

2010 URBAN WATER MANAGEMENT PLAN Amendment Crescent City, California

Prepared for:
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City of Crescent City
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INTRODUCTION

This 2010 Urban Water Management Plan (UWMP) Amendment has been prepared for Crescent City, California in compliance with requirements of the California Department of Water Resources (DWR) pursuant to the Urban Water Management Act (UWMP Act) and the Water Conservation Bill of 2009. The City of Crescent City previously prepared a 2005 UWMP (Winzler & Kelly, 2006).

The UWMP Act (California Water Code §10610 et seq.) requires urban water suppliers to report, describe, and evaluate the following:

- Water deliveries and uses;
- Water supply sources;
- Efficient water uses; and
- Demand Management Measures (DMMs), including implementation strategy and schedule.

In addition, the Water Conservation Bill of 2009 requires urban water suppliers to report in their UWMPs base daily per capita water use (baseline), urban water use target, interim urban water use target, and compliance daily per capita water use. The UWMP Act directs water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future demands (CWC 10612 (b)). Urban water suppliers are required to assess current demands and supplies over a 20-year planning horizon and consider various drought scenarios. The UWMP Act also requires water shortage contingency planning and drought response actions to be included in the UWMP.

This 2010 UWMP Amendment was prepared and adopted in 2014. The original 2010 UWMP was prepared and adopted in 2012. The previous plan was submitted in August 2006.

The data used for preparing this report comes primarily from the Crescent City's operational records, and the 2005 UWMP (Winzler & Kelly, 2006). Data related to watershed runoff were obtained from the United States Geological Survey. Current and projected population figures for the service area are based on data from the U.S. Census Bureau.

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

SECTION 1 PLAN PREPARATION

The intent of this section is to describe how the UWMP was prepared, coordinated with other agencies and the public, and adopted. This plan was prepared with the assistance of Freshwater Environmental Services.

1.1 Coordination

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 (10620(d)(2)).

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

1. Flood Control District W1, (FCW1);
2. Church Tree Community Services District;
3. Bertsch Oceanview Community Services District; and
4. Pelican Bay State Prison.

The municipalities that were notified of the preparation of the Crescent City 2010 UWMP update are listed above and included in Table 1. A copy of the notification letter forwarded to these communities is contained in Appendix A.

Requirement - The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan (10635(b)).

The City of Crescent City will provide copies of the updated UWMP to the entities that were notified of its preparation as listed above within 60 days of submission.

Requirement - Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan (10642).

The City of Crescent City has encouraged public participation in the process of developing this 2010 UWMP. Public outreach and plan coordination is documented in Table 1.

Requirement: - Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area (10642).

For the City of Crescent City's 2010 UWMP Amendment, a public hearing was held during the July 7, 2014 Crescent City Council meeting. Two weeks prior to the hearing, notice of the

time and place of the public hearing was published in the local newspaper and posted on the City's web site (Appendix B).

Requirement: - After the hearing, the plan shall be adopted as prepared or as modified after the hearing (10642).

Following the public hearing the plan was modified and adopted as described below.

1.2 Plan Adoption, Submittal, and Implementation

Requirement: - The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640) (10621(c)).

Crescent City's 2010 UWMP Amendment, was adopted by the Crescent City Council on July 7, 2014 by Resolution 2014-28 (Appendix F), and will be submitted to the DWR by July 15, 2014.

Requirement: - An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan (10643).

The Crescent City 2010 UWMP Amendment is being implemented in accordance to the schedule contained in the plan.

SECTION 2 SYSTEM DESCRIPTION

The intent of this section of the UWMP is to describe the physical setting of the water distribution system and the population of the service area.

2.1 Service Area Physical Description

Requirement: - Describe the service area of the supplier (10631(a)).

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 is 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 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 Bureau data the population of the Crescent City water service area was 17,840 including Pelican Bay State Prison population.

The population served by the City's water system, which includes Crescent City, Pelican Bay State Prison and unincorporated areas is approximately 17,840 (2010) (Figure 1 thru 5). According to the California Department of Finance, and the US Census Bureau data, between 2000 and 2010 the City of Crescent City population increased by 5% while Del Norte County population increased by 4%. Estimates of future and past populations elsewhere in this report are based on an annual service area population increase of 0.5%.

The City supplies water to three water districts as well as customers in the urban services area and within the City's jurisdictional area. The districts hire by contract the City crews and staff to maintain their system and to perform the accounting. The districts are Flood Control District W1 (FCW1), 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) 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 million gallons per year). 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) with a maximum annual diversion of 3,666 AFY (1,194 million gallons per year).

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. The well is located on the river bank approximately 8.5 miles north of the City limits. The Ranney Well is capable of producing about 6,700 AFY (2,181 million gallons per year). Water is pumped from the source to a chlorination and fluoridation 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, fluoride injection equipment, 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/fluoridation 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. 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 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 (million gallons per day). 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. 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. A schematic of the water transmission system is included in Figure 8.

The Washington Blvd. storage reservoir and pumping facility was constructed in 1963. In 2001 the original 1 million gallon storage reservoir at this facility was replaced 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 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 is controlled via the Amador pump station master control panel. The Amador pumping facility was 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. During the water system upgrade, which took place 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 Fire District W-1 (FDW1), Churchtree and Bertsch Oceanview. Production from the Smith River between 2005 and 2010 is 690-830 million gallons per year, well below the permitted amount of 2,312 million gallons per year.

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

Crescent City supplies water to 3,886 active connections (2010). Approximately 3,772 residential connections (3,344 single family, 428 multi-family), 107 connections are commercial, six are industrial connections, and one connection for the Pelican Bay State Prison.

In 2010, a total of 690.2 million gallons of water was distributed to the city's customer base.

Requirement: - (Describe the service area) climate (10631(a)).

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 75 inches, with a majority of rainfall occurring between the months of October and April.

2.2 Service Area Population

Requirement: - (Describe the service area) 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. (10631(a)).

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. According to the California Department of Finance, and the US Census

Bureau data, between 2000 and 2010 the City of Crescent City population increased by 5% while Del Norte County population increased by 4%. Estimates of future and past population elsewhere in this report are based on an annual service area population increase of 0.5%. The current and estimated future population of the Crescent City water distribution service area is shown in Table 2.

Requirement: - (population projections) shall be in five-year increments to 20 years or as far as data is available (10631(a)).

According to the California Department of Finance, and the US Census Bureau, between 2000 and 2010 the City of Crescent City population increased by 5% while Del Norte County population increased by 4%. Estimates of future and past population elsewhere in this report are based on an annual service area population increase of 0.5%. The projected populations of the Crescent City water service area over the planning period were obtained by using a 0.5% annual population growth as indicated in Table 2.

Requirement: - Describe other demographic factors affecting the supplier's water management planning (10631(a)).

The City of Crescent City is primarily urban residential and prison (residential) in nature, which makes up approximately 92% of total City usage by volume. Commercial and industrial accounts make up the 8% balance.

The customer base for the Crescent City water distribution in 2010 is described in the table below:

Type of Service Connection	Percent of Water Use by Volume
Single-family residential	36.8%
Multi-family residential	26%
Commercial	6.4%
Industrial	1.8%
Landscape irrigation	0%
Other (Pelican Bay State Prison)	30%
Agricultural irrigation	0
Total	100%

SECTION 3 SYSTEM DEMANDS

3.1 Baselines and Targets

Requirement: - An urban retail water supplier shall include in its urban water management plan due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data (10608.20(e)).

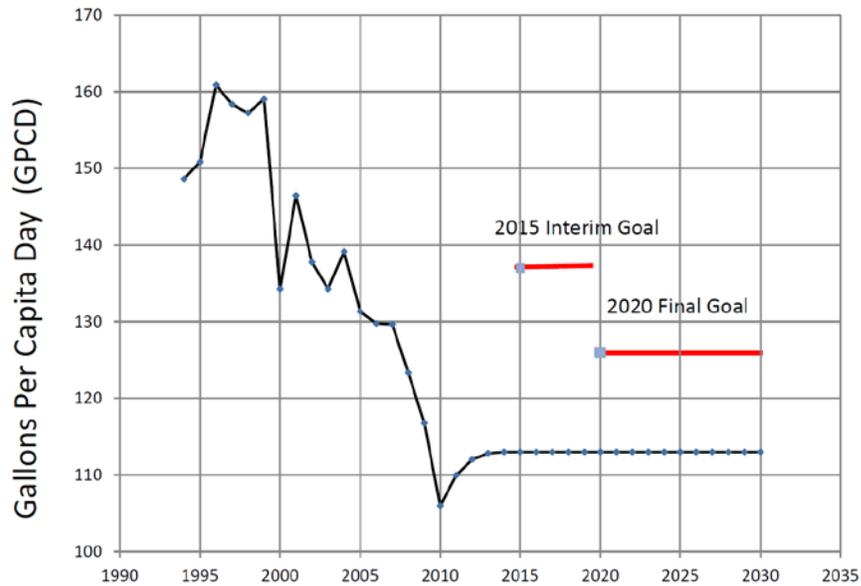
The Methodology contained in Calculating Baseline and Compliance Urban Per Capita Water Use, (California Department of Water Resources, 2011) was used to determine the target and baseline values for Crescent City (Tables 13-15). The spreadsheet used for determination of baseline and targets is included in Appendix C. The City of Crescent City calculated individual baselines and targets. In 2008, the 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. Technical methodology # 1 was used to determine gross water use and Technical methodology # 2 was used to determine the services population area. 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 # 3 (95% of the regional goal of 137) to calculate the 2020 GPCD goal for the District results in 130 GPCD.

The second baseline (5-year continuous period) was selected from 2003 to 2007. The average GPCD for the 5-year baseline was 132.8 GPCD. Since 95% of the 5-year baseline is 126 GPCD and is less than the 2020 GPCD goal using Method # 3 (130 GPCD) the adjusted 2020 GPCD goal is 126 GPCD. The interim target goal for 2015 is 137 GPCD.

Summary of GPCD Goals

10-year Base GPCD	148
80% (10-year Base GPCD)	118
North Coast Region Statewide Target by 2020	130
5-year Base Daily Per Capita Water Use	133
95% of 5-year Base GPCD/ adjusted 2020 Urban Water Use Target	126
Crescent City's Interim (2015) Goal	137
Crescent City's 2020 Target	126

The graph provided below illustrates the City of Crescent City GPCD data, baselines and targets.



3.2 Water Demand

Requirement: - Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multi-family; (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 (10631(e)(1) and (2)).

The required information is included in Tables 3 through 7. There is no anticipation that Crescent City would sell water to any other agencies as indicated in Table 9.

Requirement: - The water use projections required by Section 10631 shall include projected water use for single-family and multi-family 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 (10631.1(a)).

According to the Del Norte County General Plan Housing Element, 2008-2014, low income and very low income households have an income less than 80% of the median household income account for 44% of the population. Water use projections include projected water use for single-family and multi-family residential housing needed for lower income (Table 8). As stated earlier in the plan it is assumed that 80% of the commercial water use is for multi-family residential.

3.3 Water Demand Projections

Requirement: - Urban water suppliers that rely 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) (10631(k)).

The City of Crescent City does not rely upon a wholesale agency for a source of water as reflected in Table 12.

3.4 Water Use Reduction Plan

Requirement: - Urban wholesale water suppliers shall include in the urban water management plans an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts (CWC §10608.26).

The City of Crescent City has established a 2020 water consumption goal of 87.3 GPCD. Due to ongoing conservation measures the GPCD has been significantly reduced in the past 10 years from over 100 GPCD in 2000 to less than 80 GPCD in 2010 surpassing the 2020 water consumption goal. The City of Crescent City is committed to initiating public and school education programs. These additional water conservation measures should result in additional reductions beyond the 2020 GPCD goal.

SECTION 4 SYSTEM SUPPLIES

This section describes the sources of water available to the City of Crescent City. It includes a description of each water source, source limitations (physical or political), water quality, and water exchange opportunities.

4.1 Water Sources

Requirement: - Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a) (10631(b)).

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 acre-feet per year (AFY) (944,265 million gallons per year), 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 as indicated in Tables 16 and 17.

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 location of point of diversion. The place of use for CDC permit appears to be contained within the place of use for City of Crescent City Permit. A summary of the permit limits for pumping rate and total annual production is included in the table below.

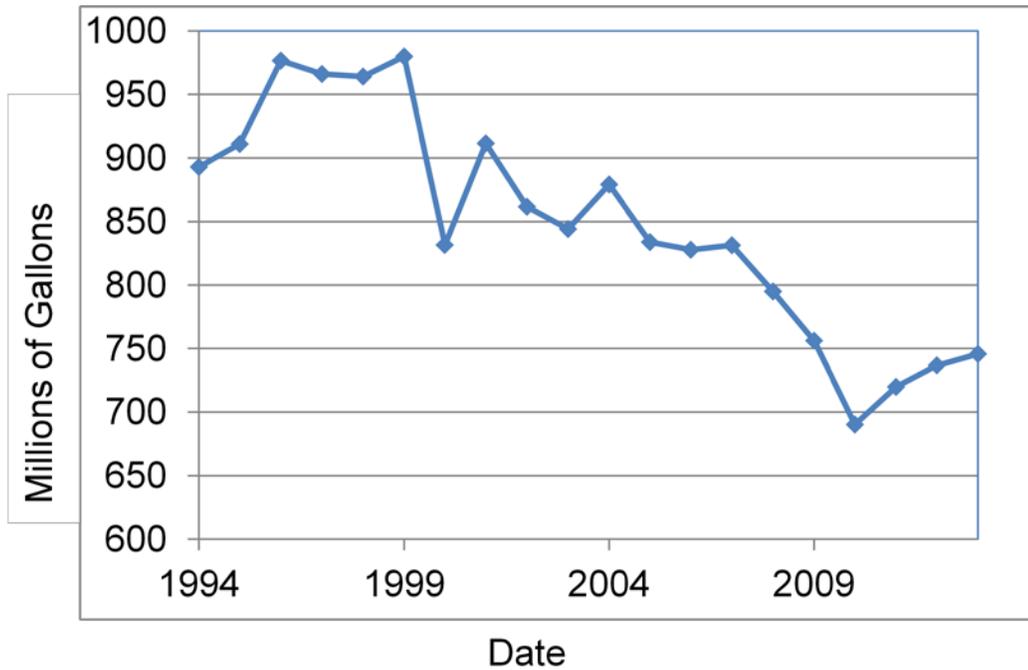
Maximum Permitted Pumping Rate			
Entity	Permit Number	Cubic Feet per Second	Million Gallons /Day
City of Crescent City	11475	9.8	6.3
State Department of Corrections	20210	3	1.9
Total		12.80	8.2

Maximum Permitted Annual Production			
Entity	Permit Number	Acre Feet / Year	Million Gallons /Year
City of Crescent City	11475	2600	847
State Department of Corrections	20210	1066	347
Total		3666.00	1194.00

Currently the City of Crescent City has water rights to divert a combined maximum 8.3 million gallons per day (MGD) and maximum 1,194 million gallons per year 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 millions of gallons per year.

Total Crescent City Water Production



In the planning period there are no plans to acquire water from any wholesalers or other sources as indicated in Tables 16 and 17. The total available water supply as indicated in Table 32.

4.2 Groundwater

Requirement: - (Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . . (10631(b))?

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

Requirement: - (Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management (10631(b)(1)).

A Groundwater Management Plan has not been developed for the Smith River Plain Groundwater Basin.

Requirement: - (Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater (10631(b)(2)).

