SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-B**

FROM: Steve Mack, General Manager

Meeting Date : September 1, 2016

SUBJECT: DRAFT 2015 DISTRICT URBAN WATER MANAGEMENT PLAN (UWMP) UPDATE

RECOMMENDED ACTION: Receive a presentation from General Manager Steve Mack regarding the draft 2015 Urban Water Management Plan update, and provide direction.

FISCAL IMPACT: none

DISCUSSION:

Sweetwater Springs Water District is tasked with updating its UWMP for the 2015 cycle. This update was due July 1, 2016 but because the late provision of guidelines, the efforts and uncertainty related to drought water use restrictions, California Urban Water Conservation Coalition reporting requirements and the fact of doing this report inhouse, we are aiming at a public hearing date at the October 1 meeting with submittal to the State shortly after that. A draft UWMP (attached) has been completed and is available for public review.

The draft UWMP follows the guidelines provided by the California Department of Water Resources. It provides a comprehensive review of the Districts water operations, current and historical water use, projections of future supplies, reliability estimates of the District's supplies and an update of the District's Water Shortage Contingency Plan. Observations (very similar to last month except for #1):

- Producing this Plan felt more like meeting a regulatory requirement than writing a water supply plan for created specifically for the District. There are many tables and sections that have little to do with determining the District's water needs and issues. For examples, low income housing starts are not an issue in this District and we have no relationship (officially) with wastewater management and recycled water.

- I was wrong in my population projections presented last month. The County is staying with its 0.69% per year population growth rate in General Plan 2020. This means the population figures used with the 2010 UWMP can be (and are) used in the 2015 Update.

- DWR requires the UWMP to include some methodology to demonstrate that a water agency will reduce its water use by 20% compared to the baseline - the 80% of baseline gpcd approach and 3 other more complicated approaches. The District's approach in 2010 UWMP was the 80% of baseline. That is easy to do and show, and we are meeting those targets. As discussed last month, I see no reason to change.

- The District is doing much better than the gpcd targets set in 2010. The 2015 target set in 2010 was 102 gpcd; we achieved 76. The 2020 target is 91 gpcd.

- The drought restrictions have 'interfered' with or confounded the 2015 actual results. We have no way of knowing what will happen when District customers' water use rebounds. I expect the rebound to take some time, especially if other parts of the State remain in drought conditions.

- Water loss reduction has played an important part of the District's overall reduction in gpcd from 2010. Overall water production reduced 20% and 7% of that can be attributed to water loss reduction. District water users reduced their water use (by sales) by 13% since 2010, water losses reduced 40% in the past five years.

- Regardless of the rebound effect and whether our beyond 2025 targets are based on 12.5-10% or 15%, our water production estimates are well within the District's water license (1137 AF) and meet the State's requirement for a 20% reduction from the baseline water use as determined by the 1999-2008 baseline.

Sweetwater Springs Water District

October 2016

2015 URBAN WATER MANAGEMENT PLAN UPDATE

Table of Contents

Chapter 1. Introduction and Overview
1.1 Background and Purpose 6
1.2 Urban Water Management Planning and the CCalifornia Water Code 6
1.2.1 Changes to the Water Code pertaining to UWMPs since 2010..... ... 7
1.3 Urban Water Management Plans in Relation to Other Planning Efforts 7
1.4 Plan Organization 8
Chapter 2. Plan Preparation
2.1 Basis for Preparing a Plan 9
2.1.1 Public Water Systems 9
2.2 Regional Planning 9
2.3 Individual or Regional Planning and Compliance 10
2.4 Fiscal or Calendar Year and Units of Measurement 10
2.4.1 Fiscal or Calendar Year 10
2.4.2 Reporting Complete 2015 Data 11
2.4.3 Units of Measurement 11
2.5 Coordination and Outreach 11
Chapter 3. System Description
3.1 General Description 12
3.2 Service Area and Customer Types 12
3.3 Service Area Climate 15
3.4 Service Area Population and Demographics 16
3.5 Potable System Facilities 17
3.5.1 Water Treatment Facilities 17
3.5.2 Distribution Systems 17
3.5.3 Pump Stations 17
3.5.4 Storage 18
3.5.5 Operational Management 18
Chapter 4. System Water Use
4.1 Introduction 19
4.2 Historical, Current, and Future Water Use 19
4.2.1 Historical Water Use 19
4.2.2 Current Demand 20
4.2.3 Water Losses 20
4.2.4 Potable Water Demand: Projections to 2035 21
4.3 Total Demand 22
4.4 Climate Change 22
4.5 Low Income Housing 22
Chapter 5. SB X7-7 Baselines and Targets
5.1 Background 23
5.2 Updates to Baselines and Targets from the 2010 Plan 23
5.3 2015 and 2020 Targets Determination 24
5.4 Using SB X7-7 Targets for Future Water Supply Needs 24
Chapter 6. System Supplies
6.1 Introduction 26

DRAFT

6.2 Groundwater 26
6.3 Wastewater and Recycled Water 27
6.4 Planned Water Supply Projects 28
6.5 Summary of Existing and Planned Sources of Water 29
Chapter 7. Water Supply Reliability
7.1 Introduction/Constraints of Water Sources 30
7.1.1 Water Quality 30
7.2 Reliability by Type of Year 31
7.3 Supply and Demand Assessment 32
7.4 Regional Supply Reliability 33
Chapter 8. Water Shortage Contingency Planning
8.1 Stages of Actions 34
8.2 Prohibitions on End Uses 34
8.3 Penalties, Charges, and Other Enforcement of Prohibitions 35
8.4 Consumption Reduction Methods 35
8.5 Determining Water Shortage Reductions 36
8.6 Revenue Expenditure Impacts 36
8.7 Adoption by Resolution 37
8.8 Catastrophic Supply Interruption 37
8.9 Minimum Supply for the Next Three Years 38
Chapter 9. Demand Management Measures
9.1 Introduction 39
9.2 Summary of District Water Conservation Program 39
Chapter 10. Plan Adoption, Submittal, and Implementation
8.1 Inclusion of 2015 Data 40
8.2 Public Hearing and Adoption 40
8.3 Plan Availability to the Public 40
8.4 Amending the Adopted Plan 40

List of Tables

Table 2-1: Public Water Systems 9
Table 2-2: Plan Identification 9
Table 2-3: Agency Identification 10
Table 2-4: UWMP Coordination 11
Table 3-1. Summary of District's Water System Customer Types 12
Table 3-2: Climate 15
Table 3-3: Population - Current and Projected 13
Table 4-1: Historical Water Use 20
Table 4-2: Demands for Potalbe and Raw Water (DWR Table 4-1) 21
Table 4-3: 12 Month Water Loss Audit Reporting (DWR Table 4-2) 21
Table 4-4: Demands for Potable and Raw Water - Projected (DWR Table 4-2) 22
Table 5-1: Baselines and Targets Summary 24
Table 5-2: 2015 Compliance 24

DRAFT

Table 5-3: GPCD Targets and District Water Production 25
Table 6-1: Groundwater Volume Pumped 26
Table 6-2: Wastewater Collected within Service Area in 2015 28
Table 6-3: Wastewater Treatment and Discharge within Service Area in 2015 27
Table 6-4: Water Supplies - Actual (DWR Table 6-8) 29
Table 6-5: Water Supplies - Projected (DWR Table 6-9) 29
Table 7-1: Basis of Water Year Data 31
Table 7-2: Normal Year Supply and Demand Comparison 32
Table7-3: Single Dry Year Supply and Demand Comparison 32
Table 7-4: Multiple Dry Years Supply and Demand Comparison 33
Table 8-1: Stages of Water Shortage Contingency Plan 34
Table 8-2: Restrictions and Prohibitions on End Uses 35
Table 8-3: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods 36
Table 8-4: Cost Impacts Associated with Water Shortages 37
Table 8-5: Response Actions to Catastrophic Water Interruptions 38
Table 8-6: Minimum Supply Next Three Years (DWR Table 8-4 38
Table 10-1: Notification to Counties 40

List of Figures

FIGURE 3-1: LAND USE MAP – SOUTHERN PORTION OF DISTRICT 13

FIGURE 3-2: LAND USE MAP – NORTHERN PORTION OF DISTRICT 14

FIGURE 7-1: RUSSIAN RIVER SUMMER FLOW AT HACIENDA BRIDGE 31

Appendices

APPENDIX A – WATER SHORTAGE CONTINGENCY PLAN 41
APPENDIX B – RESOLUTION OF ADOPTION - URBAN WATER MANAGEMENT PLAN 35
APPENDIX C – DOCUMENTATION OF REGIONAL COORDINATION 38
A. 60 DAY NOTICE LETTER TO COUNTY OF SONOMA
B. Copy of the published Notice of Public Hearing
C. List of Public Participation and Public Information Activities
APPENDIX D – DRAFT EMERGENCY WATER SHORTAGE RESOLUTION 41
APPENDIX E – URBAN WATER MANAGEMENT PLAN CHECKLIST 43

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DRAFT

Chapter 1. Introduction and Overview

1.1 Background and Purpose

This Urban Water Management Plan (UWMP and Plan) document provides detailed information on water management for Sweetwater Springs Water District (SSWD), and is intended both as a planning tool for long-term supply and resource management and to provide information to the public on the District's water supplies and facilities and its operational plans for a range of water supply conditions.

This 2015 Plan is an update to the District's 2010 Plan. It addresses the Sweetwater Springs Water District (District) water system and includes a description of the water supply sources, historical and projected water use, and a comparison of water supply to water demands during normal, single-dry, and multiple-dry years. It addresses Senate Bill X7-7 requirements and provides the District's Water Shortage Contingency Plan.

This section provides background information on the Plan, an overview of coordination with other agencies, and a description of public participation and Plan adoption.

