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Rural North Vacaville Water District
2023 Water Management Plan/Strategic Plan

November 2023

Mission Statement: *The Mission of the Rural North Vacaville Water District is to deliver efficiently and reliably, for many years, quality water for domestic use and fire protection.*

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Message from the President of the Board

Rural North Vacaville Water District (RNVWD) is in better shape than most water providers in California. We have affordable, plentiful, good quality water. This is due entirely to the foresight and good planning of those who have guided RNVWD over its 23-year life. We will not continue to have good water supply, distribution, and treatment systems unless we plan for the future. If RNVWD is to comply with its mission to deliver efficiently and reliably, for many years, quality water for domestic use and fire protection, then we must continue to look ahead and define what we need to accomplish to meet that mission. This Water Management/Strategic plan outlines the mission, vision, and values of RNVWD. It then discusses the strategies and objectives that we now see as important to achieve that mission and vision and remain consistent with our values.

Our current water supply and systems within RNVWD are excellent and the fees charged for that system are reasonable, but they will not stay that way unless we act proactively and plan ahead.

This plan provides the framework within which RNVWD will operate over the next five years. It will guide our decisions and actions.

This plan represents the best thinking today but must not be viewed as a fixed document. RNVWD staff and Board members must refer often to this plan to make sure we are following its guidance. New information will become available and new issues will arise. We must annually review and update this plan to keep it relevant.

I wish to thank the General Manager and staff of RNVWD who have put in many hours to prepare this plan. I look forward to working with all of you and with all of RNVWD's customers to implement this Water Management/Strategic Plan and to expand on the strategies and objectives it defines.

Patric Sweeney,
President
RNVWD Board of Directors

Vision Statement:

The Rural North Vacaville Water District will be an organization that:

- *Fosters a positive and long-term relationship with its customers.*
- *Researches and develops alternative income sources to maintain the lowest possible water rates for our District customers.*
- *Develops a proactive and innovative approach to expand, maintain and rehabilitate water delivery systems.*
- *Provides accountability and transparency to all District customers.*
- *Will be a responsible steward and guardian of our County's natural and fiscal resources.*

Values Statement:

The Rural North Vacaville Water District Values:

- *Train all staff to be ambassadors of customer service to improve internal and external connectivity.*
- *Engage customers through a variety of venues/methods to create broader base outreach.*
- *Educate and inform customers on relevant real time topics.*
- *Provide customers with expedient feedback by utilizing technology and engagement platforms (e.g. leak notification, water outages, board meetings and capital improvement project updates).*
- *Include language in contractors' contracts on customer service protocols and procedure expectations to provide seamless customer service and accountability (e.g. uphold standards when working on District members' streets).*

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DOCUMENT ORGANIZATION

This 2023 WMP/SP has been prepared based on guidance provided by the California Department of Water Resources (DWR) in the California Rural Water Association Management Plan Guidebook 2020 (2020 CRWA MP Guidebook) (DWR, 2021).

Chapter 1 – Introduction and Overview: This chapter provides a discussion on the basics of the WMPSP and a general overview of the document.

Chapter 2 – Plan Preparation: This chapter describes the development of the WMP/SP, including information on public outreach and agency coordination.

Chapter 3 – System Description: This chapter provides background information on the District and a general description of the water system, service area, climate, population, and demographics.

Chapter 4 – Customer Water Use: This chapter describes past, current, and projected water uses within the District.

Chapter 5 – System Supplies: This chapter documents current and future water sources for the District.

Chapter 6 – Water System Reliability: This chapter assesses the reliability of the District's water system through 2028, including in normal conditions, a single dry year, and five consecutive dry years.