Crescent City's drinking water is acquired from groundwater. 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 (Figures 6 and 7). The geology of the Smith River Plain Groundwater Basin is shown in Figure 3. The general location of the Crescent City Ranney Well is included in Figures 6 and 7.

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 Boundaries and Hydrology

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 form 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.

Requirement: - (For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board (10631(b)(2)).

The City of Crescent City currently extracts water from the Smith River (underflow) under 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 location of 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	8.3

Maximum Permitted Annual Production			
Entity	Permit Number	Acre Feet / Year	Million Gallons /Year
City of Crescent City	11475	2600	847
State Department of Corrections	20210	1066	347
Total		3666.00	1194.14

Currently the City of Crescent City utilizes water rights to divert a combined maximum 8.3 million gallons per day (MGD) and maximum extraction of 1,194 million gallons per year from the Smith River.

Requirement: - (Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree (10631(b)(2)).

The City of Crescent City currently extracts groundwater (underflow from the Smith River) under the authority of the permits and limits described above.

Requirement: - For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition (10631(b)(2)).

The Smith River Plain Groundwater Basin is not in critical or overdraft condition (DWR, 1975).

Efforts being undertaken to eliminate long-term overdraft conditions include metering of groundwater pumping, and promotion of water conservation techniques through various programs.

Requirement: - (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records (10631(b)(3)).

The volume of groundwater pumped from 2005 through 2010 is included in Table 18. During 2005-2010 there were no limitations or challenges obtaining groundwater.

Requirement: - (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records (10631(b)(4)).

The volume of water projected to be pumped during the planning horizon of the UWMP is included in Table 19. There are no changes or expansion planned for the groundwater supply.

4.3 Transfer Opportunities

Requirement: - Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis (10631(d)).

Currently, and in the planning horizon, the City of Crescent City does not plan to exchange or transfer water on a short-term or long-term basis (Table 20).

4.4 Desalinated Water Opportunities

Requirement: - Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply (10631(i)).

The City being located on the Pacific coast of California has the potential and opportunity, if needed, to develop desalinated water from ocean and brackish supplies. These sources could serve as long-term supplies for the City.

Water desalination is cost prohibitive and is not being considered in the planning period.

4.5 Recycled Water Opportunities

Requirement: - Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area (10633).

The City's 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 will seek opportunities for the use of 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. The 24-inch diameter ductile iron pipe outfall discharges into a rocky slot in the surf zone adjacent to Battery Point Lighthouse, and has an effluent conveyance capacity up to 13 mgd.

Use of recycled wastewater is indicated in Table 23.

Requirement: - (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal (10633(a)).

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 17,840 (2010). 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 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.

Requirement: - (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project (10633(b)).

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.

Requirement: - (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use (10633(c)).

Currently recycled water is not being used in the service area.

Requirement: - (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses (10633(d)).

The City has considered using recycled water for irrigation of Beachfront Park. Other uses of recycled water will be considered by the City as opportunities present themselves. Volumes of existing planned and potential uses of recycled water are indicated in Table 23.

Requirement: - (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision (10633(e)).

Volumes of existing planned and potential uses of recycled water are indicated in Table 23. In the City's 2005 UWMP it was projected that the City could use approximately 1.7 MGD (620

million gallons per year) of recycled water for irrigation of Beachfront Park. Currently it is possible that the City could use approximately 250,000 gallons of recycled water per day for a 5-month irrigation season resulting in an annual use of 3.74 million gallons per year as indicated in Table 23.

Requirement: - (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year (10633(f)).

The City has considered using recycled water for irrigation of Beachfront Park. Other uses of recycled water will be considered by the City as opportunities present themselves. When in place the City will consider offering discounted rates for recycled water as compared to potable water to encourage its use. The City will consider implementing a proactive public education program to communicate the benefits (safety and reliability) of recycled water use.

The resulting volume of recycled water used as a result of the financial incentive and public education is not known and will partially depend on the commercial/industrial users located in Crescent City at the time that recycled water is available for distribution.

Requirement: - (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recycling uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use (10633(g)).

The City plans on identifying potential customers and conducting feasibility analysis to determine the potential of using recycled water. The City then plans on performing cost-benefit analysis to identify which customers' use of recycled water is most feasible and of greatest benefit to the City. The results from the above activities will be used to develop a recycled water optimization plan for the City.

4.6 Future Water Projects

Requirement: - (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program (10631(h)).

The City is able to meet the total water projected use with the existing water source and does not have any future projects or programs planned other than the demand management programs described in Section 5. As indicated in Table 26 the City does not have any planned projects or programs to expand the water supply.

SECTION 5 WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING

Water supply reliability is the ability for a water supply to manage water shortages. Given the abundance of water available from the Smith River Plain Groundwater Basin and system upgrades, the short-term and long-term reliability of the source, even considering climatologic effects, are not major concerns for the City over the 20 year planning period.

5.1 Water Supply Reliability

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 (10620(f)).

Crescent City ensures the long-term functionality and production from the Ranney Collector well by inspecting the well on a semi-annual schedule. Due to the high quality of the water being pumped, the well has required minimal maintenance since it was installed in 1958.

Factors other than climate can cause a water supply shortage including earthquakes, major fire emergencies, power outages, localized flooding, water contamination and acts of sabotage. These shortages are planned for in the City's Water Shortage Contingency Plan discussed later in this plan.

According to the City's Water Shortage Contingency Plan (1997) the City's sole water source is groundwater from the Smith River Plain Groundwater Basin. This has historically proven to be an abundant source of good quality water with no water supply shortages experienced, even during the 1977 drought.

The City maintains an Emergency Disaster Response Plan which describes how the City will respond to a disaster/emergency that affects the water system. The plan includes:

- Responsible personnel;
- Available resources;
- Agency coordination; and
- Response procedures.

In the case of a power outage, all of the City's pump stations are equipped with emergency generators. Additionally the City also maintains enough supplies to replace any single portion of the system that may be damaged in a disaster.

Requirement: - For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable (10631(c)(2)).

The City maintains supplemental water supplies in the form of storage within the transmission and distribution system and water system storage reservoirs. The City maintains a total storage of 6.355 million gallons in six reservoirs: the Elevated Reservoir (50,000 gallons), the Washington Blvd. Reservoir (4 million gallons), the Amador St. Reservoir (1.5 million gallons), Bertsch Ocean View District Tank (750,000 gallons), Wigley Tank (25,000 gallons) and

Church Tree District Tank (30,000 gallons). There are no current plans to supplement or seek any alternative sources of water for the City of Crescent City.

5.2 Water Shortage Contingency Planning

Requirement: - Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster (10632(c)).

The California Safe Drinking Water Act mandates in Section 4029 that every public water system includes a Disaster Response Plan as part of their Emergency Notification Plan. This plan will outline the steps to be taken to maintain or return water service to the City's customers after a major disaster.

In the event of a major earthquake, the City has steps in the Crescent City Emergency/ Disaster Response Plan that detail the City's responses.

The City has a Water Shortage Contingency Plan dated September, 1997 included in Appendix D. Implementation of the plan will be coordinated by City staff upon declaration of a water shortage emergency by the City Council. This plan was prepared in compliance with AB11 as required by the California Department of Water Resources and incorporated with the City's Urban Water Management Plan.

The City of Crescent City Municipal Code Section 13.17 regulates water conservation and is included in Appendix E.

The City has never experienced a water source deficiency. In theory, the worst case situation would be the water system transmission capacity's inability to meet consumer demand until system improvements are completed. Conservation and rationing programs are needed to ensure that water demand is met until system improvements can be completed that will increase capacity. The plan contains action stages and trigger levels. The action stage will be determined by the Director of Public Works. All restrictions under each applicable action stage shall be implemented immediately upon declaration of such stage. Lifting of an emergency action stage and resumption to the normal operating stage will be determined by the Director of Public Works based upon current conditions affecting the water supply.

Requirement: - Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning (10632(d)).

Crescent City Municipal Code contains the following mandatory prohibitions;

The City's Water Shortage Contingency Plan and Crescent City Municipal Code Section 13.17 contain mandatory prohibitions against specific water use during a Stage III Serious Water Shortage. This stage will take effect when the tank level at the Washington storage facility falls below 35% of storage capacity (ten foot level) and/or the tank level at the Amador storage facility falls below 26% of storage capacity (ten foot level).

During a Stage III Serious Water Shortage the following water uses are prohibited for all water users:

- Landscape irrigation or watering of lawns or gardens;
- Washing of cars, boats, trailers, or other vehicles;
- Washing down of driveways, sidewalks, buildings, windows, or any outdoor surface;
- Filling of swimming pools or hot tubs;
- Serving of drinking water at restaurants unless requested;
- Filling or operating of ornamental fountains, ponds, or lakes;
- Sewer system maintenance, fire protection training, or flushing of hydrants;
- Street cleaning or dust control; and
- Use of hydrant meters for construction purposes.

During a stage four prohibits all used of potable water except as necessary for human consumption, sanitation and fire protection.

Requirement: - Penalties or charges for excessive use, where applicable (10632(f)).

According to the Water Shortage Contingency Plan, warnings will be issued for water waste, over-watering, and water leaks. Crescent City Municipal Code Section 13.17.040 contains the enforcement provisions for the City Water Conservation code. It indicates that any willful violation after issuance of a second written warning shall constitute a misdemeanor and the City may at its discretion disconnect the water service.

Crescent City Municipal Code Section 13.17.050 contains the definition of water waste and the authority to charge the water user double the account billing rate.

Crescent City Municipal Code Section 13.17.060 provides the City authority to terminate a user's service after three *written notices* or continued excessive use of water.

Requirement: - Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 % reduction in water supply (10632(e)).

As indicated in the Water Shortage Contingency Plan, there are 4 stages and trigger levels.

Stage I - Voluntary Conservation Measures. Voluntary compliance with conservation measures. The City will initiate a water conservation program to provide public information on ways to reduce water use. Water customers and the community will be made aware of the emergency action stages and restrictions under the water storage contingency plan. Customers are encouraged to reduce water usage by taking the following voluntary water conservation measures:

- Refrain from landscape watering between the hours of 10:00 a.m. and 6:00 p.m.;
- Refrain from allowing water to run off any lawns, landscape, or garden into adjoining streets, gutters, sidewalks, parking lots or alleys;
- Refrain from hosing or washing sidewalks, walkways, driveways, parking lots, or other hard surfaced areas;
- Refrain from washing cars, boats, trailers, or other vehicles except by hose with a shutoff nozzle and bucket;
- Equip any hose with a shutoff nozzle and bucket;

- Promptly repair all leaks in plumbing fixtures, water lines, and sprinkler systems;
- Equip ornamental fountains, ponds, or lakes with a water recycling system;
- Equip commercial cash washes with a water recycling system;
- Refrain from filling or refilling a swimming pool, spa, or hot tub;
- Install low-flow shower heads, low-flush water closets, and faucet aerators;
- Operators of restaurants provide on each table a notice of water emergency and refrain from serving drinking water except upon specific request by a customer; and
- Operators of hotels and motels provide in each room a notice of water emergency.

This will be the normal operating stage for the water system.

Stage II - Mandatory Conservation Measures. Mandatory implementation of conservation measures. Customers shall comply with the following water conservation measures:

- Refrain from landscape watering between the hours of 10:00 a.m. & 6:00 p.m.;
- Refrain from allowing water to run off any lawns, landscape, or garden into adjoining streets, gutters, sidewalks, parking lots, or alleys;
- Refrain from hosing or washing sidewalks, walkways, driveways, parking lots, or other hard surfaced areas;
- Refrain from washing cars, boats, trailers, or other vehicles except by hose with shutoff nozzle and bucket;
- Equip any hose with a quick acting shutoff nozzle;
- Equip ornamental fountains, ponds, or lakes with a water recycling system;
- Equip commercial car washes with a water recycling system;
- Promptly repair all leaks in plumbing fixtures, water lines, and sprinkler systems.
- Refrain from filling or refilling a swimming pool, spa, or hot tub;
- Restaurants provide on each table a notice of water emergency and refrain from serving drinking water except upon specific request; and
- Hotels and motels provide in each room a notice of water emergency.

Customers will be notified via news media and other methods of this stage of water shortage emergency and implementation of mandatory conservation measures. Industrial water users will be specifically notified via telephone and city staff will make every attempt to keep them informed of the status of the water emergency so they can prepare for a possible shutdown of production. This stage will take effect when the tank levels at the Washington and/or Amador storage facilities fall below 50% of their storage capacity.

Stage III - Serious Water Shortage. Mandatory Reduction.

Customers will be notified via news media and other methods of this stage of water shortage emergency. Industrial users will be notified specifically via telephone and will be asked to voluntarily shutdown production during a Stage III water emergency. City staff will make every attempt to keep the industrial users informed of the status of a water emergency prior to the declaration of a Stage III water emergency so they can prepare for a possible shutdown of production. The following water uses will be prohibited for all water users:

- Landscape irrigation or watering of lawns or gardens;
- Washing of cars, boats, trailers, or other vehicles;
- Washing down of driveways, sidewalks, buildings, windows, or any outdoor surface;
- Filling of swimming pools or hot tubs;

- Serving of drinking water at restaurants unless requested;
- Filling or operating of ornamental fountains, ponds, or lakes;
- Sewer system maintenance, fire protection training, or flushing of hydrants;
- Street cleaning or dust control; and
- Use of hydrant meters for construction purposes.

This stage will take effect when the tank level at the Washington storage facility falls below 35% of storage capacity (ten foot level) and/or the tank level at the Amador storage facility falls below 26% of storage capacity (ten foot level).

Stage IV - Disaster Shortage/Rationing. Major catastrophe or contamination of the water supply. Priorities for all water use will be for human consumption, sanitation, and fire protection. All water users will be limited to amounts required for human consumption, sanitation, and fire protection. No water will be available for nonessential use or for commercial or industrial processes.

Requirement: - An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments (10632(g)).

Reduced revenue is expected during a period of water shortage. Crescent City maintains a reserve fund for such emergencies which would be used to supplement water sale revenue for short term water shortage. In the event of long term water shortage, a fee increase may be implemented to reduce reserve fund depletion and promote water conservation. All service connections are metered in the service area and can easily be compared to historical consumption data to determine actual reduction in water use during a period of water shortage. Tables 29 (Proposed measures to overcome revenue impacts) and Table 30 (Proposed measures to overcome expenditure impacts) are not applicable.

Requirement: - A draft water shortage contingency resolution or ordinance (10632(h)).

A copy of City of Crescent City Municipal Code Section 13.17 "Water Conservation" establishing rules and regulations for rationing water during a water shortage emergency and establishing penalties for violations thereof." is attached (Appendix E).

5.3 Water Quality

Requirement: - The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability (10634).

Groundwater Wells, Smith River Plain Groundwater Basin 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.

5.4 Drought Planning

Requirement: - Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) an average water year, (B) a single dry water year, (C) multiple dry water years (10631(c)(1)).

The North Coast is one of the few areas in California with an adequate water supply. Droughts, while severe climatically, have not resulted in the level of water supply shortfalls that other areas of California routinely experience.

Reliability is a measure of a water service system's expected success in managing water shortages. Due to the abundance of water available from the Smith River Plain Groundwater Basin source and the recent water system upgrades the short-term and long-term reliability of the source and any climatologic effects are not major concerns for the City now or in the next 10 to 20 years.

Historic annual rainfall data from the City of Crescent City was acquired from the California Department of Water Resources. The Smith River annual discharge rates as acquired from the United States Geological Survey Bureau (USGS). The annual rainfall and annual Smith River discharge is summarized in the table below.