1.2 Urban Water Management Planning and the California Water Code

The Urban Water Management Planning Act (UWMP Act) was first passed in 1983, and is found in the California Water Code (CWC or Water Code), Sections 10610-10656. The Act requires water agencies to develop or update UWMPs every five years as a long-term planning and resource management document. The Act requires every urban water supplier that provides water for municipal purposes to more than 3,000 connections, or supplying more than 3,000 acre-feet of water annually (AFY), to adopt and submit a plan every five years to the California Department of Water Resources (DWR).

The Water Conservation Act of 2009 (i.e., SB X7-7) amended the CWC. Among other requirements, SB X7-7 called for a state-wide 20 percent per capita water use reduction in urban water use by 2020. To be eligible for State water grants and loans, water agencies must comply with the requirements of SB X7-7. The District's compliance with these requirements is detailed in Chapter 5.
This plan serves as a long-range planning document of the District's water supply.

In 2015, the District supplied 658 AF of potable water to approximately 3600 customers within the District's service area located in an unincorporated area of Sonoma County. Therefore the District is subject to the UWMP requirements of the CWC. The District prepared its first UWMP in 2000; the UWMP was then updated in 2005 and 2010.

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1.2.1 Changes to the Water Code pertaining to UWMPs since 2010

The Water Code was amended in 2014 to include eight changes relevant to the preparation of UWMPs. These include:

- Revisions to the demand management measure requirements, reducing the burden of the required narrative descriptions, reflecting legislative changes, and allowing more flexibility in water suppliers' selection of demand management measures (AB 2067, 2014.)
- Requirements for submittal to the Department of Water Resources (DWR) by July 1, 2016.
- Requirements for electronic submittal of UWMPs.
- Requirements for UWMPs to include standardized forms, tables, and displays.
- Requirements for UWMPs to quantify and report distribution system water losses using a specified format.
- Provisions for water use projections that account for the water savings estimated from adopted codes, ordinances, etc. (when available).
- Voluntary reporting of energy intensity, as related to the nexus of water and energy
- consumption.
- Requirements for features that are artificially supplied with water (including ponds, lakes, waterfalls and fountains) to be addressed separately from pools and spas.

1.3 Urban Water Management Plans in Relation to Other Planning Efforts

The District has coordinated the development of this Plan with the Sonoma County Water Agency (which is the parent agency of the Russian River County Sanitation District, the wastewater agency for the Guerneville area), and the County of Sonoma. Table 1-1 provides a summary of the District's coordination with the appropriate agencies. In addition, the District based the water demand projections in this Plan with the 2009 County of Sonoma General Plan Update which uses the Association of Bay Area Government's (ABAG) demographic projections. The Plan uses County population growth estimates and District staff have communicated with County and Sonoma County Water Agency (SCWA) staff during the development of this plan.

1.4 Plan Organization

The structure of this Plan generally follows the suggestions outlined in the 2015 Urban Water Management Plan Guidebook for Urban Water Suppliers, distributed by the California Department of Water Resources (DWR), January 2016. A checklist of all Plan requirements, the form of which was provided by the DWR, is included in Appendix A. This Plan is organized into chapters as follows:

- **Chapter 1 "Introduction and Overview" –** Includes legislative background for the UWMP requirements.
- **Chapter 2 "Plan Preparation"** – Includes information on the process for development of this Plan, along with coordination and outreach efforts.

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- **Chapter 3 "System Description"** – Details the service area, climate, history and other relevant system information.
- **Chapter 4 "System Water Use"** – Evaluates the overall historical and projected demand of the system within its service area.
- **Chapter 5 "SB X7-7 Baselines and Targets"** – Describes methods for calculating baseline and target water consumption, and includes 2015 compliance information with SB X7-7.
- **Chapter 6 "System Supply"** – Describes the sources of water available to the District.
- **Chapter 7 "Water Supply Reliability Assessment"** – A description of the water system reliability out to 2035, including projections for normal, single-dry, and multiple-dry years.
- **Chapter 8 "Water Shortage Contingency Planning"** – Describes the District's plan for dealing with water shortage.
- **Chapter 9 "Demand Management Measures"** – Discusses efforts by the District to reduce demand through water efficiency programs and conservation.
- **Chapter 10 "Plan Adoption, Submittal, and Implementation"** – Lists the District's adoption, submittal and implementation of its 2015 Plan

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Chapter 2. Plan Preparation

2.1 Basis for Preparing a Plan

In accordance with the California Water Code (CWC), urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet of water per year (AFY) are required to prepare a UWMP every five years. These UWMPs are to be completed for years ending in 0 or 5. The District supplies less than 1,000 AFY but has more than 3,000 water service connections; therefore the District must prepare a UWMP. The number of connections and volume of water supplied in 2015 is presented in Table 2-1 below.

2.1.1 Public Water Systems

As defined by the CWC, a public water system is a system that provides water for human consumption through pipes or other constructed conveyances, and has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

2.1.2 Agencies Serving Multiple Service Areas/Public Water Systems

The District operates only two separate public water system (Guerneville System and the Monte Rio System) which together serve the District's service area.

Table 2-1: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
4910004	Guerneville System	2,551	376
4910028	Monte Rio System	1,059	140
	TOTAL	3,610	516

NOTES: The Guerneville and Monte Rio systems are adjacent but not connected.

2.2 Regional Planning

The District actively and regularly coordinates with other agencies for water efficiency and water planning. For the preparation of this Plan, the District consulted with the County of Sonoma and the Sonoma County Water Agency.

Table 2-2: Plan Identification			
	Type of Plan		Name of RUWMP or Regional Alliance
	Individual UWMP		
☑		Water Supplier is also a member of a RUWMP	
		Water Supplier is also a member of a Regional Alliance	
	Regional Urban Water Management Plan (RUWMP)		
NOTES:			

2.3 Individual or Regional Planning and Compliance

The District's Plan is an individual Plan with District-specific information, baselines, and targets.

2.4 Fiscal or Calendar Year and Units of Measure

2.4.1 Fiscal or Calendar Year

The District has provided data on a calendar year basis whenever possible. In some cases, fiscal year data is provided, and is clearly identified in the table notes.

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP (select from Drop down)	

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Unit	AF
NOTES:	

2.4.2 Reporting Complete 2015 Data

This 2015 Plan includes water billing, consumption, and production data for the year 2015

2.4.3 Units of Measure

All water measuring units throughout the report are presented as acre-feet (AF) unless otherwise noted.

2.5 Coordination and Outreach

The Act requires the District to 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. The District coordinated the preparation of its Plan with the Sonoma County Water Agency (which is the parent agency of the Russian River County Sanitation District), and the County of Sonoma. Table 2-1 provides a summary of the District's coordination with the appropriate agencies. In addition, the District based the water demand projections in this Plan with the 2020 County of Sonoma General Plan Update which uses the Association of Bay Area Government's (ABAG) demographic projections.

Notification letters were sent in February 2016 and verbal communications have occurred with County and Water Agency staff in the preparation of this update.

Notification of the update was placed on the District website. Progress reports on the update were regular features of the meeting agendas which are also posted on the District's website.

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Table 2-4. UWMP Coordination	County Agencies		Wastewater Agency	
	Sonoma County	Sonoma County Water Agency	Russian River County Sanitation District	Public Involvement
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				

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Chapter 3. System Description

3.1 General Description

The Sweetwater Springs Water District is located in the lower Russian River Basin of Sonoma County with its' southern service area approximately eight (8) miles from the Pacific Ocean. The District occupies an area of approximately two thousand (2000) acres. Service area maps of the southern and northern portions of the District are provided as Figures 1 and 2 below.

The District was formed in 1988 for purposes of purchasing the water supply and distribution system from a private utility. The purchase from Citizen Utilities, Inc. took place in April 1992. Water service is provided to all residential, commercial, and industrial customers, and for environmental and fire protection uses.

3.2 Service Area and Customer Types

As of December 2015 the District had 3,071 single-family residential connections, 352 multi-family connections, 146 commercial and 24 public facility connections (Table 3-1). These customers are served through two (2) separate water supply and distribution systems. The southern system serves the Monte Rio area and consists of two (2) wells, a filtration plant, eight (8) storage tanks with a total storage capacity of 580,000 gallons and five (5) pressure zones. The northern system serves the Guerneville, Guernewood Park, Vacation Beach, and Rio Nido areas and consists of three (3) wells, eighteen (18) storage tanks with a total storage capacity of 1,245,000 gallons and five (5) pressure zones.

Table 3-1. Summary of District's Water System Customer Types[(a)]

Customer Type	Number of Meters	Percent of Total Meters
Single Family Residential	3,071	85
Multi-Family Residential	352	10
Commercial	146	4
Institutional	24	1
Other (Firelines)	20	1
Total	3,613	100

[(a)] Source: Sweetwater Springs Water District, Number of Meters as of December 2015.

