	159.2
01/2020	214.5
[1] *Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* [2] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES: The 2020 AWWA Water Loss Audit had not been prepared at the time of the UWMP preparation.	

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

Urban Water Supplier: *City of Crescent City*

Water Delivery Product (If delivering more than one type of product use Table O-1C)
Retail Potable Deliveries

Table O-1A: Recommended Energy Reporting - Water Supply Process Approach

Enter Start Date for Reporting Period: 1/1/2020
End Date: 12/31/2020
Is upstream embedded in the values reported?

		Urban Water Supplier Operational Control							
		Water Management Process						Non-Consequential Hydropower (if applicable)	
	Water Volume Units Used	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process		*833*	*833*			*833*	*833*		*833*
Energy Consumed (kWh)	*N/A*	*944914*	*85173*			*122960*	*1153047*		*1153047*
Energy Intensity (kWh/vol. converted to MG)	*N/A*	*1134.4*	*102.2*	*0.0*	*0.0*	*147.6*	*1384.2*	*0.0*	*0.0*

Quantity of Self-Generated Renewable Energy
kWh

Data Quality *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

Data Quality Narrative:

Narrative:

Submittal Table 5-1 Baselines and Targets Summary
From SB X7-7 Verification Form
Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	*1995*	*2004*	*145*	*116*
5 Year	*2003*	*2007*	*127*	

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

Submittal Table 5-2: 2020 Compliance **From** **SB X7-7 2020 Compliance Form** *Retail Supplier or Regional Alliance Only*				
2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* *(Adjusted if applicable)*		
112	*SB X7-7 Table 9*	*SB X7-7 Table 9*	*116*	*Y*
**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*				
NOTES:				

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
☑	Supplier does not pump groundwater. The supplier will not complete the table below.					
☐	All or part of the groundwater described below is desalinated.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
Add additional rows as needed						
Alluvial Basin	Smith River Groundwater Basin	**656**	**738**	**819**	**830**	**833**
	TOTAL	656	738	819	830	833
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
100	Percentage of 2020 service area covered by wastewater collection system *(optional)*					
100	Percentage of 2020 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
City of Crescent City	Metered	472	City of Crescent City	Wastewater Treatment Facility	Yes	Yes
Total Wastewater Collected from Service Area in 2020:		472				
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3* **.**						
NOTES:						

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

☐ **No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)* [2]	Method of Disposal ***Drop down list***	Does This Plant Treat Wastewater Generated Outside the Service Area? ***Drop down list***	Treatment Level ***Drop down list***	2020 volumes [1]				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
Wastewater	Pacific Ocean	1	1A84006ODN	Ocean outfall	Yes	Secondary,	472	392	0	0	0
						Total	472	392	0	0	0

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.
[2] If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

NOTES:

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area

☑	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.

Name of Supplier Producing (Treating) the Recycled Water:	
Name of Supplier Operating the Recycled Water Distribution System:	
Supplemental Water Added in 2020 (volume) *Include units*	
Source of 2020 Supplemental Water	

Beneficial Use Type *Insert additional rows if needed.*	**Potential** Beneficial Uses of Recycled Water (Describe)	Amount of **Potential** Uses of Recycled Water (Quantity) *Include volume units* [1]	General Description of 2020 Uses	Level of Treatment *Drop down list*	2020 [1]	2025 [1]	2030 [1]	2035 [1]	2040 [1]	2045 [1] (opt)
Agricultural irrigation										
Landscape irrigation (exc golf courses)										
Golf course irrigation										
Commercial use										
Industrial use										
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)										
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)										
				Total:	0	0	0	0	0	0
				2020 Internal Reuse						

[1] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

☑	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.

Beneficial Use Type	2015 Projection for 2020 [1]	2020 Actual Use[1]
Insert additional rows as needed.		
Agricultural irrigation		
Landscape irrigation (exc golf courses)		
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	0	0

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

NOTE:

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
Add additional rows as needed			
		Total	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES:			

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Supplier* *This may be a range*
	Drop Down List (y/n)	*If Yes, Supplier Name*				
Add additional rows as needed						
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)	Smith River Groundwater Basin	833	Drinking Water	
	Total	833		0
Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*				
NOTES:				

Submittal Table 6-9 Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply * Report To the Extent Practicable									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**2025**		**2030**		**2035**		**2040**		**2045** (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Groundwater (not desalinated)	Smith River Groundwater Basin	809		801		795		790		786	
	Total	809	0	801	0	795	0	790	0	786	0

Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Projected groundwater supply is set equat to the projected demand. The total permit volume allowed is 1,194 MGY.