Crescent City Precipitation			
	Inches	Years	Percent of Normal
Normal Year	68.7	1932-1996	
Single Dry Water Year	33.2	1977	48.3%
Multi-dry Water Year	49.3	1990-1992	71.7%

Smith River Discharge			
	Cubic Feet/Second	Years	Percent of Normal
Normal Year	3743	1931-2101	
Single Dry Water Year	975	1977	26.0%
Multi-dry Water Year	1,644	1990-1992	43.9%

A normal year rainfall for Crescent City is 68.7 inches per year. A normal year for Smith River discharge is 3,743 cfs. The single dry water year based on precipitation and discharge, was 1977 representing 48% and 26% of normal respectively. The multiple dry water years based on precipitation and discharge was 1990-1992 representing 72% and 44% of normal respectively.

During the single driest year (1977) and during the multiple dry water years (1990-1992) the City had adequate water supplies without any restrictions. The lack of water shortages or restrictions during the single driest water year and multiple dry water years is illustrated in Tables 31-34.

Requirement: - Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage (10632(a)).

As indicated in the Water Shortage Contingency Plan, there are 4 stages and trigger levels.

Stage I - Voluntary Conservation Measures. Voluntary compliance with conservation measures. The City will initiate a water conservation program to provide public information on ways to reduce water use. Water customers and the community will be made aware of the emergency action stages and restrictions under the water storage contingency plan. Customers are encouraged to reduce water usage by taking the following voluntary water conservation measures:

- Refrain from landscape watering between the hours of 10:00 a.m. and 6:00 p.m.;
- Refrain from allowing water to run off any lawns, landscape, or garden into adjoining streets, gutters, sidewalks, parking lots or alleys;
- Refrain from hosing or washing sidewalks, walkways, driveways, parking lots, or other hard surfaced areas;
- Refrain from washing cars, boats, trailers, or other vehicles except by hose with a shut off nozzle and bucket;
- Equip any hose with a shutoff nozzle and bucket;
- Promptly repair all leaks in plumbing fixtures, water lines, and sprinkler systems;
- Equip ornamental fountains, ponds, or lakes with a water recycling system;
- Equip commercial car washes with a water recycling system;
- Refrain from filling or refilling a swimming pool, spa, or hot tub;
- Install low flow shower heads, low flush water closets, and faucet aerators;
- Operators of restaurants provide on each table a notice of water emergency and refrain from serving drinking water except upon specific request by a customer; and
- Operators of hotels and motels provide in each room a notice of water emergency.

This will be the normal operating stage for the water system.

Stage II - Mandatory Conservation Measures. Mandatory implementation of conservation measures. Customers shall comply with the following water conservation measures:

- Refrain from landscape watering between the hours of 10:00 a.m. & 6:00 p.m.;
- Refrain from allowing water runoff any lawns, landscape, or garden into adjoining streets, gutters, sidewalks, parking lots, or alleys;
- Refrain from hosing or washing sidewalks, walkways, driveways, parking lots, or other hard surfaced areas;
- Refrain from washing cars, boats, trailers, or other vehicles except by hose with shutoff nozzle and bucket;
- Equip any hose with a quick acting shut off nozzle;
- Equip ornamental fountains, ponds, or lakes with a water recycling system;
- Equip commercial car washes with a water recycling system;
- Promptly repair all leaks in plumbing fixtures, water lines, and sprinkler systems;
- Refrain from filling or refilling a swimming pool, spa, or hot tub;
- Restaurants provide on each table a notice of water emergency and refrain from serving drinking water except upon specific request; and
- Hotels and motels provide in each room a notice of water emergency.

Customers will be notified via news media and other methods of this stage of water shortage emergency and implementation of mandatory conservation measures. Industrial water users

will be specifically notified via telephone and City staff will make every attempt to keep them informed of the status of the water emergency so they can prepare for a possible shutdown of production. This stage will take effect when the tank levels at the Washington and/or Amador storage facilities fall below 50% of their storage capacity.

Stage III - Serious Water Shortage. Mandatory Reduction.

Customers will be notified via news media and other methods of this stage of water shortage emergency. Industrial users will be notified specifically via telephone and will be asked to voluntarily shutdown production during a Stage III water emergency. City staff will make every attempt to keep the industrial users informed of the status of a water emergency prior to the declaration of a Stage III water emergency so they can prepare for a possible shutdown of production. The following water uses will be prohibited for all water users:

- Landscape irrigation or watering of lawns or gardens;
- Washing of cars, boats, trailers, or other vehicles;
- Washing down of driveways, sidewalks, buildings, windows, or any outdoor surface;
- Filling of swimming pools or hot tubs;
- Serving of drinking water at restaurants unless requested;
- Filling or operating of ornamental fountains, ponds, or lakes;
- Sewer system maintenance, fire protection training, or flushing of hydrants;
- Street cleaning or dust control
- Use of hydrant meters for construction purposes.

This stage will take effect when the tank level at the Washington storage facility falls below 35% of storage capacity (ten foot level) and/or the tank level at the Amador storage facility falls below 26% of storage capacity (ten foot level).

Stage IV - Disaster Shortage/Rationing. Major catastrophe or contamination of the water supply. Priorities for all water use will be for human consumption, sanitation, and fire protection. All water users will be limited to amounts required for human consumption, sanitation, and fire protection. No water will be available for nonessential use or for commercial or industrial processes.

Requirement: - An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historical sequence for the agency's water supply (10632(b)).

During the single driest year (1977) and during the multiple dry water years (1990-1992) the City had adequate water supplies without any restrictions. The lack of water shortages or restrictions during the single driest water year and multiple dry water years is illustrated in Tables 31-34.

Requirement: - A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis 10632(i).

The City's water source is metered and daily readings are recorded. All customer accounts are metered and recorded monthly. Water production records are reviewed on a regular basis.

The water storage tank levels, system pressure, and pump operations are inspected daily.

During times or water shortages emergency action Stages II, III, and IV system components will be monitored as often as needed each day with the results reported to the Director of Public Works.

Existing record keeping and monitoring methods will allow the City to determine actual reductions in water usage during a water shortage emergency.

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 total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry 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 (10635(a)).

Tables 32 thru 34 compare current, and projected water supply and demand in 5 year increments through the planning period for normal, single dry and multiple dry water year scenarios. Available supplies do not appear to be affected by single and multiple dry years due to the significant storage reserves of the Smith River Plain Groundwater Basin.

SECTION 6 DEMAND MANAGEMENT MEASURES

6.1 Demand Management Measures (DMMs)

Requirement: - (Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing; (L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-lowflush toilet replacement programs (10631(f)(1) and (2)).

Requirement: - A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan (10631(f)(3)).

Requirement: - An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand (10631(f)(4)).

Requirement: - An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation (10631(g)).

DMM A - Water Survey for Single/Multi-Family Residential Customers

The City will be implementing a relatively simple, low-cost checklist designed for customers to use by themselves. The City has opted to design a checklist for customers to use in evaluating their potential water savings. In the 2014/2015 fiscal year the City will research options for development of a water survey program either by City staff or in collaboration with neighboring municipalities. Program development will include creation of a checklist and informational literature.

Implementation costs for a water survey program could be kept to a minimum if staffing for the program is provided by the City. In addition to funds, resources needed to implement this DMM include personnel to manage the program; creation of a checklist and informational literature and program advertisement.

DMM B - Residential Plumbing Retrofit

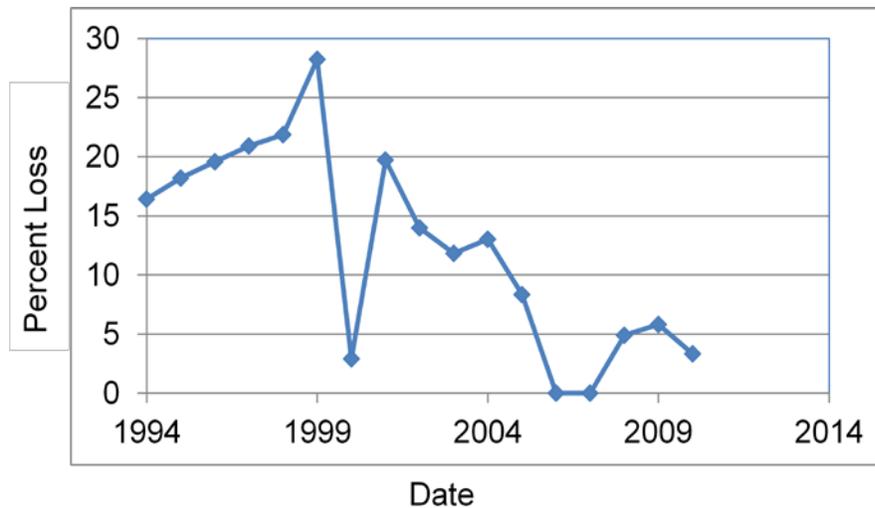
The City has distributed showerheads and aerators as a condition of its low-flow toilet rebate program. The City began this program in 2003 and it is ongoing.

DMM C - System Water Audits, Leak Detection (Foundational)

During 2014 the City will utilize the American Water Works Association (AWWA) leak audit software to assist in leak detection. In addition, the City will hire a leak detection contractor to do a detailed leak study of specific portions of the water distribution system.

In addition, the City performs leak detection and repair service on a regular basis utilizing leak detection contractors and City Staff. The graph below illustrates the results of the ongoing leak detection and repair program. The City has reduces the water loss percent from over 25 % in the 1999 to below 5 % in 2010.

Crescent City Water System Loss



DMM D - Metering with Commodity Rates for All New Connections (Foundational)

Within the Crescent City service area all new service connections are metered and are being billed by volume of use. In 2010 there were 3,886 metered accounts that are read on a monthly bases and are billed by volume of use. All customer meters are read and billed monthly (12 times per year). There are no unmetered accounts in the service area. There were no unmetered residential services connections retrofitted during this reporting period. In 2010 there were 535 commercial and institutional accounts (includes multi-family residences), and 6 industrial accounts. There were no unmetered commercial or industrial services connections retrofitted during this reporting period.

DMM E - Large Landscape Conservation Programs and Incentives

The City service area does not include any privately managed large landscape areas that rely on municipal water for irrigation purposes. Beachfront Park and the high school sports field are the only two landscape areas that irrigate with municipal water. The Beachfront Park is watered with an irrigation control system that results in water conservation. Since there are no privately managed landscape areas that are irrigated, a large landscape conservation

program and cost incentives is not possible. Crescent City performed a cost-benefit analysis on this DMM and found that it was not cost effective to implement. The cost-benefit analysis is included in Appendix H.

DMM F - High-Efficiency Washing Machine Rebate Programs

The City does not offer a rebate program for high-efficiency washing machines. Crescent City performed a cost-benefit analysis on this DMM and found that although it appears to be cost effective, the City plans to use funding for other conservation measures. The cost-benefit analysis is included in Appendix H.

DMM G - Public Information (Foundational)

The City distributes information to the public regarding water rates, water use and conservation information in customer's monthly water bills. The City also distributes an annual water report to its customers, which provides information on water chemistry, rates, and water usage. In addition, the City posts important notices in the local newspapers. Actual costs related to these efforts are minimal. Expenditures for these programs are difficult to estimate, as they are built into the City's water fund. The City has no method to quantify the savings of DMM G, but believes that this program is in the public's interest.

Starting in 2013 the City will have quarterly contact with the public and with the media. The City website will contain water conservation information that will be updated quarterly. The City will maintain a file containing samples of materials and documentation of contacts.

The City believes it would currently be difficult to estimate the effects of water conservation savings on the City revenue for DMM G.

DMM H - School Education (Foundational)

The City does not currently work with the local school districts, but plans to begin promoting water conservation in the schools by 2013. The City will begin working with the local school districts and providing teachers with educational materials for use in grades K-12. Some educational materials are currently available from California Project W.E.T. (Water Education for Teachers) that can be used in the classroom. The City will maintain a file containing samples of materials and documentation of school contacts.

The City believes it would currently be difficult to estimate the effects of water conservation savings on the City revenue for DMM H.

DMM I - Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

The City has very few water intensive commercial accounts. Rumiano Cheese and Pelican Bay State Prison are the two largest consumers. Landscapes only require irrigation (if at all) during the four summer months, with abundant rainfall available during fall, spring and winter. Crescent City performed a cost-benefit analysis on this DMM and found that although it appears to be cost effective, the City plans to use funding for other conservation measures. The cost-benefit analysis is included in Appendix H.

DMM J - Wholesale Agency Assistance Programs

The City is not a wholesale agency and is therefore exempt from this water demand management measure. There are no revenue reduction effects of water conservation savings on the City's revenue for DMM J.

DMM K - Conservation Pricing (Foundational)

The City of Crescent City completed a rate study in September 2013 and approved a new rate structure in 2013 within Crescent City Ordinance Number 777 (Appendix G). The new rate structure utilizes a uniform rate and results in conservation pricing.

DMM L - Conservation Coordinator (Foundational)

The coordinator in charge of the Crescent City water conservation program is the Director of Public Works. The water conservation program began in 2003. It is estimated that the Director of Public Works dedicates approximately 25 hours per year to the water conservation program. Expenditures are estimated at \$1,000 per year. The City has no method to quantify the savings of DMM L but believes that this program is in the public's interest.

DMM M - Water Waste Prohibitions (Foundational)

Due to the abundant supply of source water, the City does not presently have a need for enforcing water conservation. However, the City has adopted a "no waste" ordinance. The City has historically, during times of inadequate distribution system supply, requested that customers refrain from landscape watering, which has been effective. In the event of a major interruption to water supply, the City's "no waste" ordinance goes into effect. There are no revenue reduction effects of water conservation savings on the City's revenue for DMM M.

DMM N - Residential Ultra Low-Flow Toilet (ULFT) Replacement Programs

The City supports water conservation through a low-flush toilet replacement program. Water users were provided a \$225 per toilet rebate for replacing older "high-flow" toilets with newer low-flow toilets provided they also install low-flow fixtures within their homes or businesses.

Slightly over 10 AFY have been conserved as a result of this program. Most "high-flow" toilets have already been replaced through this program; therefore, expenditures are predicted to decrease in the coming years. Although per capita water use may decline, the revenue reduction effects of water conservation savings resulting from DMM N are expected to be negligible since very few customers currently use more than 500 cubic feet of water each month. See DMM D (Section 6.5) for metering rates. The program has replaced approximately 600 toilets since 2003. There is no mandatory toilet retrofit on resale ordinance in effect in the City.

SECTION 7 REFERENCES

California Department of Water Resources. 1965. North Central Hydrographic Area, Volume 1; Southern Portion. Bulletin 142-1.

California Department of Water Resources. 1975. California's Groundwater. California Department of Water Resources. Bulletin 118.

California, Department of Water Resources, 2003, California's Groundwater Bulletin 118, 2003 update.

California, Department of Water Resources, 1980: Ground Water Basins in California Bulletin 118-80.

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Winzler & Kelly, 2006. 205 Urban Water Management Plan, Crescent City, California.

Jennings, 1977 Geologic Map of California, Scale 1:750,000. California Division of Mines and Geology.

TABLES

Table 1 Coordination with appropriate agencies							
Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not involved / No information
Flood Control W1 (FCW1)					X	X	
Churchtree CSD					X	X	
Bertsch Oceanview CSD					X	X	
Pelican Bay Prison					X	X	
Del Norte County					X	X	

Table 2 Population — current and projected							
	2010	2015	2020	2025	2030	2035 - optional	Data source
Crescent City Water Service Area	17,840	18,290	18,752	19,226	19,711		US Census Bureau

Population based on 2010 US Census data. Growth is based on US Census 2000-2010 average annual growth 0.5%. California Department of Finance estimated growth for Del Norte county of 0.7%.