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Figure 3-1. Map of Southern System (Monte Rio)

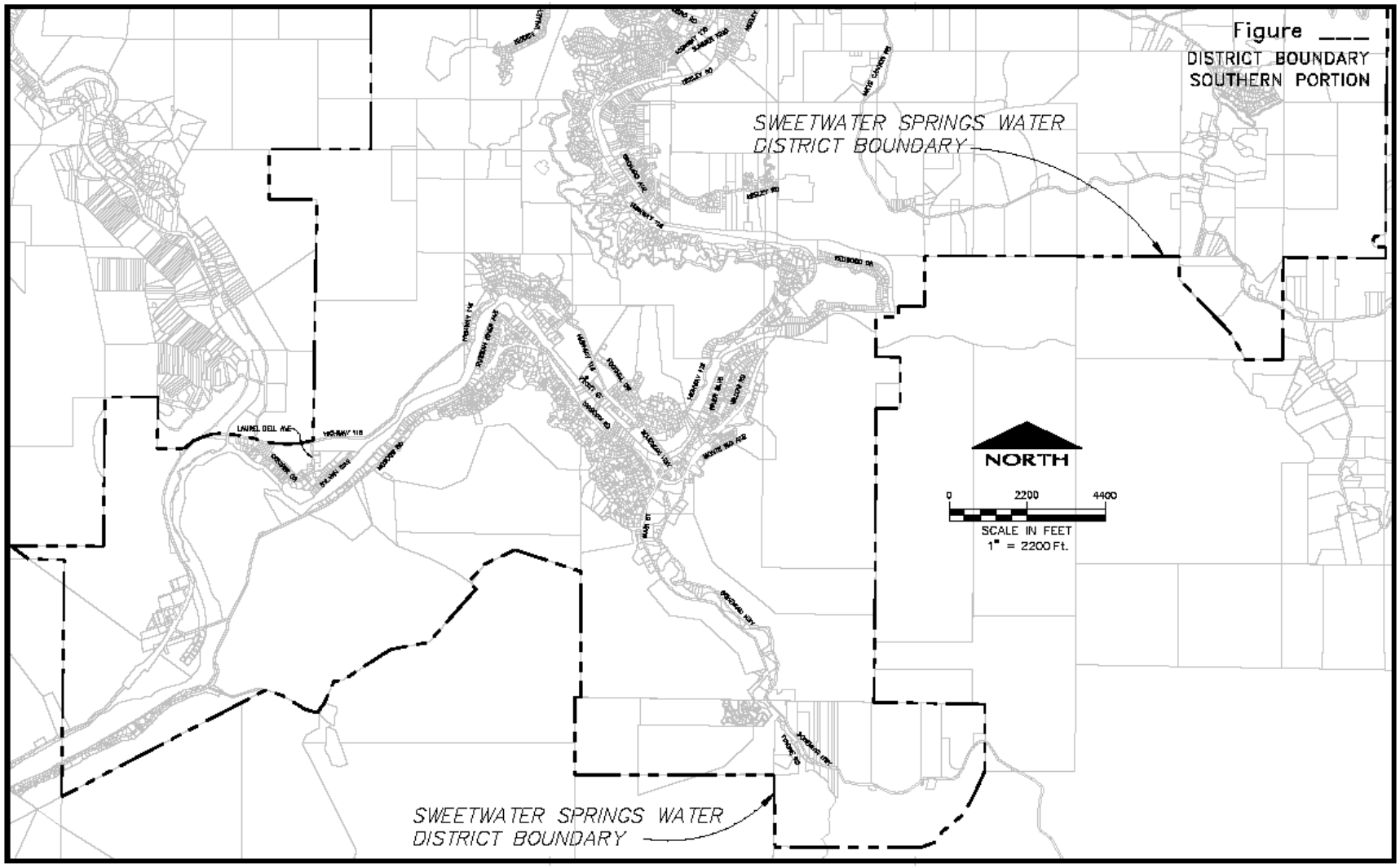
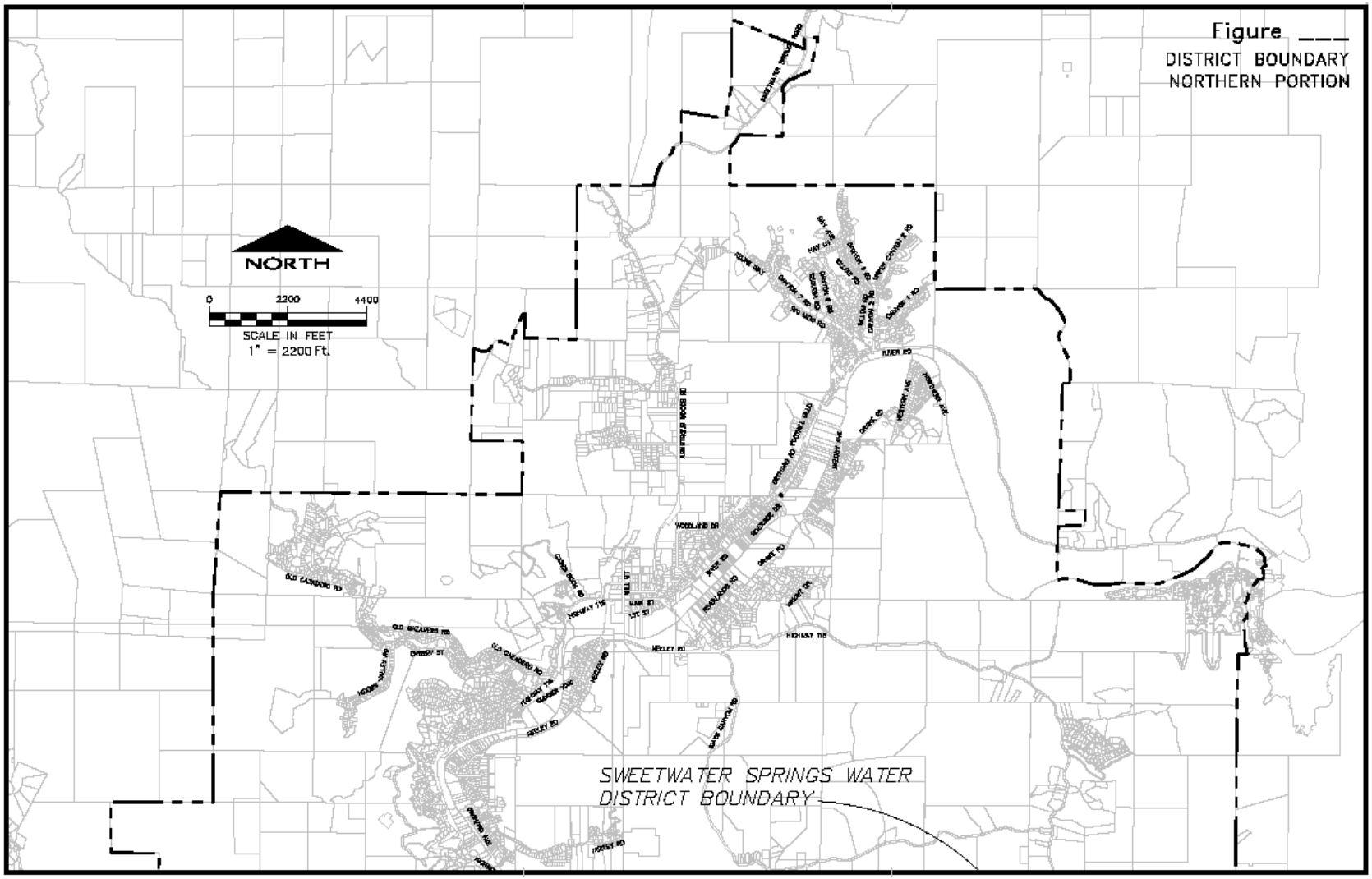


Figure 3-2. Map of Northern System (Guerneville)



3.3 Service Area Climate

The Sweetwater Springs Water District is located approximately seventy-five (75) miles north of San Francisco and can be characterized as a northern coastal climate. Summers are warm and generally rain-free and winters are cool, with an annual average of fifty-five inches (55") of precipitation. The source of the District's water supply, the Russian River watershed, is influenced by its proximity to the Pacific Ocean. In common with much of the California coastal area, the year is divided into wet and dry seasons. Over 90 percent of the annual precipitation normally falls during the wet season, October to May, with a large percentage of the rainfall typically occurring during three to five major winter storms. Winters are cool, and below-freezing temperatures seldom occur. Summers are warm and the frost-free season is fairly long. A significant part of the region is subject to marine influence and fog intrusion. The region is subject to wide variations in annual precipitation with some years exceeding eighty inches (80"). Table 3-2 summarizes monthly average evapotranspiration rates (ETo) and temperature at the Santa Rosa CIMIS (California Irrigation Management Information System) station, and monthly average rainfall at the Guerneville Fire Station.

Table 3-1: Climate

	Standard Average ETo[a]	Average Rainfall[b]	Average Temperature[a]
Jan	1.1	10.5	45.4
Feb	1.6	9.3	47.7
March	3.1	6.8	50.3
April	4.4	3.4	52.5
May	5.5	0.38	56.8
June	6.2	0.13	61.0
July	6.4	0.26	62.5
Aug	5.9	0.22	62.5
Sept	4.5	0.87	60.7
Oct	3.2	4.0	56.6
Nov	1.5	9.4	49.8
Dec	1.0	9.9	44.4
Total Annual	44.4	55.16	54.2

[a]Data represents the monthly ETo average from January 2000 to February 2011 and was recorded from Santa Rosa CIMIS
Station 83.
ETo, or evapotranspiration, is the loss of water from evaporation and transpiration from plants.
[b]U.S. National Weather Service, Guerneville Fire Station, 1971-2000

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3.4 Service Area Population and Demographics

The lower Russian River area, what is currently the service area of the District, developed in the early twentieth century as a summer tourist area for people in the Bay Area, up into the 1930's. During this period numerous hotels and resorts served the tourist population that arrived by train. A transition took place during the 1940's thru the 1960's when small cabins were constructed for weekend and summer vacation use. Much of the housing constructed was of poor quality and on small lots. Many of these lots were on steep slopes and those at lower elevations subject to winter flooding (and still are).

The service area is now undergoing another transition. In the decade prior to 2010 home and rental prices escalated in other parts of Sonoma County encouraging more people to move to the Guerneville- Monte Rio area. The 2008 economic collapse changed this dynamic and burst the housing price bubble in the District service area as well as the other parts of Sonoma County. For much of the period since the 2008 collapse into the 2010's housing sales were largely being driven by foreclosure sales and many of those sales were for second homes. The District service area saw a decline in population of approximately 800 between the last two censuses (2000 and 2010) and the prevailing opinion is that this decline was due to the economic collapse. More recently population has stabilized but there does still seem to be the trend of increasing vacation/second homes. There is very little development of new housing.