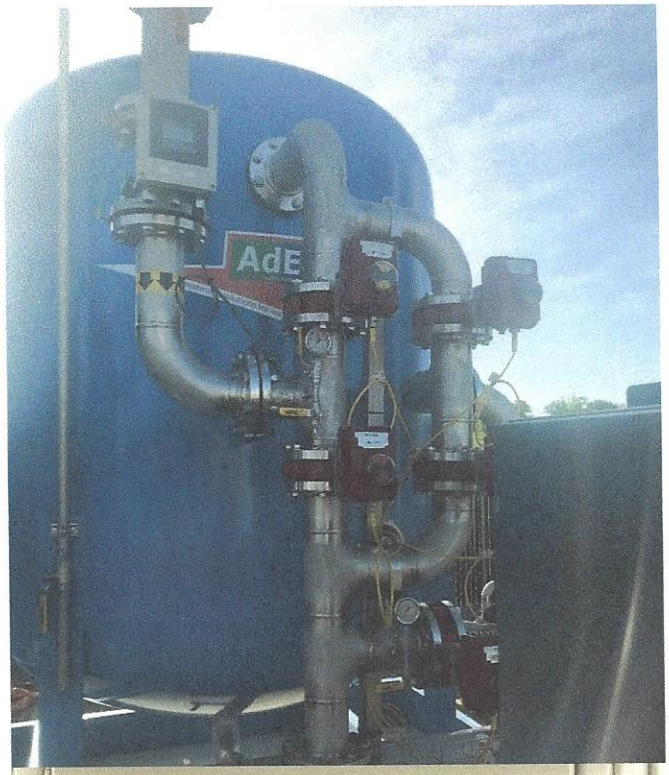
Chapter 7 – Water Shortage Contingency Planning: This chapter outlines the District's enforcement prohibitions, methods, and ordinances to ensure adequate water supply during drought years or other shortage situations, as included in the Rural Water Shortage Contingency Plan.

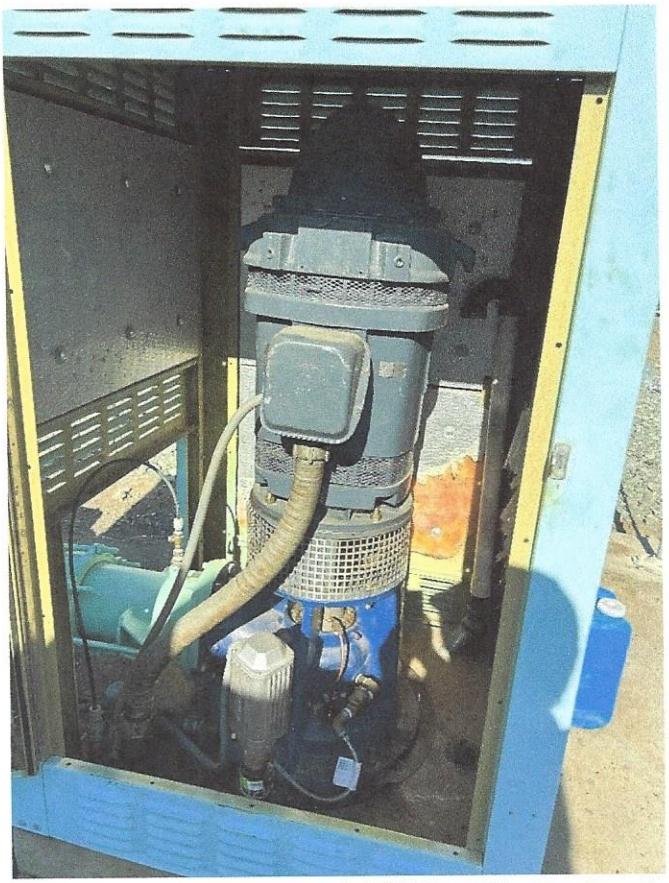
Chapter 8 – Demand Management Measures: This chapter provides a description of actions the District takes to promote conservation and reduce demand on the water supply.

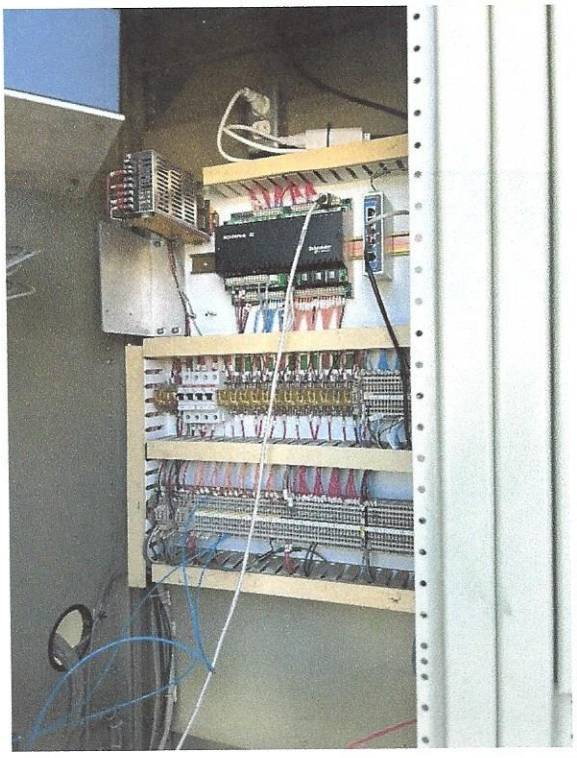
Chapter 9 – Operations Management Planning: This chapter discusses succession, operations training and staff changes.