**Table 3
Water deliveries — actual, 2005**

	2005				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	3,651	270.73			271
Multi-family					0
Commercial (includes Multi-family)	576	225.10			225
Industrial	7	16.36			16
Institutional/governmental					0
Landscape					0
Agriculture					0
Other (Prison)	1	252.10			252
Total	4,235	764	0	0	764

Units : million gallons per year

**Table 4
Water deliveries — actual, 2010**

	2010				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	3,344	245.40			245
Multi-family					0
Commercial (includes Multi-family)	535	213.20			213
Industrial	6	12.00			12
Institutional/governmental					0
Landscape					0
Agriculture					0
Other (Prison)	1	196.56			197
Total	3,886	667	0	0	667

Units : million gallons per year

**Table 5
Water deliveries — projected, 2015**

	2015				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	3,453	254.11			254
Multi-family					0
Commercial (includes Multi-family)	554	220.77			221
Industrial	6	12.43			12
Institutional/governmental					0
Landscape					0
Agriculture					0
Other (Prison)	1	195.56	0		196
Total	4,014	683	0	0	683

Units : million gallons per year

Volume and connections projected based on 0.5% increase per year.

**Table 6
Water deliveries — projected, 2020**

Water use sectors	2020				
	Metered		Not metered		Total
	# of accounts	Volume	# of accounts	Volume	Volume
Single family	3,576	263.13			263
Multi-family					0
Commercial (includes Multi-family)	574	228.60			229
Industrial	6	12.87			13
Institutional/governmental					0
Landscape					0
Agriculture					0
Other (Prison)	1.00	195.56	0		196
Total	4,157	700	0	0	700

Units : million gallons per year

Volume and connections projected based on 0.5% increase per year.

**Table 7
Water deliveries — projected 2025, 2030, and 2035**

Water use sectors	2025		2030		2035 - optional	
	metered		metered		metered	
	# of accounts	Volume	# of accounts	Volume	# of accounts	Volume
Single family	3,703	272.47	3,834	282		
Multi-family						
Commercial (includes Multi-family)	594	236.72	615	245		
Industrial	7	13.32	7	14		
Institutional/governmental						
Landscape						
Agriculture						
Other (Prison)	1	195.56	1	195.56		
Total	4,305	718	4,457	737	0	0

Units : million gallons per year

Volume and connections projected based on 0.5% increase per year.

**Table 8
Low-income projected water demands**

Low Income Water Demands ¹	2015	2020	2025	2030	2035 - opt
Single-family residential	112	116	120	124	
Multi-family residential	78	80	83	86	
Total	190	196	203	210	0

Units : million gallons per year

¹ Provide demands either as directly estimated values or as a percent of demand.

Del Norte County County General Plan Housing Element 2008-2014 (44% low and very-low income).

Low income multi-family residential is assumed to be 44 % of 80% of commercial water use.

**Table 9
Sales to other water agencies**

Water distributed	2005	2010	2015	2020	2025	2030	2035 - opt
NA							
NA							
NA							
Total	0						

Units : million gallons per year

Table 10 Additional water uses and losses							
Water use ¹	2005	2010	2015	2020	2025	2030	2035 -opt
Saline barriers							
Groundwater recharge							
Conjunctive use							
Raw water							
Recycled water (Water Front Park irrigation June-October)			3.74	3.74	3.74	3.74	
System losses	69.60	23.04	22.12	22.64	23.18	23.73	
Other (define)							
Total	69.60	23.04	25.86	26.38	26.92	27.47	0

Units: million gallons per year
Assumes annual loss to be maintained at 3% through 2030.
¹ Any water accounted for in Tables 3 through 7 are not included in this table.

Table 11 Total water use							
Water Use	2005	2010	2015	2020	2025	2030	2035 - opt
Total water deliveries (from Tables 3 to 7)	764	667	683	700	718	737	
Sales to other water agencies (from Table 9)							
Additional water uses and losses (from Table 10)	69.60	23.04	25.86	26.38	26.92	27.47	
Total	834	690	709	727	745	764	0

Units: million gallons per year

Table 12 Retail agency demand projections provided to wholesale suppliers							
Wholesaler	Contracted Volume ²	Peak Rate Allocation	2010	2015	2020	2025	2030
NA							
NA							
NA							

Table 13 Base period ranges			
Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries	755.99	see below
	2008 total volume of delivered recycled water	0	see below
	2008 recycled water as a percent of total deliveries	0%	percent
	Number of years in base period ¹	10	years
	Year beginning base period range	1/1/1995	
	Year ending base period range ²	12/31/2004	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	1/1/2003	
	Year ending base period range ³	12/31/2007	

Units: million gallons per year
¹ If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.
² The ending year must be between December 31, 2004 and December 31, 2010.
³ The ending year must be between December 31, 2007 and December 31, 2010.

Table 14
Base daily per capita water use — 10- to 15-year range

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	1995	16,548	2.496164384	151
Year 2	1996	16,631	2.675616438	161
Year 3	1997	16,715	2.646849315	158
Year 4	1998	16,799	2.641369863	157
Year 5	1999	16,883	2.684657534	159
Year 6	2000	16,968	2.278356164	134
Year 7	2001	17,053	2.497260274	146
Year 8	2002	17,138	2.360986301	138
Year 9	2003	17,224	2.31260274	134
Year 10	2004	17,310	2.408767123	139
Base Daily Per Capita Water Use ¹				148

¹ Add the values in the column and divide by the number of rows.

Table 15
Base daily per capita water use — 5-year range

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2003	17224	2.31	134
Year 2	2004	17310	2.41	139
Year 3	2005	17396	2.28	131
Year 4	2006	17483	2.27	130
Year 5	2007	17571	1.97	130
Base Daily Per Capita Water Use ¹				133

¹ Add the values in the column and divide by the number of rows.

Table 16

Water supplies — current and projected

Water Supply Sources		2010	2015	2020	2025	2030	2035 - opt
Water purchased from ¹ :	Wholesaler supplied volume (yes/no)						
	No						
	No						
Crescent City Groundwater Wells (Smith River Aquifer)		1,194	1,194	1,194	1,194	1,194	1,194
Transfers in		NA	NA	NA	NA	NA	NA
Exchanges In		NA	NA	NA	NA	NA	NA
Recycled Water		0.00	3.74	3.74	3.74	3.74	NA
Desalinated Water		NA	NA	NA	NA	NA	NA
Other							
Other							
Total		1,194	1,198	1,198	1,198	1,198	1,194

Units: million gallons per year

¹ Volumes shown here should be what was purchased in 2010 and what is anticipated to be purchased in the future. If these numbers differ from what is contracted, show the contracted quantities in Table 17.

² Volumes shown here should be consistent with Tables 17 and 18.

Table 17

Wholesale supplies — existing and planned sources of water

Wholesale sources ^{1,2}	Contracted Volume ³	2015	2020	2025	2030	2035 - opt
NA	0	0	0	0	0	0
NA	0	0	0	0	0	0
NA	0	0	0	0	0	0
Total Contracted Volume		0.0	0.0	0.0	0.0	

Units: million gallons per year

¹ Water volumes presented here should be accounted for in Table 16.

² If the water supplier is a wholesaler, indicate all customers (excluding individual retail customers) to which water is sold. If the water supplier is a retailer, indicate each wholesale supplier, if more than one.

³ Indicate the full amount of water

Table 18

Groundwater — volume pumped

Basin name(s)	Metered or Unmetered ¹	2006	2007	2008	2009	2010
Groundwater Basin	Metered	828.03	831.51	795.00	756.00	690.00
Total groundwater pumped		828.03	831.51	795.00	756.00	690.00
Groundwater as a percent of total water supply		100%	100%	100%	100%	100%

Units: million gallons per year

¹ Indicate whether volume is based on volumetric meter data or another method

Table 19

Groundwater — volume projected to be pumped

Basin name(s)	2015	2020	2025	2030	2035 - opt
Groundwater Basin	762.00	773.00	793.00	813.00	
Total groundwater pumped	762.00	773.00	793.00	813.00	
Percent of total water supply	100%	100%	100%	100%	

Units: million gallons per year

Include future planned expansion

Table 20

Transfer and exchange opportunities

Transfer agency	Transfer or exchange	Short term or long term	Proposed Volume
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA
Total			

Units: million gallons per year

Table 21

Recycled water — wastewater collection and treatment

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035 - opt
Wastewater collected & treated in service area	620.5	585.4	604.34	619.1	601.06	648.62	
Volume that meets recycled water standard	0.00	0.00	0.00	3.74	3.74	3.74	3.74

Units: million gallons per year

Table 22

Recycled water — non-recycled wastewater disposal

Method of disposal	Treatment Level		2010	2015	2020	2025	2030	2035 - opt
Beachfont Park (City owned)	Tertiary	NA	NA	NA	3.74	3.74	3.74	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA
Total			0.00	0.00	3.74	3.74	3.74	0

Units: million gallons per year

Table 23

Recycled water — potential future use

User type	Description		Feasibility ¹	2015	2020	2025	2030	2035 - opt
Agricultural irrigation	NA	NA	NA	NA	NA	NA	NA	NA
Landscape irrigation ²	Irrigation of City owned Waterfront park		in progress	NA	3.74	3.74	3.74	NA
Commercial irrigation ³	NA	NA	NA	NA	NA	NA	NA	NA
Wildlife habitat	NA	NA	NA	NA	NA	NA	NA	NA
Wetlands	NA	NA	NA	NA	NA	NA	NA	NA
Industrial reuse	NA	NA	NA	NA	NA	NA	NA	NA
Groundwater recharge	NA	NA	NA	NA	NA	NA	NA	NA
Seawater barrier	NA	NA	NA	NA	NA	NA	NA	NA
Geothermal/Energy	NA	NA	NA	NA	NA	NA	NA	NA
Indirect potable reuse	NA	NA	NA	NA	NA	NA	NA	NA
Other (user type)	NA	NA	NA	NA	NA	NA	NA	NA
Other (user type)	NA	NA	NA	NA	NA	NA	NA	NA
Total			0	0.00	3.74	3.74	3.74	0.00

Units: million gallons per year

¹ Technical and economic feasibility.

² Includes parks, schools, cemeteries, churches, residential, or other public facilities)

³ Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

Table 24

Recycled water — 2005 UWMP use projection compared to 2010 actual

Use type	2010 actual use		2005 Projection for 2010 ¹	
Agricultural irrigation	NA	NA	NA	NA
Landscape irrigation ²	0	0	0	0
Commercial irrigation ³	NA	NA	NA	NA
Golf course irrigation	NA	NA	NA	NA
Wildlife habitat	NA	NA	NA	NA
Wetlands	NA	NA	NA	NA
Industrial reuse	NA	NA	NA	NA
Groundwater recharge	NA	NA	NA	NA
Seawater barrier	NA	NA	NA	NA
Geothermal/Energy	NA	NA	NA	NA
Indirect potable reuse	NA	NA	NA	NA
Other (user type)	NA	NA	NA	NA
Other (user type)	NA	NA	NA	NA
Total		0		0

Units (circle one): million gallons per year

¹From the 2005 UWMP. There has been some modification of use types. Data from the 2005 UWMP can be left in the existing categories or modified to the new categories, at the discretion of the water supplier.

² Includes parks, schools, cemeteries, churches, residential, or other public facilities)

³ Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

Table 25

Methods to encourage recycled water use

Actions	Projected Results					
	2010	2015	2020	2025	2030	2035 - opt
Discounted Rates for Recycled Water Use	NA	?	?	?	?	NA
name of action (none currently, none planned)	NA	NA	NA	NA	NA	NA
name of action (none currently, none planned)	NA	NA	NA	NA	NA	NA
Total	0	0	0	0	0	0

Units: million gallons per year

Table 26

Future water supply projects

Project name ¹	Projected start date	Projected completion date	Potential project constraints ²	Normal-year supply ³	Single-dry year supply ³	Multiple-dry year first year supply ³	Multiple-dry year second year supply ³	Multiple-dry year third year supply ³
No projects needed or planned.								
Total				0	0	0	0	0

Units: million gallons per year

¹ Water volumes presented here should be accounted for in Table 16.
² Indicate whether project is likely to happen and what constraints, if any, exist for project implementation.
³ Provide estimated supply benefits, if available.

Table 27 Basis of water year data	
Water Year Type	Base Year(s)
Average Water Year	2003
Single-Dry Water Year	1977 and 2001
Multiple-Dry Water Years	1990, 1991, 1992

Table 28 Supply reliability — historic conditions				
Average / Normal Water Year ¹	Single Dry Water Year	Multiple Dry Water Years		
		1990	1991	1992
3,793	975	1,644	1,644	1,644
Percent of Average/Normal Year:	26%	43%	43%	43%

¹ Based on annual Smith River Discharge in cubic feet per second.

Table 29 Factors resulting in inconsistency of supply							
Water supply sources ¹	Specific source name, if any	Limitation quantification	Legal	Environmental	Water quality	Climatic	Additional information
Ground Water	Smith River Groundwater Basin	1,194	1,194	0	0	0	

Units: million gallons per year

¹ From Table 16.

² Maximum permitted annual diversion of 3,666 AFY (1,194 million gallons per year).

Table 30 Water quality — current and projected water supply impacts							
Water source	Description of condition	2010	2015	2020	2025	2030	2035 - opt
Smith River Groundwater Basin	na	0	0	0	0	0	

Units: million gallons per year

Table 31 Supply reliability — current water sources				
Water supply sources ¹	Average / Normal Water Year Supply ²	Multiple Dry Water Year Supply ²		
		Year 2011	Year 2012	Year 2013
Smith River Groundwater Basin	844	844	844	844
Percent of normal year:	100.0%	100.0%	100.0%	100.0%

Units: million gallons per year

¹ From Table 16.

² See Table 27 for basis of water type years.

Table 32 Supply and demand comparison — normal year					
	2015	2020	2025	2030	2035 - opt
Supply totals (from Table 16 and 17)	1,194.14	1,194.14	1,194.14	1,194.14	
Demand totals (From Table 11)	763	781	799	819	
Difference	431	413	395	376	
Difference as % of Supply	36.1%	34.6%	33.1%	31.5%	
Difference as % of Demanc	56.5%	52.9%	49.4%	45.9%	

Units: million gallons per year

Table 33 Supply and demand comparison — single dry year					
	2015	2020	2025	2030	2035 - opt
Supply totals ^{1,2}	1,194.14	1,194.14	1,194.14	1,194.14	
Demand totals ^{2,3,4}	763	781	799	819	
Difference	431	413	395	376	
Difference as % of Supply	36.1%	34.6%	33.1%	31.5%	
Difference as % of Demanc	56.5%	52.9%	49.4%	45.9%	

Units: million gallons per year

¹Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.

²Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

³ Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.

⁴ The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

Table 34 Supply and demand comparison — multiple dry-year events						
		2015	2020	2025	2030	2035 - opt
Multiple-dry year first year supply	Supply totals ^{1,2}	1,194.14	1,194.14	1,194.14	1,194.14	
	Demand totals ^{2,3,4}	763	781	799	819	
	Difference	431	413	395	376	
	Difference as % of Supply	36.1%	34.6%	33.1%	31.5%	
	Difference as % of Demand	56.5%	52.9%	49.4%	45.9%	
Multiple-dry year second year supply	Supply totals ^{1,2}	1,194.14	1,194.14	1,194.14	1,194.14	
	Demand totals ^{2,3,4}	763	781	799	819	
	Difference	431	413	395	376	
	Difference as % of Supply	36.1%	34.6%	33.1%	31.5%	
	Difference as % of Demand	56.5%	52.9%	49.4%	45.9%	
Multiple-dry year third year supply	Supply totals ^{1,2}	1,194.14	1,194.14	1,194.14	1,194.14	
	Demand totals ^{2,3,4}	763	781	799	819	
	Difference	431	413	395	376	
	Difference as % of Supply	36.1%	34.6%	33.1%	31.5%	
	Difference as % of Demand	56.5%	52.9%	49.4%	45.9%	

Units: million gallons per year

¹ Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.

² Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

³ Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.

⁴ The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

Table 35 Water shortage contingency — rationing stages to address water supply shortages		
Stage No. ¹	Water Supply Conditions	% Shortage
Stage No. 1	Voluntary Conservation Measures	
Stage No. 2	Mandatory Conservation Measures	50%
Stage No. 3	Mandatory Reduction	35%
Stage No. 4	Disaster Shortage/Rationing	

¹ Stages from City of Crescent City Municipal Code 13.17.

Table 36 Water shortage contingency — mandatory prohibitions	
Examples of Prohibitions ¹	Stage When Prohibition Becomes Mandatory
Potable water shall not be used to irrigate turf, groundcover, shrubbery, crops, vegetation, trees or other landscaping between the hours of ten a.m. and six p.m	2
Landscape irrigation shall not be permitted at any time or any manner that results in runoff of the area being irrigated.	2
Potable water shall not be used to wash sidewalks, walks, driveways, parking lots or other hard surfaces except where necessary for public health or safety.	2
Potable water shall not be allowed to escape from breaks in the customer's plumbing system for more than twenty-four hours after being notified.	2
Potable water shall not be used for the washing of cars, boats, trailers, aircraft or other vehicles except at commercial or fleet vehicle washing facilities using recycled water.	2
Potable water shall not be used to clean, fill or maintain decorative fountains, lakes, or ponds unless such water is reclaimed.	2
Potable water shall not be used for the irrigation of landscaping of any type, at any time.	3
Potable water shall not be used for the purpose of washing sidewalks, walks or driveways at any time.	3
Potable water shall not be allowed to escape from breaks in the customer's plumbing system for more than twelve hours after being notified.	3
Potable water shall not be used for construction, compaction, dust control, street or parking lot sweeping or building wash-down.	3
Potable water shall not be used for sewer system maintenance, except where necessary for public health and safety.	3
Potable water shall not be used in excess of the average amount used by the account over the past twenty-four months.	3
Stage Four, when declared, is the most severe level of water conservation and rationing and requires that potable water be used only as necessary for human consumption, sanitation and fire protection.	4

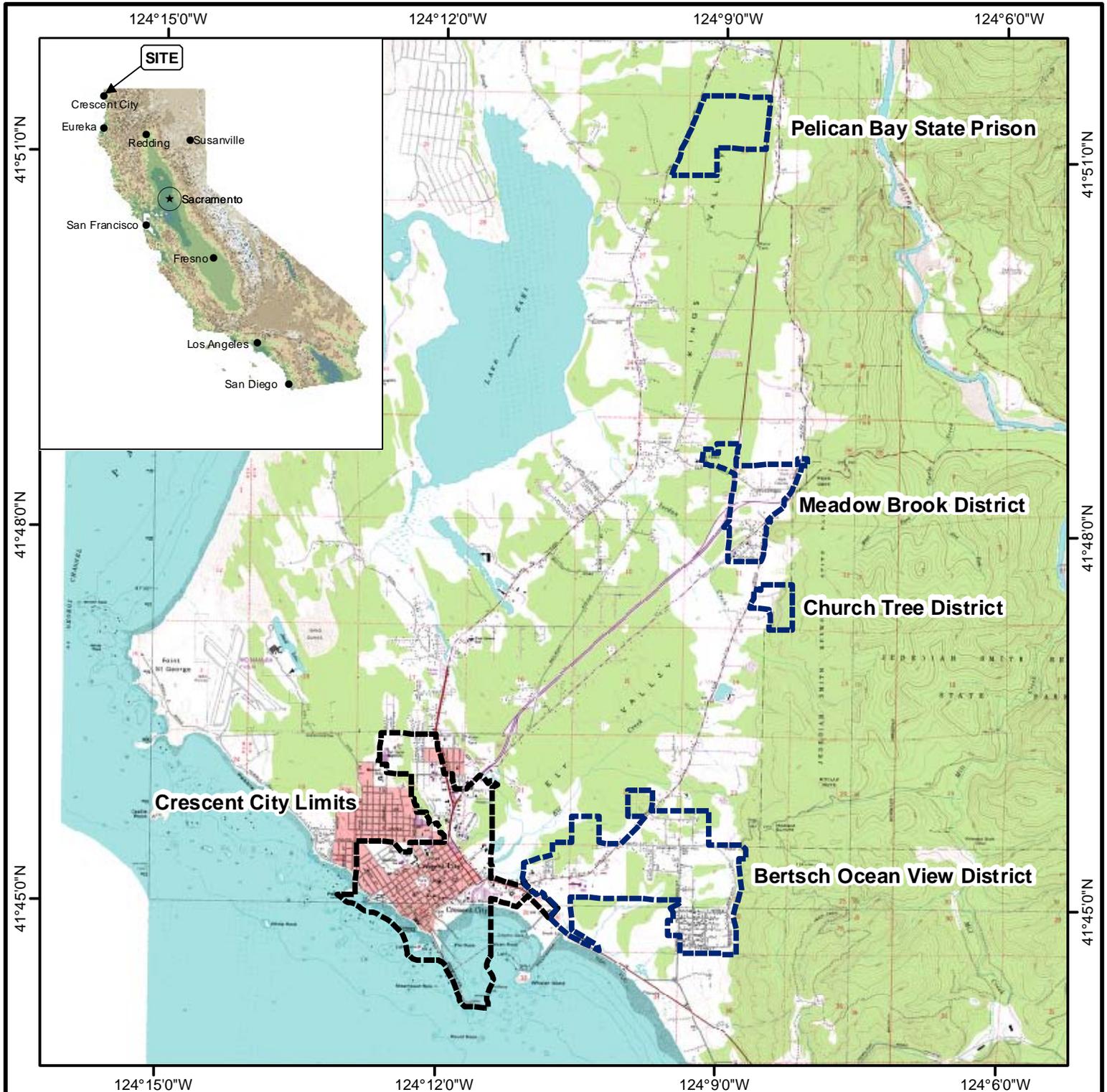
¹ Prohibitions from City of Crescent City Municipal Code 13.17.

Table 37 Water shortage contingency — consumption reduction methods		
Consumption	Stage When Method Takes Effect	Projected
Demand reduction program	1	
Reduce pressure in water lines	4	
Flow restriction	2, 3, and 4 (violators only)	
Restrict building permits	3, 4	
Restrict for only priority uses	4	
Use prohibitions	2, 3, and 4	
Water shortage pricing	2, 3, and 4 (violators only)	
Allotment by customer type	4	
Plumbing fixture replacement	All stages	
Voluntary rationing	1	
Mandatory rationing	2, 3, and 4	
Incentives to reduce water consumption	All stages	

Table 38 Water shortage contingency — penalties and charges		
Penalties or Charges ¹	Stage When Penalty Takes Effect	
First violation, Infraction, Written warning	At time of declaration of a water emergency	
Second violation, Infraction, Written warning, discretionary installation of flow restricting device at users expense. Surcharge for excessive water use (double rate).	At time of declaration of a water emergency	
Third violation (willful violation) Misdemeanor, discretionary disconnection,	At time of declaration of a water emergency	

¹ Prohibitions from City of Crescent City Municipal Code 13.17.

FIGURES



LEGEND

-  Crescent City Limits
-  Service Areas

Base Image Data Source:
1:24,000 Digital Raster Graph Mosaic of
Del Norte County, California

ALL LOCATIONS APPROXIMATE

Crescent City
Urban Watershed Management Plan

Figure 1
Site Location Map
Crescent City & Service Districts
Del Norte County, California



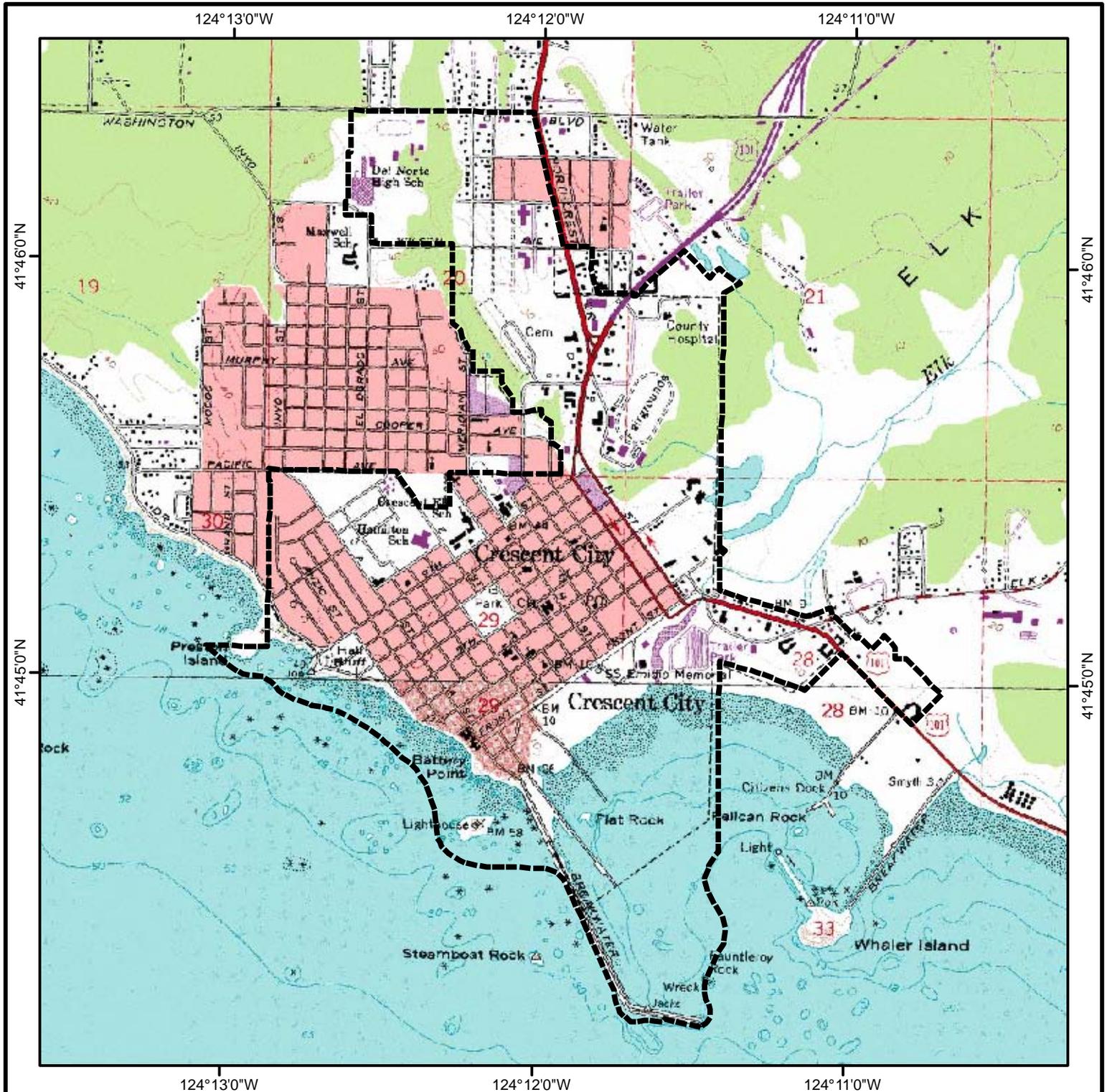
Miles




Freshwater Environmental Services

Date: 1-24-12

By: SJT



LEGEND

 Crescent City Limits

Base Image Data Source:
1:24,000 Digital Raster Graph Mosaic of
Del Norte County, California

ALL LOCATIONS APPROXIMATE

Crescent City
Urban Watershed Management Plan

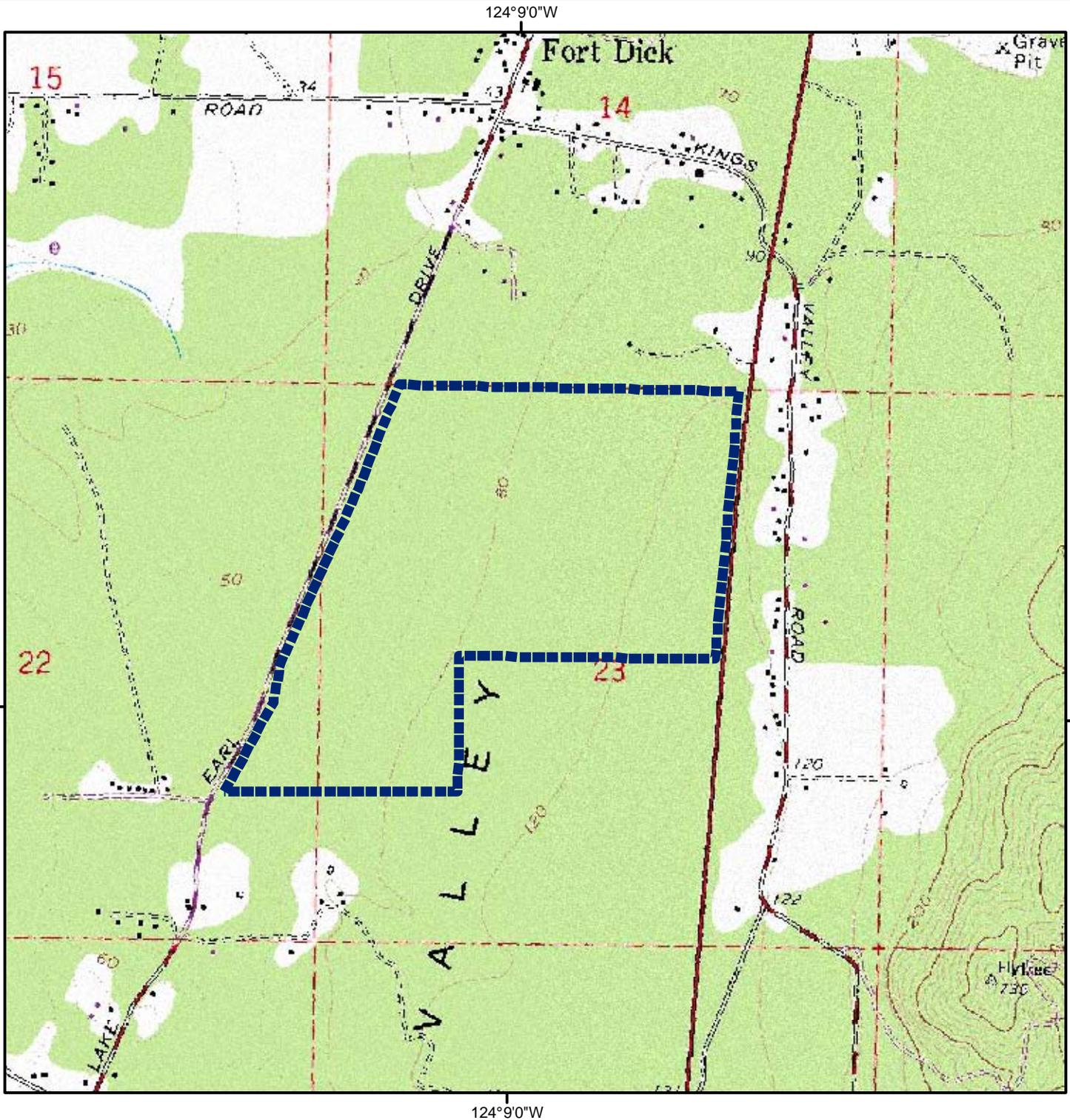
Figure 2
Site Location Map
Crescent City
Del Norte County, California

Date: 1-24-12

By: SJT



Freshwater Environmental Services

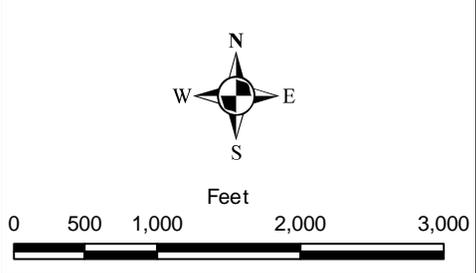


41°51'0"N

41°51'0"N

124°90'W

124°90'W



LEGEND

 Pelican Bay State Prison

Base Image Data Source:
1:24,000 Digital Raster Graph Mosaic of
Del Norte County, California

ALL LOCATIONS APPROXIMATE

Crescent City
Urban Watershed Management Plan

Figure 3
Site Location Map
Pelican Bay State Prison
Del Norte County, California

Date: 1-24-12

By: SJT



Freshwater Environmental Services

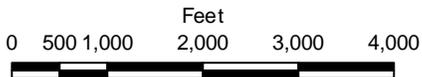
124° 12' 0" W



41° 45' 0" N

41° 45' 0" N

124° 12' 0" W



LEGEND

 Crescent City Limits

Base Image Data Source: USDA-FSA
Aerial Photography Field Office,
Dated June 12, 2010.