The uncertainty regarding population trends reported in the 2010 UWMP still exists and estimates of population going forward remain speculative:

- What will be the continuing population response as the local economy continues to stabilize? Will the service area return to the trend of being a bedroom community for Santa Rosa because of lower housing costs?

- Will the tourism success lead to a greater resident population or continue to encourage vacation homes and/or second homes. What will be the impact of the efforts to turn the West County of Sonoma into a general tourist destination on water use in the District?

- Will a wastewater management solution be developed for the Monte Rio area and what impact will that have on population in that area? Will the solution open up new lots for development or will the cost of the solution drive residential population away? Will the TMDL for the Monte Rio area (and other areas) required by the Northcoast Regional Water Quality Control Board have an impact on water use by District customers.

Because of these and other uncertainties surrounding possible population trends and the lack of projections focused on the District's service area, projecting the future population accurately is difficult. The Sonoma County General Plan Update of 2020 forecast a population growth rate of 0.69% for the Russian River Planning Area of West Sonoma County which is the same growth projection used in the 2009 General Plan Update. The 2010 census data was rechecked and found to be very close (+38 for the two census tracts which include the service area but are

somewhat larger) to what was reported in 2011 for the 2010 UWMP and those estimates were not changed for this update. Because the County population projections are unchanged from the 2010 UWMP and the 2010 Census data for the surrounding census tracts are so similar to 2011, the population projections from the 2010 UWMP are being reused for this 2015 update.

Table 3-2: Population - Current and Projected						
Population Served (2015 Estimate)	2010	2015	2020	2025	2030	2035
	7,493	7,755	8,026	8,307	8,598	8,899
NOTES: 2015 Estimate based on 2010 Census and Sonoma County General Plan 2020 population projections for the Russian River area projected out to 2015						

3.5 Potable System Facilities

The Sweetwater Springs Water District has a reliable water supply which is 100 percent supplied by groundwater which is underflow from the Russian River. The District has 3 wells for the Guerneville System and 2 wells for the Monte Rio System. These are described in more detail in Chapter 6.

3.5.1 Water Treatment Facilities

The Guerneville System's water treatment consists of chlorination disinfection, iron and manganese removal, and zinc metaphosphate injection for corrosion control.

The Monte Rio system treatment plant consists of filtration through two manganese greensand pressure filters with pre and post-chlorination, and zinc metaphosphate injection for corrosion control.

3.5.2 Distribution Systems

The distribution systems consist of a variety of pipe sizes and materials with a total length of approximately 66 miles. As part of the District's Capital Improvement Project (CIP) program, thousands of feet of new PVC or HDPE pipe have replaced older pipes in the system. Older pipes typically consist of undersized AC pipe or iron pipe. The condition of the pipes varies from poor to good and older segments of the system are continually being updated through the CIP program.

One of the District's main goals in implementing the CIP program is to minimize the distribution losses of their aging infrastructure and to install facilities in compliance with emergency service provider standards. Annual CIP projects replace undersized and deteriorating pipes throughout the system in order to help achieve this goal.

3.5.3 Pump Stations

The District operates thirteen (13) pump stations in the Guerneville system and four (4) pump stations in the Monte Rio system. The pump stations are currently in

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good condition and able to provide all needed water and meet daily and peak demands in the system.

3.5.4 Storage

The Guerneville System has eighteen (18) storage tanks with approximately 1.4 million gallons storage. The Monte Rio System has seven (7) storage tanks with approximately 500,000 gallons storage.

3.5.5 Operational Management

Flow Meters: All service connections and water supply wells have meters. There are six (6) production meters, including three (3) 8-inch meters at the El Bonita Well Field, one (1) 10-inch meter at the Highland Treatment Plant, and two (2) 8-inch meters at the Monte Rio Well Field. In general, the customer meters are in need of replacement unless they were in an area of a recent CIP project, where mainline pipe and associated water services are replaced. Flow meters are read in the field by District staff.

SCADA Systems: The District's system consists of equipment at nine (9) remote pumping and storage facilities and at both the Highland and Monte Rio Treatment Plants. Additionally, there is equipment at the District office and communication equipment at the Mount Jackson repeater site. The system is used to acquire and store data, control operations of various water system components, and allows operators to remotely monitor and make operational parameter changes. The system also sends out alarm notifications to operators when an operational data point is outside of specified parameters. The system is currently in good working condition and is adequate for the District's needs.

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Chapter 4. System Water Use

4.1 Introduction

This chapter of the Plan presents the District's water system use/demands, and provides the actual 2015 and projected annual water use in five-year increments between 2015 and 2035. Projecting water demand for a 20-year planning horizon is a key requirement of the Plan. Understanding present and future demand informs the District's policies on water conservation and management of the District's water supplies, and allows for planning of infrastructure needs to accommodate expected future water supply requirements.

The Water Code requires evaluation of recycled water in the UWMP update, however the District has no direct involvement in recycled water and the District's service area has few opportunities for use of recycled water. The information on recycled water in this UWMP is provided by the Russian River County Sanitation District which is the wastewater treatment agency for much of the Guerneville water system.

4.2 Historical, Current, and Future Water Use

4.2.1 Historical Water Use

When Sweetwater Springs Water District began operations in 1992, taking over from Citizen's Utilities, it inherited an antiquated, aging infrastructure with high distribution system losses. Table 4-1 is copied from the 2010 UWMP and shows trends since 2000 which are typical for the District for that time period. Since then the District has spent over $11 million in a Capital Improvement Program (CIP) since 2008 to bring its water systems up to current standards providing better fire flow, less system losses, better water quality, and fewer service interruptions to its customers. The District has an approved, but currently not totally funded, $6 million CIP for FY 2017-2023. This effort needs to continue as system losses are still an unacceptable 21% and the District fixes an average of approximately 150 leaks per year (down from approximately 300 in 2010).

District total water use is in a declining trend which has been further affected by the current Statewide Drought Emergency . The District has always had low per capita water use compared to other parts of California. The coastal climate and forested nature of much of the District does not require much outside watering compared to more interior areas and the landscape patterns do not favor large lawns or other grassy areas. The CIP program is having an effect in reducing system losses and the regional water conservation efforts, plus a concerted toilet replacement program by the Russian River County Sanitation District which has a service area largely similar to the District's Guerneville system, has resulted in reduced overall water production by the District, as well as the possibly short-term reductions related to the water use restrictions and public information campaign connected to the Statewide Drought Emergency.

Throughout its history, District has used four water use classes:

- **Single-family Residential**: A single-family dwelling unit. A lot with a free-standing building containing one dwelling unit.
- **Multi-family Residential**: Multiple dwelling units contained within one building or several buildings within one complex.
- **Commercial**: A water user that provides or distributes a product or service.
- **Institutional and Governmental**: A water user dedicated to public service. This type of user includes, among other users, schools and government facilities.

The District has no industrial or dedicated agriculture or related customer classes.

Table 4-1 Historical Water Use Water Deliveries — Actual 2000, 2005 and 2010						
	2000		2005		2010	
	Metered		Metered		Metered	
Water use sectors	# of accounts	Volume	# of accounts	Volume	# of accounts	Volume
Single family	3,052	466	3,068	445	3,027	381
Multi-family	289	122	311	104	346	116
Commercial	149	97	152	107	143	83
Industrial						
Institutional/governmental	15	10	24	14	23	12
Landscape						
Agriculture	1	14				
Other (Fire Protection)			17	0	20	0
Total Delivered	3,521	695	3,572	670	3,559	592
System Losses		393		277		235
Total		1,088		947		827

Units: acre-feet per year

4.2.2 Current Demand

Table 4-2 shows water use for 2015. In comparison to earlier years water use and water losses are down. The number of accounts - actual customers - has increased slightly - 54 accounts - continuing the trend of small increases in customers through the years.

4.2.3 Water Losses

The tables on water use in this chapter includes a row on water losses. The Water Code also requires reporting water losses following the AWWA water audit software approach which includes consideration of losses over which there is no reasonable expectation of control by the local water agency. For 2015 that value is 131 AF and is included in Table 4-3 below.

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Table 4-2: Demands for Potable and Raw Water - Actual (DWR Table 4-1)				
Use Type	2015 Actual			
	Additional Description *(as needed)*	Level of Treatment When Delivered	Number of Accounts	Volume
Single Family		Drinking Water	3071	329
Multi-Family		Drinking Water	352	101
Commercial		Drinking Water	146	76
Institutional/Governmental		Drinking Water	24	10
Other	Fire flows	Drinking Water	20	0
Losses		Drinking Water		141
		TOTAL	3613	658
NOTES: Losses are subtraction of total sales from total production.				

Table 4-3: 12 Month Water Loss Audit Reporting (DWR Table 4-4)	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	131.8
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: compare to water loss reported in Table 4-2 (141 af).	

4.2.4 Potable Water Demand: Projections to 2035

The District projects its future water supply needs based on the gallons-per-capita-per-day (gpcd) approach discussed in Chapter 5, SBX7-7 Baselines adn Targets. The projected population shown in Table 2.1 multiplied by the gpcd calculated in Chapter 5 gives the water demand projection. The assumptions in this projection include:

- The mix of customer classes discussed above and shown in Tables 4-1 and 4-2 will remain the same as in 2015. This has been the historical trend in the District and seems reasonable.
- The District will continue to reduce system losses as explained in Chapter 5.
- Population projections shown in Table 2-1 will happen.
- The water use reductions due the Drought Emergency restrictions and publicity are temporary and demand will return to pre-drought levels.
- Other conservation techniques will likely reduce District water supply demand but are not included in the gpcd calculation.

Table 4-4 shows these projections out to 2035.

Table 4-4: Demands for Potable and Raw Water - Projected (DWR Table 4-2)

Use Type	Additional Description	Projected Water Use			
		2020	2025	2030	2035
Single Family		411	427	442	457
Multi-Family		126	131	135	140
Commercial		95	99	103	106
Institutional/Governmental		12	13	13	13
Other					
Losses		161	118	99	80
	TOTAL	806	788	792	795
NOTES:					

4.3 Total Demand. The amounts in tables 4-2 and 4-4 are the total demands for the District. The District has no wholesale water sales, nor does it deliver recycled water or raw (non-potable) water to any customers.