Chapter 10 – Strategic Goals: This chapter outlines the District's Strategic Goals.

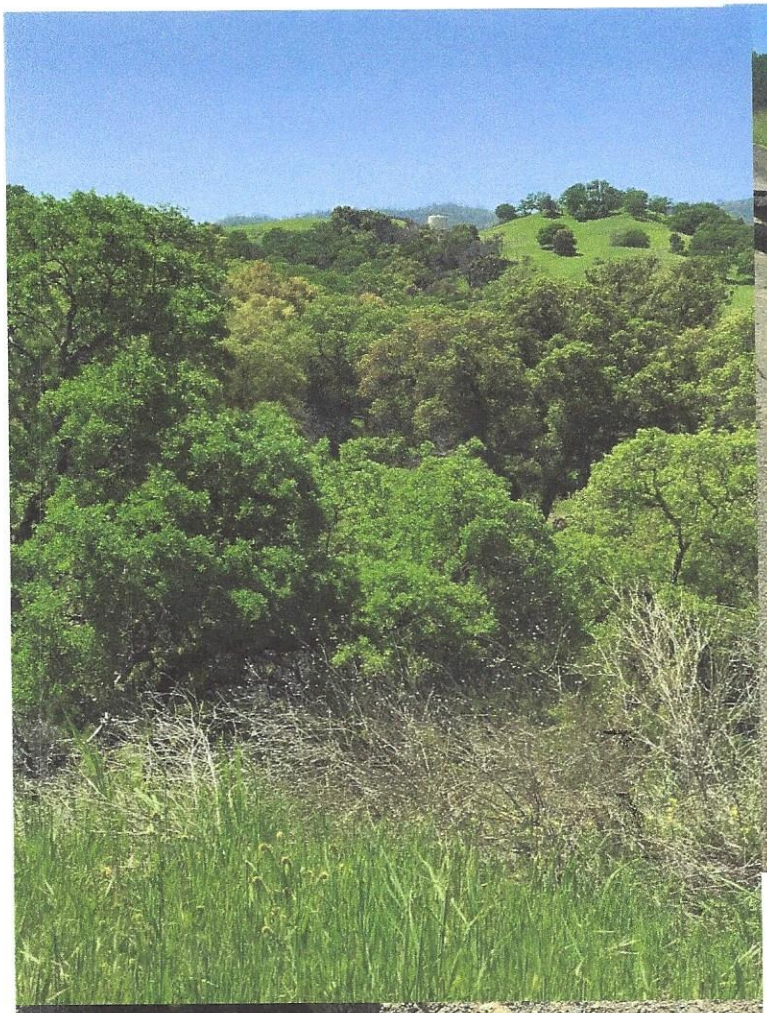
Station #1

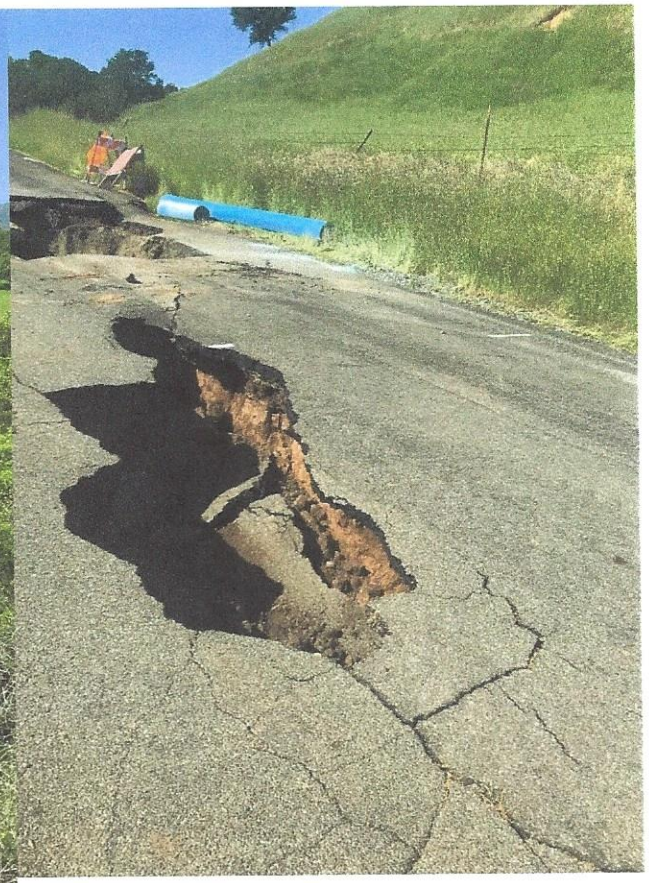


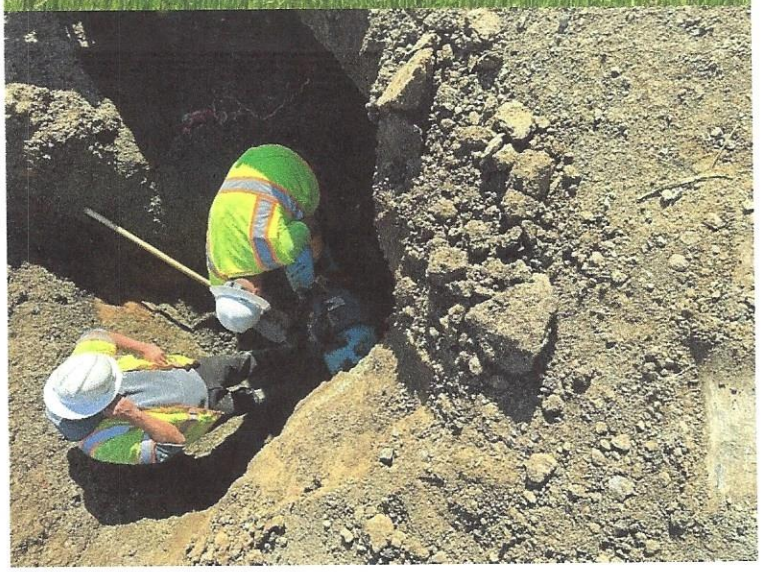




Station #4 Tank in Distance, and Cantelow Landslide and Repairs







CHAPTER 1 Introduction and Overview

The Water Management Plan (WMP)/Strategic Plan (SP) provides information on past, present, and future water sources and demands, and acts as a guide for the Rural North Vacaville Water District (RNVWD) to plan for adequate water supply in the future. This WMP/SP provides a comparison of available water supplies to projected water demands through 2028 and addresses conservation measures the District has implemented to ensure a safe and reliable water supply. This plan will be used to provide a basis for determining that sufficient water supply is available for future proposed development.

1.1 WMP/SP Summary

The District was formed in June of 1996 to provide water for residential uses and water for fire protection. A permit to supply water was issued by the State of California in June 2000. Water deliveries began in 2003.

The District covers approximately 5,163 acres and is located north of the City of Vacaville. Existing land uses are primarily zoned rural residential (approximately 39 %) and agricultural uses (approximately 59 %). The remaining 2% are public purpose uses. Boundaries for the District encompasses geographical areas generally described as English Hills, Gibson Canyon and Steiger Hill.

Potable water for residential use was originally designed to provide for a total maximum daily demand of 660 gpm and a maximum of 533 parcels within the extent of the Service Area for the District. Currently, the District has 417 active residential service connections. Property owners within the area of the District can opt out of taking delivery of potable water. Therefore, some of the Service Area parcels are considered 'island parcels' disconnected from the majority contiguous parcels within the Service Area. The District's Service Area boundaries are currently being confirmed by Solano Local Agency Formation Commission. See Figure 1.1.1 on the following page.