ALL LOCATIONS APPROXIMATE

Crescent City
Urban Watershed Management Plan

Figure 4
Site Location Map
Crescent City
Del Norte County, California

Date: 1-24-12

By: SJT



Freshwater Environmental Services

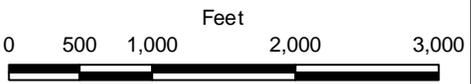
124°9'0"W



41°51'0"N

41°51'0"N

124°9'0"W



LEGEND

 Pelican Bay State Prison

Base Image Data Source: USDA-FSA
Aerial Photography Field Office,
Dated June 12, 2010.

ALL LOCATIONS APPROXIMATE

Crescent City
Urban Watershed Management Plan

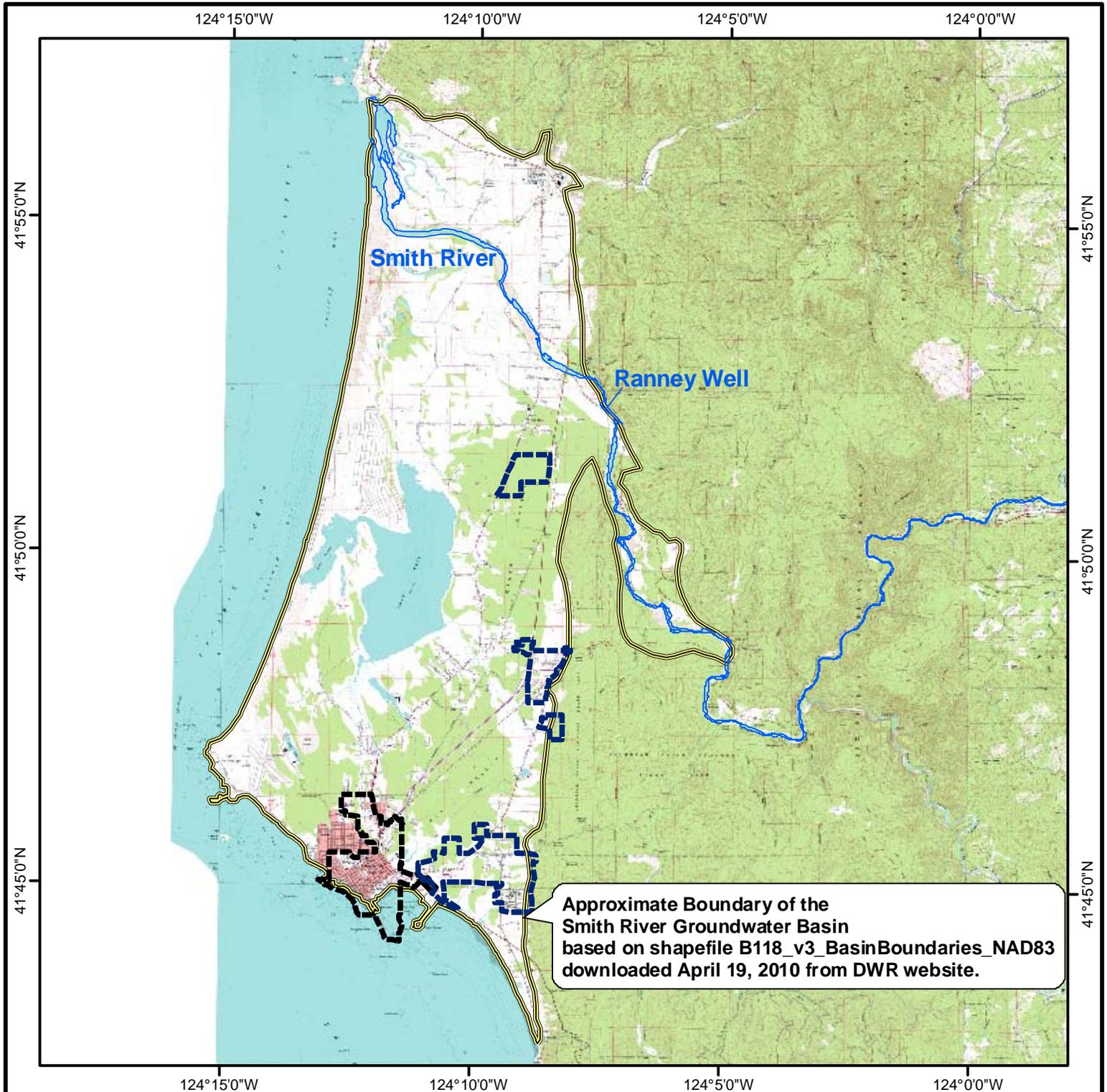
Figure 5
Site Location Map
Pelican Bay State Prison
Del Norte County, California

Date: 1-24-12

By: SJT



Freshwater Environmental Services



Approximate Boundary of the Smith River Groundwater Basin based on shapefile B118_v3_BasinBoundaries_NAD83 downloaded April 19, 2010 from DWR website.



LEGEND

-  Crescent City Limits
-  Service Areas

Base Image Data Source:
1:24,000 Digital Raster Graph Mosaic of
Del Norte County, California

ALL LOCATIONS APPROXIMATE

Crescent City
Urban Watershed Management Plan

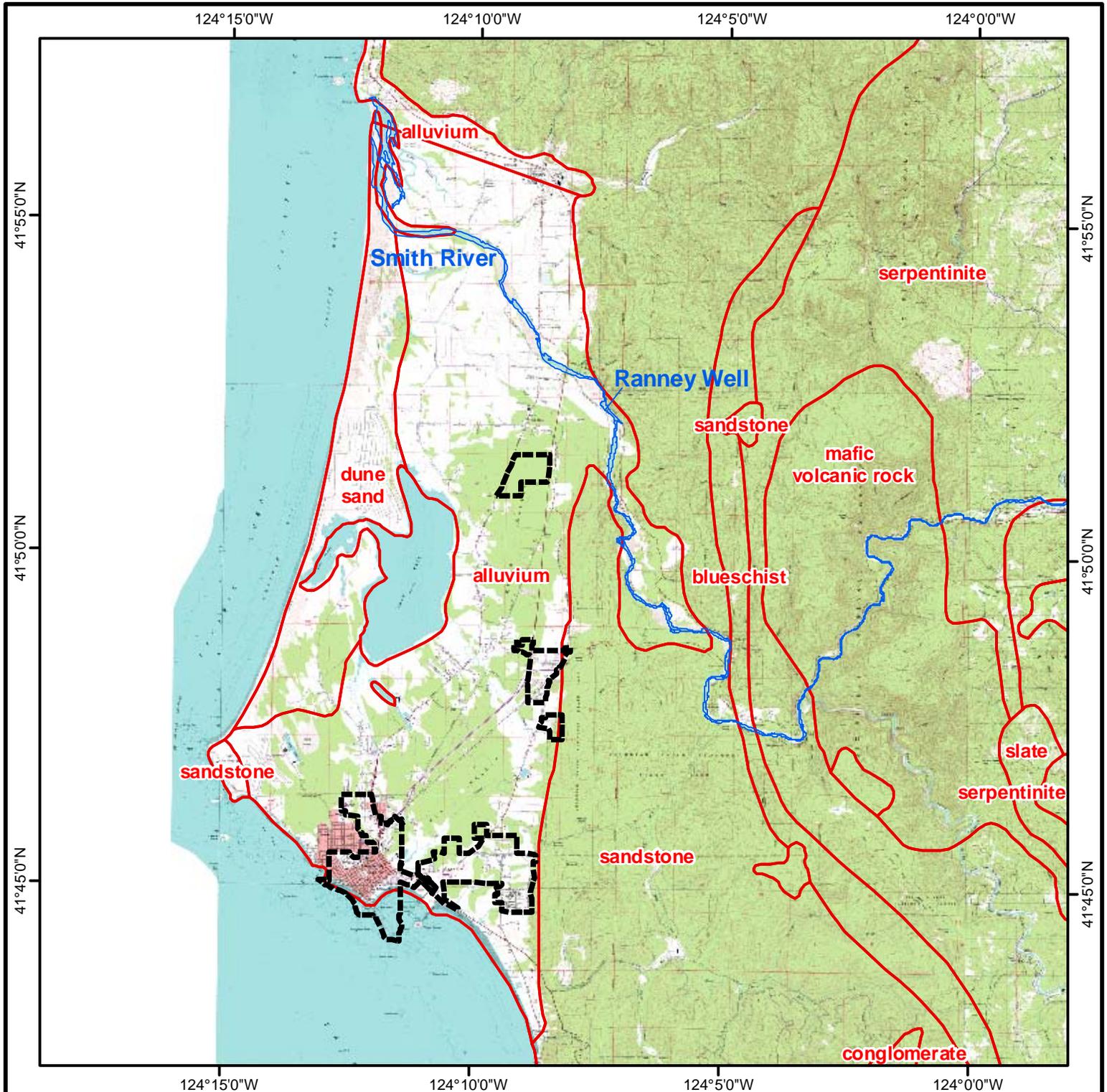
Figure 6
Smith River
Groundwater Basin

Date: 1-24-12

By: SJT



Freshwater Environmental Services



LEGEND
 Service Areas
 Geologic data obtained in digital format based on Geologic Map of California by Jennings (1977) published by California Geological Survey.
 Base Image Data Source:
 1:24,000 Digital Raster Graph Mosaic of Del Norte County, California.
 Original scale 1:750,000
 ALL LOCATIONS APPROXIMATE

Crescent City
 Urban Watershed Management Plan

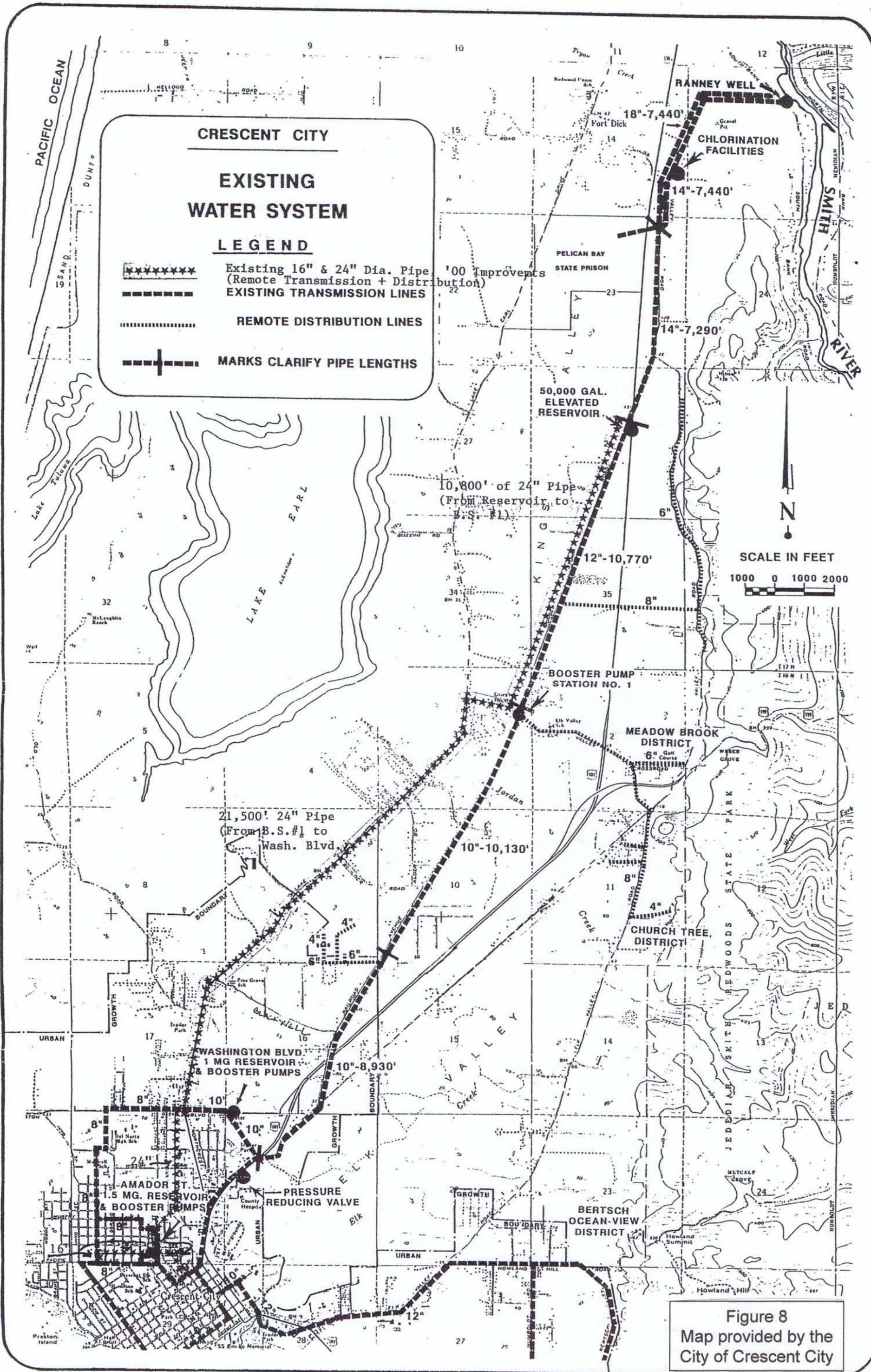
Figure 7
 Geologic Map



Freshwater Environmental Services

Date: 1-24-12

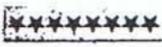
By: SJT



CRESCENT CITY

EXISTING WATER SYSTEM

LEGEND

-  Existing 16" & 24" Dia. Pipe (Remote Transmission + Distribution)
-  EXISTING TRANSMISSION LINES
-  REMOTE DISTRIBUTION LINES
-  MARKS CLARIFY PIPE LENGTHS

SCALE IN FEET
 1000 0 1000 2000

Figure 8
 Map provided by the
 City of Crescent City

**APPENDIX A
NOTICE OF PREPARATION TO NEIGHBORING
MUNICIPALITIES**



377 J STREET

CRESCENT CITY, CALIFORNIA 95531-4025

Administration/Finance: 707-464-7483
Utilities: 707-464-6517

Public Works/Planning: 707-464-9506
FAX: 707-465-4405

October 17, 2011

TO: Carol Leuthold, Bertsch Ocean View Service District
Churchtree Community Services District
Janet Turner, Del Norte County Roads Department/Flood Control W1 (FCW1)
Patricia Miller, Pelican Bay State Prison

RE: 60-Day Notification of Review of City of Crescent City 2010 UWMP

The City of Crescent City wishes to advise you that we are in the process of reviewing and revising our Urban Water Management Plan. We are informing you of this revision because the City of Crescent City supplies water to your district. We will be holding a public hearing on the draft revision of the Urban Water Management Plan in advance of the adoption and will send a notice of this hearing to you as the time gets nearer.