4.4 Climate Change. This Plan does not explicitly consider the effects of climate change on the District's water supply. The District's water efficiency programs are adaptable to changing climactic conditions, if and when they happen.

4.5 Low Income Housing. The District is a disadvantaged community by State of California standards. The County of Sonoma General Plan 2020 has no new low income housing identified for the District's service area. Constraints on new low income housing include potential flooding issues for the Guerneville and Monte Rio systems and lack of adequate wastewater treatment for the Monte Rio system. If low income housing become feasible for the service area, the District can meet water supply demands for potential housing.

5. SB X7-7 Baselines and Targets

5.1 Background

This chapter contains a summary of the Town's SB X7-7 analysis, including methodology and assumptions. Governor Arnold Schwarzenegger signed into law Senate Bill (SB) X7-7, also known as the Water Conservation Act of 2009. The goal of SB X7-7 is to reduce state wide water consumption on a per capita basis by 20 percent by the year 2020. SB X7-7 established new requirements for 2010 UWMPs, specifically requirements to:

- Develop a baseline daily per capita water use;
- Establish a daily per capita water use target for 2020 and an interim water use target for 2015 based on the baseline daily per capita water use; and
- Report planned water conservation efforts to reach water use targets.

With the 2010 UWMP the District established the baselines and targets as required. All Water suppliers, including the District, have the opportunity to recalculate their baselines and water use targets in their 2015 UWMPs and may opt to use a different methodology than was used in 2010. The 2015 UWMP is the final opportunity for suppliers to update their 2020 target, after which the reported value is considered binding. The 2015 interim target is intended to help water suppliers track progress towards their 2020 targets. The 2015 interim water use target is not binding. Failure to reach the 2020 water use target established by a water supplier would jeopardize the water supplier's eligibility for State water grants and loans.

5.2 Updates to Baselines and Targets from 2010 Plan

Four methods are available for compliance with the SBX7-7 required water use reduction targets. With the 2010 UWMP the District chose to use Method 1 of SBx7-7 20x20 compliance – the gallons per capita per day (gpcd) target. The Method 1 2020 compliance target of 91 gpcd is based on 80 percent of the District Baseline gpcd of 113 as calculated by the California Urban Water Conservation Coalition (CUWCC) GPCD Target Calculator v1.5 with the 2010 UWMP and confirmed by the SBX7-7 tables in Appendix E. The 2015 interim compliance target is 102 gpcd. In comparison, the District's 2010 gpcd was 99.4 and the 2015 actual was 76. This latter value was affected by the Statewide Drought Emergency restrictions and related water conservation public information.

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Table 5-1 Baselines and Targets Summary *Retail Agency or Regional Alliance Only*					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1997*	*2006*	*113*	*102*	*91*
5 Year	*2003*	*2007*	*106*		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES:					

5.3 2015 and 2020 Target Determination

Table 5-2: 2015 Compliance *Retail Agency or Regional Alliance Only*					
Actual 2015 GPCD*	2015 Interim Target GPCD*	TOTAL Adjustments*	Adjusted 2015 GPCD*	2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
76	102	0	76	76	Yes
**All values are in Gallons per Capita per Day (GPCD)*					
NOTES: 2015 results affected by drought water use restrictions that were in place for approximately 2 years. No adjustments taken.					

5.4 Using GPCD to Determine Future Water Supply Needs

Because the District has little planning information for its service area, projections of future water use are difficult to develop. Development of SBx7-7 targets allows a water supply projection approach that fits with State regulatory requirements. In calculating future gpcd's, water system loss targets have been employed. The 2010 system loss was 28%. The District has a goal of getting to a system loss rate of 15%. Using that as a goal for 2025, interim loss target goals were developed for 2015 (24%) and 2020 (20%) for the purpose of using the resulting gpcd's (multiplied by population projections) to estimate the water supply needed in those years.

As stated above, the District's actual gpcd in 2015 was 76.0 - this reflects better than projected water loss reduction (the target was 24%, actual was 21%) and the temporary (at least to some degree) effects of the Statewide Drought Emergency water use restrictions and water conservation publicity.

The District will strive to have a better loss percentage sooner (and has achieved that in 2015), but for water supply needs purposes, the goals established in 2010 seem to be realistic goals. In projecting out water supply needs for 2030 and 2035 the District will aim for water loss targets of 12.5% and 10%, respectively. Based on recent

experience, these seem to be achievable, realistic targets. Table 5-3 GPCD Targets and District Water Production shows actual and projected gpcd using the methods discussed here (actual water use, estimated population projections, and system water loss reduction goals).

These results meet SBX7-7 targets and demonstrate District water supply needs well within long-term District water supply availability. Water savings through better customer efficiency whether through changing habits or better water conserving appliances and fixtures will further reduce District water use.

Table 5-3 GPCD Targets and District Water Production

	% System Loss/Target	GPCD based on System Loss Reduction	GPCD Sold	GPCD Lost	SBX7-7 Target	Total Water Production
Baseline GPCD		113			113	
2010 actual	28	98.6	69.9	28.7	109	828
2015 actual	20.7	76.0	57.5	15.5		658
2015 Target	24	93.6	69.9	23.6	102	813
2020 Target	20	89.6	69.9	19.7	91	808
2025 Target	15	84.7	69.9	14.8		788
2030 Target	12.5	82.2	69.9	12.3		792
2035 Target	10	79.8	69.9	9.9		795

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Chapter 6. System Supplies

6.1 Introduction

This chapter describes the water supplies available to Sweetwater Springs Water District. The District has a simple water system - groundwater pumped from Russian River underflow. The Russian River in the area of the District's two well fields is underlain by extensive alluvium fill that is constantly recharged by the River.

A limited amount of recycled water is provided by the wastewater treatment provided, Russian River County Sanitation District, to one golf course. This latter water supply is not within the District's control.

There is no direct surface water used by the District. Nor is there any stormwater recovery systems or desalination opportunities. The District has not exchange or transfer opportunities. It does not purchase or import water.

6.2 Groundwater

The District operates three (3) wells in the Guerneville system and two (2) wells in the Monte Rio system. These wells pump underflow of the nearby Russian River under water rights license 13971 with a total licensed amount of 1137 AF per year and a maximum pumping rate of 2 cfs. No other users in the area affect these wells. Summer water flows in the Russian River are provided through discharges from Lake Mendocino (Coyote Dam) and Lake Sonoma (Warm Springs Dam) as well as natural flow from tributaries.

In 2015 the District obtained approximately 496 acre-feet per year (AFY) from three (3) wells in the Guerneville System and approximately 162 AFY from two wells in the Monte Rio System. This 75/25% split in production has stayed very consistent over the history of production from these two well fields (it was 74/26% in the 2010 UWMP Update). Table 6-1 shows the total pumping amounts from 2011 through 2015.

The wells' average depths are approximately 100 feet. The El Bonita Well Field has a pumping capacity of approximately 1100 gallons per minute (gpm). If run at that rate for an entire year, the El Bonita location would produce approximately 1770 af. The Monte Rio Well Field has a pumping capacity of approximately 550 gpm which equates to approximately 885 AFY. As noted above, the District has a water rights license for Russian River underflow of 1,137 AFY which is below the production capacity of the two well fields, therefore the current and future limit to the District's water supply is its water rights license.

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Table 6-1: Groundwater Volume Pumped						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Russian River Underflow	773	830	843	731	658
	TOTAL	773	830	843	731	658
NOTES:						

6.3 Wastewater and Recycled Water

The Sonoma County Water Agency, acting through the Russian River County Sanitation District (RRCSD), built a wastewater treatment plant in 1978 to service a large portion of the Guerneville and Rio Nido area. Currently, the RRCSD only provides recycled water to the Northwood Golf course. The amount provided to Northwoods Golf Course in 2010 was 59.4 af which offsets an equivalent amount of potable water that would be coming from District water supplies or groundwater directly pumped by the Golf Course. This amount is expected to be similar during the planning horizon of this Plan.

The District's Monte Rio service area does not have a sewer system nor any collective wastewater management system – all wastewater treatment is through individual onsite wastewater treatment systems - septic systems. Septic systems for this area have been in regulatory disfavor for many years – in 1997 Sonoma County declared a Waiver (from septic system regulations) Prohibition for the area. No new parcel can be developed with a waiver of septic system regulations and redevelopment of existing structures can become very expensive in meeting septic system codes.

The Northcoast Regional Water Quality Control Board has recently proposed a Total Maximum Daily Load (TMDL) program for the lower Russian River including the Monte Rio area. The proposed plan would require affected areas to come into compliance with the TMDL requirements. The actual details of any physical solution are unknown at this time. It is possible that recycled water may become available in the future, but this has not been anticipated in any of the solutions currently under consideration.

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Table 6-2 Wastewater Collected Within Service Area in 2015						
Approximately 50%	Percentage of 2015 service area covered by wastewater collection system					
Approximately 65%	Percentage of 2015 service area population covered by wastewater collection system					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
Russian River County Sanitation District	Metered	307	Russian River County Sanitation District	Russian River County Sanitation District Treatment Plant	Yes	No
Total Wastewater Collected from Service Area in 2015:		307				

Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2015								
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes		
						Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area
Russian River County Sanitation District Treatment Plant	Russian River	Outfall near Treatment Plant at Russian River	River or creek outfall	No	Tertiary	307	175	59

6.4 Planned Water Supply Projects

The District has no planned water supply projects to develop additional supply for the District. The existing wells will need rehabilitations periodically and nearing the end of the planning period may need replacement. Any potential replacement would likely happen at the current well field location and would not fit the definition of a "new" water supply.