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	**Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	**% of Average Supply**
Average Year	1990	100%	100%
Single-Dry Year	2013	100	100%
Consecutive Dry Years 1st Year	1987	100	100%
Consecutive Dry Years 2nd Year	1988	100	100%
Consecutive Dry Years 3rd Year	1989	100	100%
Consecutive Dry Years 4th Year	1990	100	100%
Consecutive Dry Years 5th Year	1991	100	100%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

***Units of measure (AF, CCF, MG**) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 *(Opt)*
Supply totals (*autofill from Table 6-9)*	809	801	795	790	786
Demand totals *(autofill from Table 4-3)*	809	801	795	790	786
Difference	0	0	0	0	0
NOTES:					

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	809	801	795	790	786
Demand totals*	809	801	795	790	786
Difference	0	0	0	0	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*					
NOTES:					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	809	801	795	790	786
	Demand totals	809	801	795	790	786
	Difference	0	0	0	0	0
Second year	Supply totals	809	801	795	790	786
	Demand totals	809	801	795	790	786
	Difference	0	0	0	0	0
Third year	Supply totals	809	801	795	790	786
	Demand totals	809	801	795	790	786
	Difference	0	0	0	0	0
Fourth year	Supply totals	809	801	795	790	786
	Demand totals	809	801	795	790	786
	Difference	0	0	0	0	0
Fifth year	Supply totals	809	801	795	790	786
	Demand totals	809	801	795	790	786
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	815
Total Supplies	815
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	814
Total Supplies	814
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	812
Total Supplies	812
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	811
Total Supplies	811
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	809
Total Supplies	809
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

Submittal Table 8-1
Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions (*Narrative description*)
1	Up to 10%	During a Stage I water shortage voluntary water conservation is requested of all customers including the specific voluntary measures.
2	Up to 20%	During a Stage 2 water shortage voluntary water conservation is requested of all customers including the specific voluntary measures.
3	Up to 30%	During a Stage 3water shortage water use as indicated in the table below are nonessential and are prohibited: Outdoor irrigation of ornamental landscapes or turf with potable water is prohibited on odd numbered calendar days.
4	Up to 40%	During a Stage 4 water shortage emergency, in addition to the restricted water uses in earlier Stages, water uses indicated below are nonessential and are prohibited: Outdoor irrigation is prohibited unless total water use is reduced by 50 %
5	Up to 50%	During a Stage 5 water shortage emergency, in addition to the restricted water uses in earlier Stages, water uses indicated below are nonessential and are prohibited: Outdoor irrigation is prohibited unless total water use is reduced by 50 %
6	>50%	During a Stage 6 water shortage emergency, in addition to the restricted water uses in earlier stages, water uses indicated below are nonessential and are prohibited: Agricultural irrigation.

NOTES:

Submittal Table 8-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? ***For Retail Suppliers Only*** *Drop Down List*
Add additional rows as needed				
1	Landscape - Other landscape restriction or prohibition	10%		No
2	Landscape - Other landscape restriction or prohibition	20%		No
3	Other - Prohibit use of potable water for washing hard surfaces	30%		Yes
4	Landscape - Limit landscape irrigation to specific days	40%		Yes
5	Landscape - Limit landscape irrigation to specific days	50%		Yes
6	Landscape - Prohibit all landscape irrigation	>50%		Yes
NOTES:				

Submittal Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
Add additional rows as needed			
NOTES: Due to the rural setting none of the supply augmentation methods are available to Crescent City.			

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Del Norte County	Yes	Yes
NOTES: Crescent City is the only incorporated city in del Norte County.		

FIGURES

APPENDIX A
NOTICE OF PREPARATION TO NEIGHBORING MUNICIPALITIES

APPENDIX B
SBX 7-7 TABLES

APPENDIX C
CRESCENT CITY WATER SHORTAGE CONTINGENCY PLAN

APPENDIX D
CRESCENT CITY MUNICIPAL CODE SECTION 13.17

APPENDIX E
NOTICE OF PUBLIC HEARING FROM THE LOCAL NEWSPAPER

APPENDIX F
CRESCENT CITY RESOLUTION 21-__