We welcome your participation in the revision of the City of Crescent City's Urban Water Management Plan. Please contact me at (707) 464-9506, ext. 227 if you would like to participate in the urban water management planning process or if there is another individual within your jurisdiction who should be our primary point of contact.

Sincerely,

Eric Weir
Utilities Director/Associate Engineer
City of Crescent City
(707) 464-9506, ext. 227
ewier@crenscntcity.org

EW:lj

Carol Leuthold
Bertsch Ocean View Service District
159 Club Drive
Crescent City, California 95531

Churchtree Community Services District
251 Church Tree Road
Crescent City, California 95531

Pelican Bay State Prison
Attn: Patricia Miller, Chief Plant Operator
5905 Lake Earl Drive
Crescent City, California 95531



377 J STREET

CRESCENT CITY, CALIFORNIA 95531-4025

Administration/Finance: 707-464-7483
Utilities: 707-464-6517

Public Works/Planning: 707-464-9506
FAX: 707-465-4405

April 2, 2012

TO: Carol Leuthold, Bertsch Ocean View Service District
Churchtree Community Services District
Janet Turner, Del Norte County Roads Department/Flood Control W1 (FCW1)
Patricia Miller, Pelican Bay State Prison

RE: 14-Day Notification of Review of City of Crescent City 2010 UWMP

As a follow up to our notification to you on October 17, 2011, the City of Crescent City will be holding a public meeting on April 16, 2012 at Flynn Center Board Chambers, 981 H Street, Crescent City, CA for the purpose of receiving public comment and testimony regarding the Crescent City Urban Water Management Plan. The city will hold this meeting in compliance with requirements of the California Department of Water Resources (DWR) pursuant to the WUMP Act and the Water Conservation Bill of 2009 to solicit the input of the public.

Copies of the UWMP are available for public review during our regular business hours. We welcome your participation in the revision of the City of Crescent City's Urban Water Management Plan. Please contact me at (707) 464-9506, ext. 227, if you would like to participate in the urban water management planning process or if there is another individual within your jurisdiction who should be our primary point of contact.

Sincerely,

Eric Weir
Utilities Director/Associate Engineer
City of Crescent City
(707) 464-9506, ext. 227
ewier@crestedcity.org

EW:lj

Carol Leuthold
Bertsch Ocean View Service District
159 Club Drive
Crescent City, California 95531

Churchtree Community Services District
251 Church Tree Road
Crescent City, California 95531

Pelican Bay State Prison
Attn: Patricia Miller, Chief Plant Operator
5905 Lake Earl Drive
Crescent City, California 95531

**APPENDIX B
NOTICE OF PUBLIC HEARING FROM THE LOCAL
NEWSPAPER**

Affidavit of Publication

STATE OF CALIFORNIA, COUNTY OF DEL NORTE

I, **Patricia E Miller**, a citizen of the United States and a resident of the county aforesaid; I am over the age of eighteen years, and not party to or interested in the above-entitled matter. I am the principal clerk of the printer of

The Triplicate

a daily newspaper of general circulation, printed and published in the City of Crescent City, County of Del Norte, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Del Norte, State of California, under the date of March 21, 1952, case number 7594; that the notice of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published and not in any supplement thereof on the following dates, to-wit:

Acct Name: CITY OF CRESCENT CITY
Legal Description: CITY OF CRESCENT CITY
NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN of a public hearing for the p

06/24/2014

07/01/2014

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Crescent City, California, this 1 day of July, 2014.

Patricia E. Miller
Signature

991 Public Notices	991 Public Notices
CITY OF CRESCENT CITY NOTICE OF PUBLIC HEARING	
<p>NOTICE IS HEREBY GIVEN of a public hearing for the purpose of receiving public comment and testimony regarding the Draft City of Crescent City 2010 Urban Water Management Plan (UWMP) Amendment. The City will hold this public meeting in compliance with requirements of the California Department of Water Resources (DWR) pursuant to the UWMP Act and the Water Conservation Bill of 2009 to solicit the input of the public.</p> <p>The UWMP Act (California Water Code §10610 et seq.) requires urban water suppliers to report, describe, and evaluate the following four areas:</p> <ul style="list-style-type: none">• Water deliveries and uses;• Water supply sources;• Efficient water uses; and• Demand Management Measures (DMMs), including implementation strategy and schedule. <p>Beginning June 24, 2014, copies of the 2010 UWMP Amendment will be available for public review during regular business hours at the City of Crescent City offices,</p> <p>377 J Street Crescent City, CA 95531</p> <p>Following the public review period, the City of Crescent City will hold a public hearing to consider all comments received and adoption of the 2010 UWMP Amendment. This hearing will be held at the regularly scheduled City Council Meeting scheduled for July 7, 2014 at 6:00 PM at the Flynn Center, 981 H Street.</p> <p>Questions on the SSMP can be directed to Eric Wier, Director of Public Works at (707) 464-9506, or email: ewier@creascentcity.org</p> <p>Dated: 6/20/14 Publish: 6/24/14 and 7/1/14 Ad #71069275</p>	

AFFIDAVIT OF PUBLICATION

Filed _____

By _____

From the Office of _____

Attorney for _____

Classified

Tuesday, July 01, 2014

Date: 6/20/14

Ad ID: 71069275

Time: 9:55 AM



312 H Street, Crescent City, CA 95531
707-464-2141

Acct: 71625

Name: City of Crescent City

Phone: 707-464-9506

Address: 377 J ST

Receipt No:

E-Mail:

Client:

City: CRESCENT CITY

State: CA Zip: 95531-

Ad Name: 71069275D

Reply Request:

Input Operator: PMILLERA

PO #

Start: Tuesday, June 24, 2014

Issues: 2

Stopdate: Tuesday, July 1, 2014

Classification: 991 - Public Notices

Rate: 7CSLEG

Pay Type: BL

Copy Line: CITY OF CRESCENT

Rep: Lawson, Dexter

Colors C M Y

Color selection boxes for C, M, and Y.

Editions: TRIP/

Tear Sheets:

Ad Pricing:

Table with ad pricing details: Lines (48), Depth (4.74), Columns (2.0), Ad Price (\$178.60), Other Charges (1.5), Ad Total (\$180.10), Total Payments (0.00), Total Amount Due (\$180.10).

CITY OF CRESCENT CITY
NOTICE OF PUBLIC HEARING
NOTICE IS HEREBY GIVEN of a public hearing for the purpose of receiving public comment and testimony regarding the Draft City of Crescent City 2010 Urban Water Management Plan (UWMP) Amendment. The City will hold this public meeting in compliance with requirements of the California Department of Water Resources (DWR) pursuant to the UWMP Act and the Water Conservation Bill of 2009 to solicit the input of the public.
The UWMP Act (California Water Code §10610 et seq.) requires urban water suppliers to report, describe, and evaluate the following four areas:
• Water deliveries and uses;
• Water supply sources;
• Efficient water uses; and
• Demand Management Measures (DMMs), including implementation strategy and schedule.
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Crescent City, CA 95531
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Questions on the SSMP can be directed to Edie Wier, Director of Public Works at (707) 464-9506, or email: ewier@ci.crescentcity.org
Dated: 6/20/14
Publish: 6/24/14 and 7/1/14 Ad #71069275

Ad shown is not actual print size

We appreciate your business!

APPENDIX C
BASELINE AND GOALS SPREADSHEET

New 2000 population **16,968**
 2010 Population **17,840**

Year	Population Including Prison	Increased Populaiton	% Pop Increase	Production MG	MG/Day	GPCD	Year
1993							1993
1994	16,465			893.1	2.44684932	149	1994
1995	16,548	83	0.5	911.1	2.49616438	151	1995
1996	16,631	83	0.5	976.6	2.67561644	161	1996
1997	16,715	84	0.5	966.1	2.64684932	158	1997
1998	16,799	84	0.5	964.1	2.64136986	157	1998
1999	16,883	84	0.5	979.9	2.68465753	159	1999
2000	16,968	85	0.5	831.6	2.27835616	134	2000
2001	17,053	85	0.5	911.5	2.49726027	146	2001
2002	17,138	85	0.5	861.76	2.3609863	138	2002
2003	17,224	86	0.5	844.1	2.31260274	134	2003
2004	17,310	86	0.5	879.2	2.40876712	139	2004
2005	17,396	87	0.5	833.9	2.28465753	131	2005
2006	17,483	87	0.5	828.03	2.26857534	130	2006
2007	17,571	87	0.5	831.51	2.27810959	130	2007
2008	17,659	88	0.5	795.00	2.17808219	123	2008
2009	17,747	88	0.5	756.35	2.07219178	117	2009
2010	17,840	93	0.5	690.20	1.8909589	106	2010
2011	17,929	89	0.5	720	1.97167123	110	2011
2012	18,019	90	0.5	737	2.01860274	112	2012
2013	18,109	90	0.5	746	2.04323288	113	2013
2014	18,199	91	0.5	751	2.0565418	113	2014
2015	18,290	91	0.5	754	2.06682451	113	2015
2016	18,382	91	0.5	758	2.07715863	113	2016
2017	18,474	92	0.5	762	2.08754442	113	2017
2018	18,566	92	0.5	766	2.09798214	113	2018
2019	18,659	93	0.5	770	2.10847205	113	2019
2020	18,752	93	0.5	773	2.11901441	113	2020
2021	18,846	94	0.5	777	2.12960949	113	2021
2022	18,940	94	0.5	781	2.14025753	113	2022
2023	19,035	95	0.5	785	2.15095882	113	2023
2024	19,130	95	0.5	789	2.16171362	113	2024
2025	19,226	96	0.5	793	2.17252218	113	2025
2026	19,322	96	0.5	797	2.1833848	113	2026
2027	19,419	97	0.5	801	2.19430172	113	2027
2028	19,516	97	0.5	805	2.20527323	113	2028
2029	19,613	98	0.5	809	2.21629959	113	2029
2030	19,711	98	0.5	813.0	2.22738109	113	2030

148.6065955

Method 3 Goal	
Regional Target	95% Regional Target
137	130

Method 1		
10-Year Basine GPCD	80% 10-year GPCD (2020 goal)	
147.8	118.26	
145.9		2020 Goal
142.8		95% 5-year GPCD
	5-Year Basine GPCD	
139.9	132.8	126
136.5	130.6	2015 goal
132.3	126.2	137
129.4	121.1	

Method 3 target (95% of regional goal) was used. The target was adjusted to 95% of 5-year target (maximum target). Goal can not be more than 95% or 5-year target.

Final 2020 Goal	126.19
Final 2015 Goal	137.01

* Rosemont venturi meter was not reading correctly in 2007 and this was discovered after the report was done. Production set to equal meter sales

APPENDIX D
Water Shortage Contingency Plan

CITY OF CRESCENT CITY

WATER SHORTAGE CONTINGENCY PLAN

AUGUST, 1997

**CITY OF CRESCENT CITY
WATER SHORTAGE CONTINGENCY PLAN
1993 - 1997**

INTRODUCTION

This plan has been prepared in compliance with AB11 as required by the California Department of Water Resources and incorporated with the City's Urban Water Management Plan.

In accordance with the State Water Code, the City of Crescent City has made this plan available to the public and has conducted a public hearing on the Water Shortage Contingency Plan.

PLAN COORDINATION

Preparation and development of this plan included input received from other public agencies and water customers. Implementation of this plan will be coordinated by City staff upon declaration of a water shortage emergency by the City Council.

GENERAL INFORMATION

The Crescent City water system is owned exclusively by the City. The sole water source is the Smith River which produces an abundance of good quality drinking water. We do not import any water nor sell water to any other agency.

Name of Utility:	City of Crescent City
Address:	377 J Street Crescent City, CA 95531
Telephone:	(707) 464-9506
Fax:	(707) 465-4405
Director:	David L. Gustafson Director of Public Works
Population Served:	13,600 (approx.)
Service Area:	7,500 acres
No. of Service Connections:	3,693
Water Source:	Smith River Aquifer
Climate:	Coastal, moderate temperatures, heavy annual rainfall

WATER DEMAND

Current annual customer water demand based on 1996 consumption is 782.3 million gallons, broken down into the following categories:

<u>No. of Accts.</u>	<u>Type</u>	<u>Consumption</u>
3220	Residential	267.6 mg
466	Commercial (includes multi-family residential)	219.2 mg
6	Industrial	44.1 mg
1	Prison	<u>251.4 mg</u>
	TOTAL	782.3 mg

Projected Water Demand (calculated at a 2.5% annual population growth rate):

	<u>12 Months</u>	<u>24 Months</u>	<u>36 Months</u>
Residential	274.3 mg	281.1 mg	288.2 mg
Commercial	224.6 mg	230.2 mg	236.0 mg
Industrial	45.2 mg	46.3 mg	47.4 mg
Prison	<u>257.6 mg</u>	<u>264.1 mg</u>	<u>270.7 mg</u>
TOTAL	801.7 mg	821.7 mg	842.3 mg

Due to current restrictions on new water connections, demand is expected to remain fairly constant until system improvements are made to increase transmission capacity.

WATER SUPPLY

The City of Crescent City provides water to retail users within the City's corporate limits and the surrounding urban area.

The City's sole water source is ground water from the Smith River aquifer. This has historically proven to be an abundant source of good quality water with no water supply shortages experienced, even during the 1977 drought.

The water system has sufficient collection and pumping capacity at the source, to meet current and future demands, with no anticipated supply deficiencies. However, due to undersized transmission lines between the water source and distribution system, water demand has exceeded water transmission capacity several times since 1992.

Therefore, this plan is based on the probability that a water shortage emergency would be caused by transmission capacity limits and not supply deficiencies, or by other disaster related events, impacting the water supply.

WORST CASE SUPPLY FOR 12, 24 AND 36 MONTHS

The City has never experienced a water source deficiency. In theory, the worst case situation would be the water system transmission capacity's inability to meet consumer demand until system improvements are completed. Conservation and rationing programs are needed to insure that water demand is met until system improvements can be completed that will increase capacity.

The existing transmission capacity of the water system is 2.6 mgd. The average water production for 1996 was 2.32 mgd. It is predicted that the same situation will occur each summer until transmission capacity is increased.

Storage capacity for the water system includes a one million gallon tank (Washington Blvd.) and a one and a half million gallon tank (Amador Street). The water system has enough storage capacity for a one day supply based upon normal demand. The pumping systems for the storage tanks automatically shut down when the storage tank levels fall to ten feet. This allows for a water reserve in the storage tanks for fire protection. This is approximately 35% of tank capacity at the Washington tank and 26% at the Amador tank. When this occurs, water is being pumped directly to meet consumer demand and not filling the storage tanks.