6.5 Summary of Existing and Planned Sources of Water

In summary the District produces all its water from wells at the El Bonita Well Field for the Guerneville System and the Monte RIo well field for the Monte Rio System. The District's supply is underflow of the Russian River and is licensed by the State at a total of 1137 AFY. The District anticipates no other water supplies to augment its current supply. Table 6-3 shows actual supply in 2015 and Table 6-4 shows projected supply which is the water right license amount. The actual amount used by the District will be much lower - see Table 5-3 for expected future demand.

Recycled water is managed by the Russian River County Sanitation District and is supplied to the Northwoods Gold Course. The future supply of recycled water to the golf course is expected to remain at similar levels.

Table 6-5: Water Supplies — Actual (DWR Table 6-8)

Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield
Groundwater		658	Drinking Water	1,137
	Total	658		1,137
NOTES:				

Table 6-6: Water Supplies — Projected (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	Projected Water Supply			
		2020	**2025**	**2030**	**2035**
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	Water Right License	1,137	1,137	1,137	1,137
	Total	1,137	1,137	1,137	1,137
NOTES: Based on water right license amount. Actual water used will be the amount of system demand which expected to be much lower (see Table 5-3)					

Chapter 7. Water Supply Reliability Assessment

7.1 Introduction/Constraints on Water Sources

The true measure of a water agency's water supply is how it can handle severe drought. Water agencies must compare their normal supplies with foreseeable dry conditions (and then probably add another dry year because we don't know when the drought is over, in real time). This chapter compares the District's actual and projected water demands from Chapters 3 and 4 to the District's supplies described in Chapter 6. The comparison is made for average years and for droughts of up to 3 years. The purpose is to evaluate whether there could be shortfalls in supply for dry weather conditions and, if so, to provide a basis for planning for those conditions.

The District is very fortunate in its water supply. It has a water right license to underflow of the Russian River. The District pumps a relatively small amount of Russian River underflow (maximum of 2 cubic feet per second (cfs)) from a river that has minimum flow requirement much higher than that - 35 cfs in summer of critical dry years (the term for the driest possible condition in the River) and higher in wetter years and other seasons of the year. Even in the critical dry years, the District's maximum daily water use is not noticeable in the Russian River in summer which is the driest period for the River. Once the rainy season starts river flows are much higher than those in Summer. Figure 7-1 shows a demonstration of recent summer flows which happened during a dryer than average period, a period that might qualify for the 3 year dry period required for examination by this plan. This figure shows that even during this dry period when the regional water conservation plan was asking for 20% cutbacks and more, actual District supplies as measured by flow in the Russian River, were more than sufficient.

The Sonoma County Water Agency is currently requesting that the State Water Resources Control Board revise Decision 1610 to comply with the Russian RIver Biological Opinion for Endangered Salmonids and other changed conditions for the River. That revision has not occurred and the details of the proposed revision are not available at the time of this writing. The revisions requested by the Sonoma County Water Agency are not expected to change the Districts supply during dry periods. If they do, changes may need to be made to this reliability assessment.

7.1.1 Water Quality

The quality of the District’s water deliveries is regulated by the California Division of Drinking Water, which requires regular collection and testing of water samples to ensure that the quality meets regulatory standards and does not exceed MCLs. The quality of existing groundwater supply sources over the next 25 years is expected to continue to be excellent. The District treats its water for iron and manganese removal.

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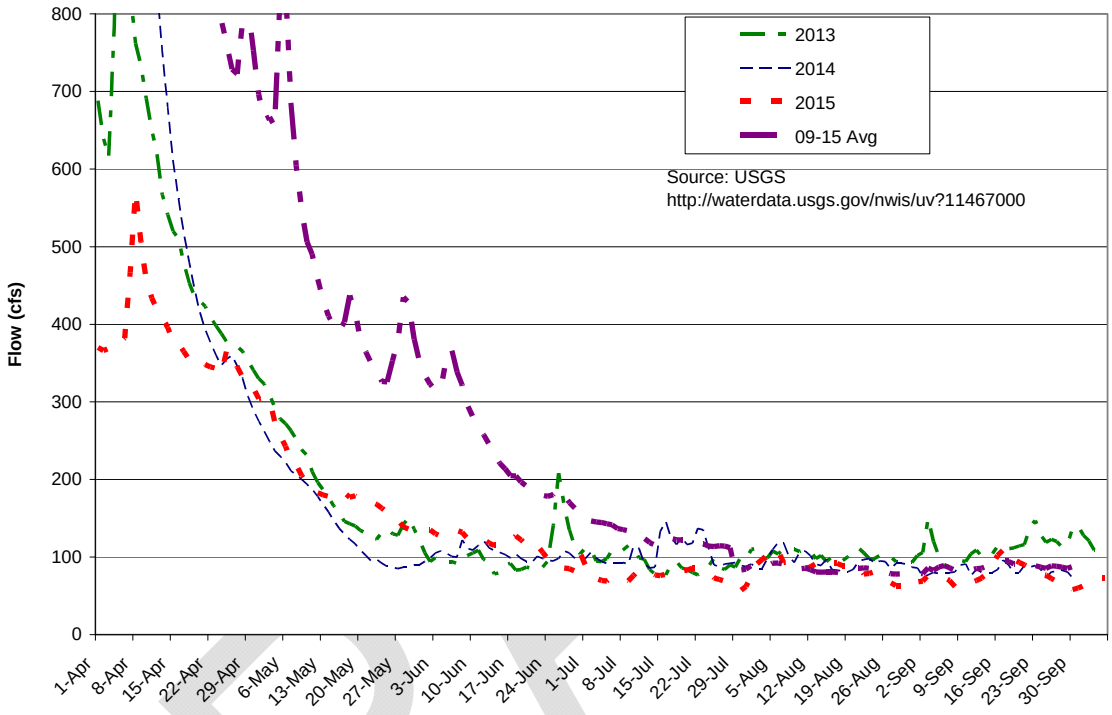
The District has to be on the alert for contamination of the Russian River. When there are toxic or contaminated spills into the River (for example a break in a wastewater line resulting in direct discharge of untreated wastewater into the River near the District's wells) the District will shut its wells off and wait for the contaminated plume to pass by the well fields.

Figure 7-1. Russian River Summer Flow at Hacienda Bridge, 2013-2015, and the 2009-15 Average, Updated July 26, 2016



7.2 Reliability by Type of Year

Table 7-1 shows that the District expects that its water right amount will be available in all types of drought-related years. When those years happen, the District participates in the regional water conservation effort and demand will be much lower than supply.

Table 7-1: Basis of Water Year Data

Year Type	Base Year	Available Supplies if Year Type Repeats	
		Volume Available	% of Average Supply
Average Year	1137	1137	100%
Single-Dry Year	1137	1137	100%
Multiple-Dry Years 1st Year	1137	1137	100%
Multiple-Dry Years 2nd Year	1137	1137	100%
Multiple-Dry Years 3rd Year	1137	1137	100%

NOTES: In dry years of any length, District will participate in regional water conservation efforts that will results in much lower water use.

7.3 Supply and Demand Assessment

Tables 7-2 through 7-4 demonstrate the District's supply in comparison with the expected demand during normal and dry periods. Currently, District normal year demand is lower than supply and during dry periods the District participates in regional water conservation efforts to help reduce the regional demand. During the recent Statewide Drought Emergency the District reduced 2015 demand compared to 2013 demand by 20%, and both years were well below the available supply.

Table 7-2: Normal Year Supply and Demand Comparison

	2020	2025	2030	2035
Supply totals (*autofill from Table 6-9)*	1,137	1,137	1,137	1,137
Demand totals *(autofill from Table 4-3)*	806	788	792	795
Difference	331	349	345	342
NOTES:				

Table 7-3: Single Dry Year Supply and Demand Comparison

	2020	2025	2030	2035	2040 (Opt)
Supply totals	1,137	1,137	1,137	1,137	
Demand totals	866	847.4019	851	855	
Difference	271	290	286	282	0
NOTES:					

Table 7-4: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	
First year	Supply totals	1,137	1,137	1,137	1,137	
	Demand totals	866	847.4019	851	855	
	Difference	271	290	286	282	
Second year	Supply totals	1,137	1,137	1,137	1,137	
	Demand totals	693	678	681	684	
	Difference	444	459	456	453	
Third year	Supply totals	1,137	1,137	1,137	1,137	
	Demand totals	650	636	639	641	
	Difference	487	501	498	496	
NOTES: Supply totals don't change but the demand totals do because we expect to be part of a regional conservation effort in which all water agencies participate.						

7.4 Regional Supply Reliability

The District has no connections to other water suppliers and does not rely on transfers or imported water from other sources. The District is part of a regional supply in the sense that it pumps its water from the Russian River which is the major source of water for other communities in Sonoma County and Marin County, and the District's share of that source is quite small. The Sonoma County Water Agency operates the facilities that provide water to these communities and is responsible for maintaining the flows in the lower Russian River in compliance with the Biological Opnion on endangered salmonid species in the Russian River. The District participates in all water conservation efforts during regional dry periods of any length. We know that the water we save stays in the River.

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Chapter 8. Water Shortage Contingency Planning

The current Statewide Drought Emergency is a reminder that water shortage contingency planning is an important element of water supply planning. The District used the Water Supply Contingency Plan (WSCP) adopted with the 2010 UWMP as the guide during the recent dry period (the District participated in a regional water conservation effort prior to declaration of the Statewide Drought Emergency). This dry period is an opportunity to revise the District's WSCP based on this recent experience. Adoption of the 2015 UWMP will include adoption of the revised WSCP. The full WSCP is included as Appendix A.

8.1 Stages of Action

Table 8-1 summarizes the stages of the Water Supply Shortage Plan as described in more detail in Appendix A. The District General Manager will be responsible for monitoring water shortage conditions and make recommendations to the District Board of Directors regarding implementation of the Plan. The Board of Directors will declare shortage conditions by resolution at a noticed Board Meeting.