EMERGENCY ACTION STAGES AND TRIGGER LEVELS

The following action stages and trigger levels have been developed to implement this plan. These stages are intended to serve as guidelines. However, unforeseeable circumstances may cause declaration of a higher action stage or postponement of an action stage other than when trigger levels occur. The action stage will be determined by the Director of Public Works. All restrictions under each applicable action stage shall be implemented immediately upon declaration of such stage. Lifting of an emergency action stage and resumption to the normal operating stage will be determined by the Director of Public Works based upon current conditions affecting the water supply.

Stage I - Voluntary Conservation Measures. Voluntary compliance with conservation measures.

The City will initiate a water conservation program to provide public information on ways to reduce water use. Water customers and the community will be made aware of the emergency action stages and restrictions under the water storage contingency plan.

Customers are encouraged to reduce water usage by taking the following voluntary water conservation measures:

- Refrain from landscape watering between the hours of 10:00 a.m. and 6:00 p.m.;
- Refrain from allowing water to run off any lawns, landscape, or garden into adjoining streets, gutters, sidewalks, parking lot or alley;
- Refrain from hosing or washing sidewalks, walkways, driveways, parking lots, or other hard surfaced areas;
- Refrain from washing cars, boats, trailers, or other vehicles except by hose with a shut off nozzle and bucket;
- Equip any hose with a shutoff nozzle and bucket;

Promptly repair all leaks in plumbing fixtures, water lines, and sprinkler systems;
Equip ornamental fountains, ponds, or lakes with a water recycling system;
Equip commercial cash washes with a water recycling system;
Refrain from filling or refilling a swimming pool, spa, or hot tub;
Install low flow shower heads, low flush water closets, and faucet aerators;
Operators of restaurants provide on each table a notice of water emergency and refrain
from serving drinking water except upon specific request by a customer;
Operators of hotels and motels provide in each room a notice of water emergency.

This will be the normal operating stage for the water system.

Stage II - Mandatory Conservation Measures. Mandatory implementation of conservation measures.

Customers shall comply with the following water conservation measures:

Refrain from landscape watering between the hours of 10:00 a.m. & 6:00 p.m.;
Refrain from allowing water run off any lawns, landscape, or garden into adjoining streets, gutters, sidewalks, parking lot, or alley;
Refrain from hosing or washing sidewalks, walkways, driveways, parking lots, or other hard surfaced areas;
Refrain from washing cars, boats, trailers, or other vehicles except by hose with shutoff nozzle and bucket;
Equip any hose with a quick acting shut off nozzle;
Equip ornamental fountains, ponds, or lakes with a water recycling system;
Equip commercial car washes with a water recycling system;
Promptly repair all leaks in plumbing fixtures, water lines, and sprinkler systems.
Refrain from filling or refilling a swimming pool, spa, or hot tub;
Restaurants provide on each table a notice of water emergency and refrain from serving drinking water except upon specific request;
Hotels and motels provide in each room a notice of water emergency.

Customers will be notified via news media and other methods of this stage of water shortage emergency and implementation of mandatory conservation measures.

Industrial water users will be specifically notified via telephone and city staff will make every attempt to keep them informed of the status of the water emergency so they can prepare for a possible shutdown of production.

This stage will take effect when the tank levels at the Washington and/or Amador storage facilities fall below 50% of their storage capacity.

Stage III - Serious Water Shortage. Mandatory Reduction.

Customers will be notified via news media and other methods of this stage of water shortage emergency. Industrial users will be notified specifically via telephone and will be asked to voluntarily shutdown production during a State III water emergency.

City staff will make every attempt to keep the industrial users informed of the status of a water emergency prior to the declaration of a State III water emergency so they can prepare for a possible shutdown of production.

The following water users will be prohibited for all water users:

- Landscape irrigation or watering of lawns or gardens;
- Washing of cars, boats, trailers, or other vehicles;
- Washing down of driveways, sidewalks, buildings, windows, or any outdoor surface;
- Filling of swimming pools or hot tubs;
- Serving of drinking water at restaurants unless requested;
- Filling or operating of ornamental fountains, ponds, or lakes;
- Sewer system maintenance, fire protection training, or flushing of hydrants;
- Street cleaning or dust control
- Use of hydrant meters for construction purposes.

This stage will take effect when the tank level at the Washington storage facility falls below 35% of storage capacity (ten foot level) and/or the tank level at the Amador storage facility falls below 26% of storage capacity (ten foot level).

Stage IV - Disaster Shortage/Rationing. Major catastrophe or contamination of the water supply. Priorities for all water use will be for human consumption, sanitation, and fire protection.

All water users will be limited to amounts required for human consumption, sanitation, and fire protection. No water will be available for nonessential use or for commercial or industrial processes.

Customers will be notified via news media and other methods of this stage of water emergency.

If contamination of the water supply occurs, consult with County/State health officials on the need to institute a boil order before use of any water.

This stage will take effect when a disaster related event impacting the water supply occurs.

WATER USE MONITORING

Our water source is metered and readings are recorded daily. All customer accounts are metered and read monthly. Water production records are reviewed on a regular basis.

The water system facilities, including storage tanks levels, system pressure, and pump operations are inspected daily.

Industrial water use is monitored daily.

When emergency action Stages II, III, and IV are in effect, system facilities will be monitored as often as needed each day with the results reported to the Director of Public Works.

Existing record keeping and monitoring methods will allow us to determine actual reductions in water use during a water shortage emergency.

CONSERVATION EFFORTS

On October 5, 1992, a water moratorium became effective restricting all new water connections to the City water system.

The City is developing a water conservation program to provide information to the public in order to promote voluntary conservation measures. The program will include a direct mail campaign, handouts, brochures, and news media advertising.

VIOLATIONS

Warnings will be issued for water waste, over-watering, and water leaks.

IMPLEMENTATION

Upon adoption of the Water Shortage Contingency Plan, the City adopted ordinances as necessary to implement the water use restrictions specified herein.

APPENDIX E
City of Crescent City Municipal Code Section 13.17

Chapter 13.17 - WATER CONSERVATION

Sections:

[13.17.010 - Intent.](#)

[13.17.020 - Declaration of water shortage emergency.](#)

[13.17.030 - Conservation and rationing stages.](#)

[13.17.040 - Enforcement.](#)

[13.17.050 - Water service surcharge.](#)

[13.17.060 - Termination of service.](#)

[13.17.070 - Appeals.](#)

[13.17.080 - Cumulative remedies.](#)

13.17.010 - Intent.

It is the intent of the city of Crescent City to encourage the conservation of the city's water supply for the greatest public benefit to minimize the wasteful use of water and to make provisions for emergency rationing of water when necessary.

(Ord. 702 (part), 2004).

13.17.020 - Declaration of water shortage emergency.

The director of public works, with the concurrence of the city manager, may declare a Stage Two, Stage Three or Stage Four water system operation for water conservation and rationing for a time period not to exceed ten calendar days. Any such declared stage to be extended beyond ten days must be done by action of the city council.

(Ord. 702 (part), 2004).

13.17.030 - Conservation and rationing stages.

The Crescent City water system has four operating stages for water conservation and rationing, as set forth in the city's urban water management plan. These stages of operation are as follows:

a.

Stage One is normal operation of the water system, wherein all customers are encouraged to follow voluntary water conservation measures as set forth in the urban water management plan.

b.

Stage Two, when declared, activates the following required conservation and rationing provisions:

1.

Potable water shall not be used to irrigate turf, groundcover, shrubbery, crops, vegetation, trees or other landscaping between the hours of ten a.m. and six p.m.

2.

Landscape irrigation shall not be permitted at any time or any manner that results in runoff of the area being irrigated.

3.

Potable water shall not be used to wash sidewalks, walks, driveways, parking lots or other hard surfaces except where necessary for public health or safety.

4.

Potable water shall not be allowed to escape from breaks in the customer's plumbing system for more than twenty-four hours after being notified.

5.

Potable water shall not be used for the washing of cars, boats, trailers, aircraft or other vehicles except at commercial or fleet vehicle washing facilities using recycled water.

6.

Potable water shall not be used to clean, fill or maintain decorative fountains, lakes, or ponds unless such water is reclaimed.

c.

Stage Three, when declared, activates the following required conservation and rationing provisions:

1.

Potable water shall not be used for the irrigation of landscaping of any type, at any time.

2.

Potable water shall not be used for the purpose of washing sidewalks, walks or driveways at any time.

3.

Potable water shall not be allowed to escape from breaks in the customer's plumbing system for more than twelve hours after being notified.

4.

Potable water shall not be used for construction, compaction, dust control, street or parking lot sweeping or building wash-down.

5.

Potable water shall not be used for sewer system maintenance, except where necessary for public health and safety.

6.

Potable water shall not be used in excess of the average amount used by the account over the past twenty-four months.

d.

Stage Four, when declared, is the most severe level of water conservation and rationing and requires that potable water be used only as necessary for human consumption, sanitation and fire protection.

(Ord. 702 (part), 2004).

13.17.040 - Enforcement.

Any customer violating the water conservation and rationing provisions regulations set forth in this chapter, shall receive a written warning for the first violation. Upon a second violation, the customer shall receive a second written warning and the city may, at its discretion, install a flow-restricting device on the customer's water service. All costs to install and remove the flow-restricting device shall be paid by the violating customer. Any willful violation after issuance of the second written

warning shall constitute a misdemeanor and the city may, at its discretion, disconnect the water service.

(Ord. 702 (part), 2004).

13.17.050 - Water service surcharge.

In addition to those provisions set forth in Section 13.17.040, any violator receiving a second written notice will be assessed a water service use surcharge for any "excessive use of water" which is defined as water use that exceeds the average water use for the account for the prior twenty-four months. The surcharge for the "excessive use of water" shall be double the account billing rate.

(Ord. 702 (part), 2004).

13.17.060 - Termination of service.

For violations resulting in third written notices and continued excessive use of water, the city may, at its discretion, disconnect water service and not reinstate service until a specific water conservation plan has been developed with the violating customer.

(Ord. 702 (part), 2004).

13.17.070 - Appeals.

Any decision or declaration made by the director of public works under this section may be appealed to the city manager. Any decision made by the city manager under this section may be appealed to the city council. Any appeal shall be made in writing, setting forth the nature of the disagreement with the decision or declaration made, the reasons to support the disagreement, and the relief sought. Any determination by the city council shall be final.

(Ord. 702 (part), 2004).

13.17.080 - Cumulative remedies.

The remedies available to the city to enforce this chapter are in addition to any other remedies available under the city's municipal code or any state statutes or regulations and do not replace or supplant any other remedy but are cumulative.

(Ord. 702 (part), 2004).



APPENDIX F
Crescent City Resolution 2014-28

RESOLUTION 2014-28

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CRESCENT CITY ADOPTING
THE 2010 URBAN WATER MANAGEMENT PLAN AMENDMENT**

WHEREAS, the City prepared an Amendment to the 2010 Urban Water Management Plan (UWMP) in compliance with the requirements of the California Department of Water Resources (DWR) pursuant to Urban Water Management Act (UWMP Act) and the Water Conservation Bill of 2009; and

WHEREAS, the UWMP Act requires development and implementation of a written UWMP that reports, describes, and evaluates the following four areas:

- Water deliveries and uses;
- Water supply sources;
- Efficient water uses; and
- Demand Management Measures (DMMs), including implementation strategy and schedule, and public notification requirements; and

WHEREAS, the City's UWMP will be updated every five years as required by the UWMP Act; and

WHEREAS, the purpose of the UWMP Amendment for water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future water demands; and

WHEREAS, the evaluation of four areas effecting the City's water supply will allow City staff to better manage the water distribution system and help to ensure efficient and cost effective operation of the City's water system into the future; and

WHEREAS, the procedural requirements of the UWMP include public notice, council review and approval, that the City has completed, considered and adopted the Plan; and

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Crescent City hereby approves the 2010 Urban Water Management Plan Amendment and its implementation.

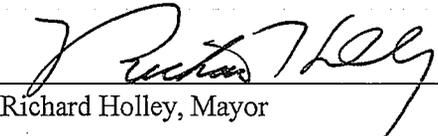
PASSED AND ADOPTED by the City Council of the City of Crescent City on July 7, 2014 by the following vote:

AYES: COUNCIL MEMBERS ENEA, MURRAY, SCHELLONG, MAYOR PRO TEM GASTINEAU, MAYOR HOLLEY

NOES: NONE

ABSENT: NONE

ABSTAIN: NONE


Richard Holley, Mayor

ATTEST:


Robin Patch, City Clerk

APPENDIX H
Cost Benefit Analysis of Selected DMMs

Cost Benefit Analysis (five year)

	DMM E Large Landscape Conservation Programs and Incentives	DMM F High-Efficiency Washing Machine Rebate Programs	DMM I Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts
Program Costs			
Capital expenditures incurred by Crescent City for equipment or conservation devices.	\$ -	\$ -	
Financial incentives to other water suppliers or retail customers.		\$ 43,750.00	
Operating expenses for staff or contractor to plan, design, or implement the program.	\$ 8,000.00	\$ 8,000.00	\$ 40,000.00
Costs to the environment.			
Total	\$ 8,000.00	\$ 51,750.00	\$ 40,000.00

Program Benefits			
Cost avoided by Crescent City of constructing production, transport, storage, treatment, distribution capacity and wastewater treatment facilities.	\$ -	\$ 54,915.00	\$ 126,566.00
Operating costs avoided by Crescent City including but not limited to, energy, and labor associated with the water deliveries that no longer must be made.	\$ -	\$ 18,070.50	\$ 41,648.20
Total	\$ 0.00	\$ 72,985.50	\$ 168,214.20

Benefit Cost Ratio	0.00	1.41	4.21
Cost of Water per million Gallon	\$ 3,442.00	\$ 3,442.00	\$ 3,442.00
Cost of Sewer per million Gallon	\$ 10,460.00	\$ 10,460.00	\$ 10,460.00
Water Savings (MG/5 years)	0.001	5.25	12.10

	DMM E Large Landscape Conservation Programs and Incentives	DMM F High-Efficiency Washing Machine Rebate Programs	DMM I Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts
Program Costs			
Capital expenditures incurred by the City for equipment or conservation devices.	NA	NA	
Financial incentives to other water suppliers or retail customers.	NA	35-\$250 rebates per year	
Operating expenses for staff or contractor to plan, design, or implement the program.	Contractor 20 hrs year for 5 years (total 100 hrs)	Contractor 20 hrs year for 5 years (total 100 hrs)	Contractor 100 hrs year for 5 years (total 500 hrs)
Costs to the environment.			
Program Benefits			
Cost avoided of constructing production, transport, storage, treatment, distribution capacity and wastewater treatment facilities.	\$10,460 per MG	\$10,460 per MG	\$10,460 per MG
Operating costs avoided, including but not limited to, energy, and labor associated with the water deliveries that no longer must be made.	\$3442 per MG	\$3442 per MG	\$3442 per MG

	DMM E Large Landscape Conservation Programs and Incentives	DMM F High-Efficiency Washing Machine Rebate Programs	DMM I Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts
Water Savings (MGY)			
	No water savings expected	10,000 gallons per household per Year 1-35, Year 2-70, Year 3-105, Year 4-140, year 5-175	
Gallons per day per household (facility)	0	27.4	1% reduction per year (243 MGY commercial/Institutional/Industrial)
Year 1	0	350,000	2,430,000
Year 2	0	700,000	2,430,000
Year 3	0	1,050,000	2,430,000
Year 4	0	1,400,000	2,430,000
Year 5	0	1,750,000	2,430,000
Total Gallons	0	5,250,000	12,150,000