Table 8-1 Stages of Water Shortage Contingency Plan

Stage	Percent Supply Reduction	Water Supply Condition
I	20-30%	Regional or Statewide drought declaration, or local reduction in water supply requiring 20-30% reduction, short term reduction in water use
II	31-50%	Reduction in water supply requiring 31-50% reduction in water use
III	>51%	Greater than 50% reduction in water supply
NOTES:		

8.2 Prohibitions on End Uses

Table 2 lists non-essential water uses and water waste prohibitions. Waste of water as defined by District Policy 3090.90 - water provided by the District running to waste in any gutter or otherwise - is prohibited at all times. The District requires customers to repair leaks and breaks at all times. All prohibitions are cumulative: each stage includes all prohibitions and restrictions from the previous stages.

Table 8-2: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
0	Landscape - Restrict or prohibit runoff from landscape irrigation	This is required at all times.	Yes
0	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	This is required at all times.	Yes
I	CII - Restaurants may only serve water upon request		No
I	CII - Lodging establishment must offer opt out of linen service		No
I	Other - Require automatic shut of hoses		Yes
I	Other - Prohibit use of potable water for washing hard surfaces		Yes
I	Landscape - Limit landscape irrigation to specific days		Yes
II	Landscape - Prohibit all landscape irrigation		Yes
II	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
NOTES:			

8.3 Penalties, charges, and other enforcement of prohibitions

The District does not have monetary penalties for noncompliance with water use restrictions or prohibitions during any stage of the WSCP. If a customer does not comply with any restriction or prohibitions, they are subject to water service turn off. There is a fee for turning the water back on; currently it is $50 for the first event. The District has never needed to turn off a water service for noncompliance with the WSCP - one warning has been enough in all cases.

8.4 Consumption reduction methods

Public information is an important element of the water supply program, drought or no. To achieve the needed result the District will need to communicate the situation to its customers. Table 8-3 lists the consumption reduction methods that are included in the WSCP.

Table 8-3 Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
	Provide Rebates on Plumbing Fixtures and Devices	This is provided at all times
	Reduce System Water Loss	System water loss reduction is a major objective of the District at all times
I-III	Expand Public Information Campaign	This is an important element - the amount of reduction required will be communicated to District customers.
I	Decrease Line Flushing	
I	Increase Water Waste Patrols	Field staff are instructed to look for water waste while moving throughout the District service area
III	Implement or Modify Drought Rate Structure or Surcharge	This would be considered in Stage III
III	Moratorium or Net Zero Demand Increase on New Connections	This would be considered in Stage III
NOTES: In most conceivable shortage situations, this will be a regional shortage and the District will be participating in the regional program.		

8.5 Determining Water Shortage Reductions

The District meters all customers and has meters for all wells. The customer meters are read bimonthly; the production meters are read weekly and totalled a monthly basis. By comparing these data with prior months and years, the District can calculate the water use and production reductions that are happening.

8.6 Revenue Expenditure Impacts

The District maintains a reserve equal to 15% of its annual operating budget expenses (approximately $1.75 million Operating Budget expenses) for the purposes of dealing with emergencies and disaster-related expenses. This reserve amount is $264,000 for FY 16. The District has additional budget reserves for economic uncertainty, debt repayment and capital expenses. The total District Reserve Policy amount is approximately $1 million.

The analysis shown in Table 8-4 Cost Impacts Associated with Water Shortages assumes that water revenues are consistent with metered use in the 2005/2006 fiscal years upon which the District's Rate Model is based. It also assumes that total district operating expenses would increase during these major water shortage

events with greater increases during larger shortages. Table 8-4 shows the estimated cost impacts of the major shortage events:

Table 8-4 : Cost Impacts Associated with Water Shortages			
	Stage i	**Stage II**	**Stage III**
% Reduction in Annual Sales	20%	35%	50%
Reduction in Water Sales Revenue	$120,000	$210,000	$300,000
Increased Operating Costs	$50,000	$100,000	$150,000
Total Net Reduction in Revenue	**170,000**	**$310,000**	**$450,000**

As shown in Table 8-4, the District would have sufficient reserves to sustain a major (greater than Stage 1) water shortage emergency for over one year, but the financial impacts of these unlikely events would be substantial. During this period the Board of Directors would have ample time to assess the need for rate increases consistent with the type of water shortage. It may be that a rate restructuring would be needed to encourage reduced water use while developing sufficient revenues for sustained operations.

8.7 Adoption by Resolution

The current WSCP was adopted by resolution with the adoption of the 2010 UWMP in October 2015. The revised WSCP as shown in Appendix A will be adopted by resolution with the adoption of the 2015 UWMP.

8.8 Catastrophic Supply Interruption

The District must be prepared for catastrophic events. Table 8-5 lists possible catastrophes - they are variable in frequency as the District must be prepared for flooding on an annual basis, power outages are even more common, and we hope the large earthquake does not happen at all, but we must be prepared for it. The District has a good working relationship with the County Office of Emergency Services and the local public safety agencies - this has happened because we have annual flood preparation meetings and have cooperated in local flooding events in the past.

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Table 8-5: Response Actions to Catastrophic Water Interruptions	
Possible Catastrophe	**Summary of Actions**
Earthquake	Isolate damaged areas, above ground use of flexible piping for ruptured mains
Flooding	Urge conservation extend supplies; prepare well fields for inundations; boil water notices is supply contaminated
Toxic/Contaminated Spills	Shut off wells if River contaminated; urge conservation
Fire	Work with fire agencies to provide water
Power Outage or Grid Failure	Use portable and fixed emergency generators where applicable
Severe Winter Storms	Use portable and fixed emergency generators where applicable

8.9 Minimum Supply Next Three Years

Table 8-6 shows the minimum supply available to the District if the next three years are dry and includes rows that show expected demand if the weather stays dry and expected demand if the weather returns to normal or better (but hopefully not too much better as flooding remains a critical concern for this area). A continued dry period would keep the minimum flow in the Russian River below the 100 cfs range but still with adequate water to provide for the District water right license amount. Demand will be much different and lower. We expect water use to remain at current levels if the dry weather returns and slowly rebound if winter weather returns to normal or better levels.

Table 8-6: Minimum Supply Next Three Years (DWR 8-4)			
	2016	2017	2018
Available Water Supply	1,137	1,137	1,137
Expected Demand If Dry	660	660	660
Expected Demand if Wet	660	726	799
NOTES:			

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Chapter 9. Demand Management Measures

9.1 Introduction

This section provides a description of the District's water conservation program and its Best Management Practices (BMPs), which are also referred to as water demand management measures (DMMs) by the Urban Water Management Planning process. The District utilizes water conservation BMPs as a method to reduce water demands, thereby reducing water supply need for the District.

The District is a member of the California Urban Water Conservation Council (CUWCC), joining in December 2010. The CUWCC was created to assist in increasing water conservation statewide, under a Memorandum of Understanding Regarding Urban Water Conservation (MOU). As signatory to the MOU, the District has pledged their good faith effort towards implementing BMPs identified in the CUWCC MOU. The two primary purposes of the MOU are:

1. To expedite implementation of reasonable water conservation measures in urban areas, and
2. To establish assumptions for use in calculating estimates of reliable future water conservation savings resulting from proven and reasonable conservation measures. Estimates of reliable savings are the water conservation savings that can be achieved with a high degree of confidence in a given service area.

CUWCC members have the option of submitting their 2013-2014 Best Management Practice (BMP) annual reports in lieu of describing the Demand Management Measures (DMM) used by DWR in their UWMP. The District is doing that for this UWMP. The BMP reports are in Appendix ?

9.2 District Water Conservation Program Summary

The District has the good fortune of being in a well-watered part of California with conservation-motivated customers. The District's water conservation program includes:

- District wide metering with tiered water rates to promote conservation.
- Public education and outreach - the District works with the Sonoma County Water Agency which has a professional staff to provide excellent water efficiency information to Sonoma County residents.
- A rigorous water loss prevention program - the District takes water losses very seriously. The District has spent more than $11 million since 2008 on capital projects which target aging, leaking water mains, has purchased correlation equipment to proactively look for leaking pipes, vigorously fix leaks when reported, and track and analyze leaks and leak history.

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Chapter 10. Plan Adoption, Submittal, and Implementation

This chapter describes the process of requesting input from public and private entities regarding the plan update, and includes information on the public hearings, plan adoption, and submittal to DWR and other agencies for information, review, approval, and implementation.

10.1 Inclusion of 2015 Data

For reporting of water use and supply information, and all other relevant information, data for the entire calendar year of 2015 was included in this plan.

10.2 Public Hearing and Adoption

The public hearing for approval of this Plan was on October 6, 2016 and the Plan was adopted by Resolution 16-?? by the Board at that meeting. Prior to the public hearing the Board discussed the preparation of the Plan at several noticed Board meetings and discussed the draft Plan at the September 1, 2016 Board meeting. Public hearing notice was published in the Sonoma West Times on ????. A copy of the adopting resolution and the published public notice is included in Appendix B.

Sonoma County and the Sonoma County Water Agency were contacted directly to inform them of the UWMP update process and timing. The District wishes to thank the County and Water Agency staff for their assistance in providing information and advice.

Table 10-1 Notification to Counties

County Name	60 Day Notice	Notice of Public Hearing
Sonoma County	☑	☑

10.3 Plan Availability to the Public

The draft Plan was available for review at the District Office, the Guerneville Library and on the District website prior to the public hearing. The approved Plan is on the District's website and copies are available for review at the District office.

10.4 Amending the Adopted Plan

If the District amends the adopted Plan after submittal to DWR, the amendment process will be noticed to the public and presented to the public in a process similar to adoption of the Plan. The proposed amendments will be made available for public review prior to adoption.

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Appendix A. Water Shortage Contingency Plan

A.1. Water Shortage Emergency Response

During declared shortages, or when a shortage declaration appears imminent, the General Manager, or his designated representative(s), shall be responsible for notification of the appropriate personnel and agency representatives. The personnel and agencies to be contacted include: The District Board of Directors, District Staff, the Russian River & Monte Rio Fire Protection Districts, the California Division of Drinking Water, the Sonoma County Office of Emergency Services and such other agencies and/or persons as deemed appropriate. The District may also notify all customers through its automated calling service, as appropriate. The District's general response to any emergency is also described in the District's Emergency Preparedness Response and Recovery Plan.

The District Plan includes responses to regional and statewide drought emergencies. In most of these cases where the requested reduction is 20% or less, the District would specify a list of water use restrictions but not declare Stage I of the Water Shortage Contingency Plan. The possible water use restrictions include:

1. The application of potable water to any driveway or sidewalk is prohibited.
2. Using a hose that dispenses potable water to wash a motor vehicle, unless the hose is fitted with a shut-off nozzle is prohibited.
3. Using potable water in a fountain or decorative water feature, unless the water is recirculated, is prohibited.
4. Irrigating turf or ornamental landscapes during and 48 hours following measurable precipitation is prohibited.
5. Restaurants and other food service establishments can only serve water to customers on request; and
6. Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.

During situations that require 20% or less water use, District will rely extensively on public information to let people know of the need to reduce water use.

A.1.1. Emergency Response Check List.

The following Table A-1 summarizes the actions the District will evaluate during a water supply emergency.

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Table A-1. Possible Disaster Response Activities	
Examples of Potential Actions to Discuss	**Check if Discussed**
Determine what constitutes a proclamation of a water shortage.	
Stretch existing water storage.	
Obtain additional water supplies.	
Develop alternative water supplies.	
Determine where the funding will come from.	
Contact and coordinate with other agencies.	
Create an Emergency Response Team/Coordinator.	
Create a catastrophe preparedness plan.	
Put employees/contractors on-call.	
Develop methods to communicate with the public.	
Develop methods to prepare for water quality interruptions.	

A.2. Emergency Response Stages and Reduction Goals

The District has a three-stage Emergency Response Plan (Table 8-1) to invoke during declared water shortages. The Emergency Response Plan includes voluntary and mandatory reductions, depending on the causes, severity, and anticipated duration of the water supply shortage.

Table A-2 Stages of Water Shortage Contingency Plan (DWR Table 8-1)		
Stage	Percent Supply Reduction[1]	Water Supply Condition
Add additional rows as needed		
.I	20-30%	Regional or Statewide drought declaration, or local reduction in water supply requiring 20-30% reduction, short term reduction in water use
II	31-50%	Reduction in water supply requiring 31-50% reduction in water use
III	>50%	Greater than 50% reduction in water supply
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES:		

A.2.1 Priority by Use

Priorities for use of available potable water during shortages are based on the legal requirements set forth in the California Water Code, Sections 350-358. Water allocations are established for all customers according to the following ranking system:

- Minimum health and safety allocations for interior residential needs (includes

single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, and fire fighting and public safety)

- Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses)
- Permanent agriculture (orchards, vineyards, and other commercial agriculture which would require at least five years to return to production).
- Existing landscaping
- New customers, proposed projects without permits when shortage declared.

A.2.2 Health and Safety Requirements

Based on commonly accepted estimates of interior residential water use in the United States, Table A-3 indicates per capita health and safety water requirements. In Stage I, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal.

Under the Stage II the District would ask customers for greater reductions in use, including indoor uses to reduce their usage to essential interior water use. Stage III water use reductions would require that most customers make changes in their interior water use habits (for instance, not flushing toilets unless "necessary" or taking less frequent showers).

Table A-3
Per Capita Health and Safety Water Quantity Calculations

	Non-Conserving Fixtures		**Habit Changes** 1		**Conserving Fixtures** 2	
Toilets	3 flushes x 5.5 gpf	16.5	3 flushes x 5.5 gpf	16.5	5 flushes x 1.6 gpf	8.0
Shower	4 min x 4.0 gpm	16.0	4 min x 3.0 gpm	12.0	5 min x 2.0	10.0
Washer	12.5 gpcd	12.5	11.5 gpcd	11.5	11.5 gpcd	11.5
Kitchen	3 gpcd	3.0	2 gpcd	2.0	4 gpcd	4.0
other	3 gpcd	3.0	2 gpcd	2.0	4 gpcd	4.0
Total (gpcd)		51.0		44.0		37.5

1 Reduced shower use results from shorter and reduced flow. Reduced washer use results from fuller loads.
2 Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads and efficient clothes washers.

A.2.3 Water Shortage Stages and Triggering Mechanisms

Specific criteria for triggering the District's rationing stages are shown in Table A-4. Examples of possible reduction methods are shown in Table A-5.

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Table A-4 Water Shortage Stages and Triggering Mechanisms			
Percent Reduction of Supply	**Stage I 20 - 30%**	**Stage II 30 -50%**	**Stage III >50%**
Water Supply Condition			
Current Supply	Total supply is70 – 80% of "normal." or conservation is needed to stretch existing supplies, or participation in a regional or statewide drought emergency OR	Total supply is 69 – 50% of "normal." or conservation is needed to stretch existing supplies OR	Total supply is less than49% of "normal." or conservation is needed to stretch existing supplies OR
Future Supply	Projected supply insufficient to provide 80% of "normal" deliveries for the next two years. OR	Projected supply insufficient to provide 70% of "normal" deliveries for the next two years. OR	Projected supply insufficient to provide 60% of "normal" deliveries for the next two years. OR
Water Quality	Contamination of water supply (exceeds primary drinking water standards) for 3 days OR	Contamination of water supply (exceeds primary drinking water standards) for up to one week OR	Contamination of the water supply (exceeds primary drinking water standards) for over one week OR
Disaster Loss	Disaster loss	Disaster loss	Disaster Loss

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Table A-5: Restrictions and Prohibitions on End Uses (DWR Table 8-2)			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Add additional rows as needed			
	Landscape - Restrict or prohibit runoff from landscape irrigation	This is required at all times.	Yes
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	This is required at all times.	Yes
I	CII - Restaurants may only serve water upon request		No
I	CII - Lodging establishment must offer opt out of linen service		No
I	Other - Require automatic shut of hoses		Yes
I	Other - Prohibit use of potable water for washing hard surfaces		Yes
I	Landscape - Limit landscape irrigation to specific days		Yes
II	Landscape - Prohibit all landscape irrigation		Yes
II	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
NOTES:			

A.3. Water Shortage Ordinance

The District has adopted a Wastage of Water Ordinance (3090.90) listed below.

3090.90 Wastage of Water: No consumer shall cause or permit any water furnished to their property by the District to run to waste in any gutter or otherwise. Notwithstanding section 3080.30-3080.60, the District may, after one warning, terminate the service of any consumer for failure to comply with the foregoing rule. Restoration of service may be conditioned upon installation of a flow restrictor on the consumer's service. Fees will be charged for the flow restrictor and installation or removal in addition to the turn-on charge provided for in section 3020.112.

The District would consider implementing a moratorium on new connections during declared water shortages, and revisions to the wastage of water ordinance or adoption of other water shortage-related ordinances as appropriate to the type of emergency. A draft emergency water shortage ordinance is in Appendix D.

A.3.1. Excessive Use Penalties

Any customer violating the regulations and restrictions on water use shall receive a verbal warning for the first such violation. Upon a second violation, the customer shall receive a written warning. If the written warning is not complied with water service may be disconnected; it shall be restored only upon payment of the turn-on charge fixed by the Board of Directors.

A.4. Mechanism to Determine Reductions in Water Use

Under normal water supply conditions, potable water production figures are recorded daily. All customers are metered and are billed on a bimonthly basis. Production totals are reported monthly to the Field Supervisor and the General Manager, and are incorporated into the District's water production report and the General Manager's Report presented at each monthly Board meeting. Bimonthly sales information is also incorporated into the General Manager's monthly report.

During a Stage II or Stage III water shortage, or during a water emergency, daily production figures will be reported to the Field Manager, as appropriate. The Field Manager will compare the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports will be forwarded to the General Manager, the Board of Directors and the State Division of Drinking Water or other appropriate regulatory agencies. If reduction goals are not met, the General Manager will notify the Board of Directors so that corrective action can be taken.

A.5. Revenue and Expenditure Impacts and Measures to Overcome Impacts

The District maintains a reserve equal to 15% of its annual operating budget expenses (approximately $1.75 million Operating Budget expenses) for the purposes of dealing with emergencies and disaster-related expenses. This reserve amount is $264,000 for FY 16. The District has additional budget reserves for economic uncertainty, debt repayment and capital expenses. The total District Reserve Policy amount is approximately $1 million.

The analysis shown in Table 8-4 Cost Impacts Associated with Water Shortages assumes that water revenues are consistent with metered use in the 2005/2006 fiscal years upon which the District's Rate Model is based. It also assumes that total district operating expenses would increase during these major water shortage events with greater increases during larger shortages. Table 8-4 shows the estimated cost impacts of the major shortage events:

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Table A-6 Cost Impacts Associated with Water Shortages			
	Stage i	**Stage II**	**Stage III**
% Reduction in Annual Sales	20%	35%	50%
Reduction in Water Sales Revenue	$120,000	$210,000	$300,000
Increased Operating Costs	$50,000	$100,000	$150,000
Total Net Reduction in Revenue	**170,000**	**$310,000**	**$450,000**

As shown in Table 8-4, the District would have sufficient reserves to sustain a major (greater than Stage 1) water shortage emergency for over one year, but the financial impacts of these unlikely events would be substantial. During this period the Board of Directors would have ample time to assess the need for rate increases consistent with the type of water shortage. It may be that a rate restructuring would be needed to encourage reduced water use while developing sufficient revenues for sustained operations.

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