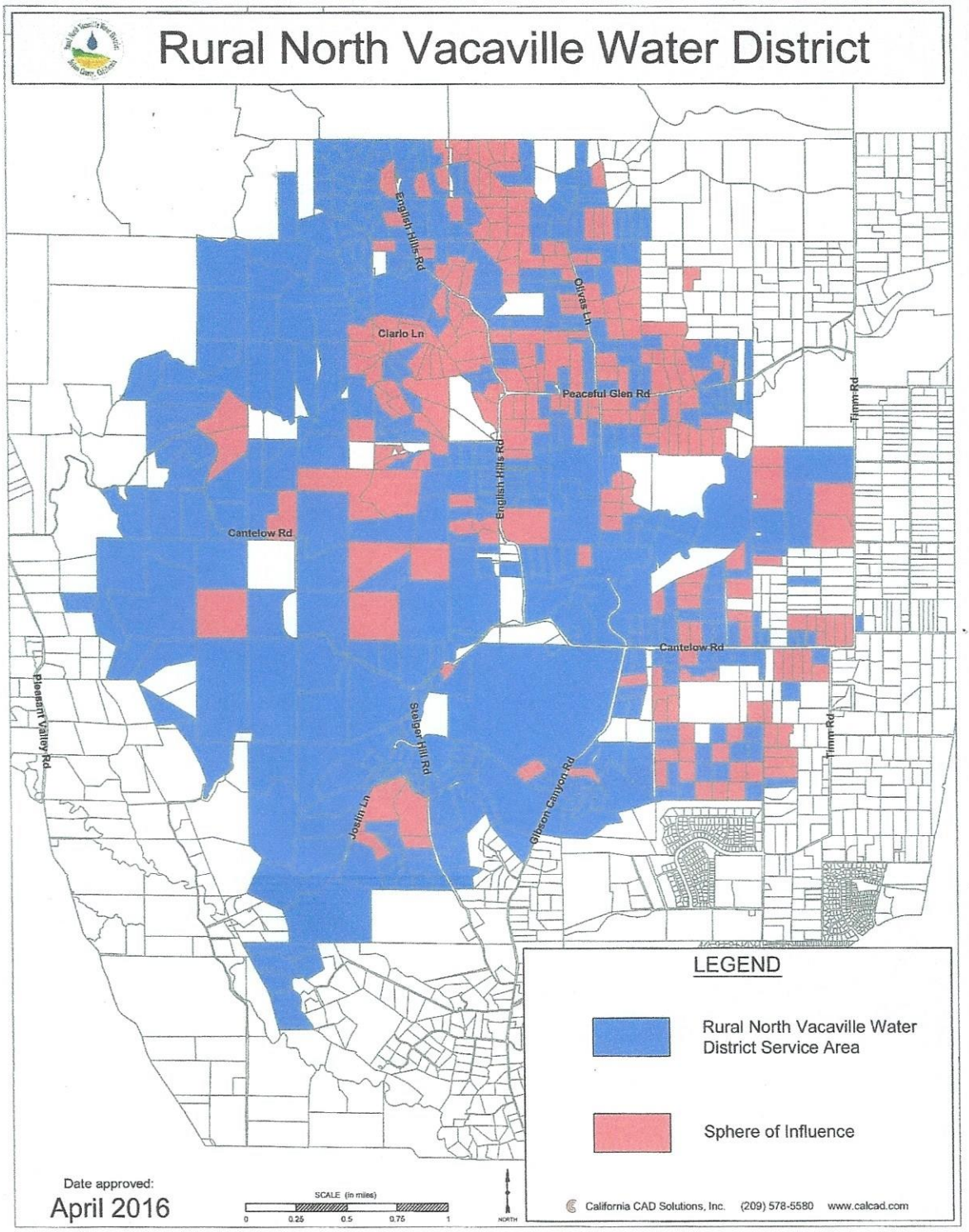
Property owners can also opt out of fire water service. Water for fire protection is currently provided for a total of 711 parcels located within the District's larger Sphere of Influence. Some of the fire service parcels are also considered 'island parcels' disconnected from the of majority contiguous parcels within the District's Sphere of Influence. (Coastland DCCM Condition Assessment 4/2023)

1.2 Legislation

California Water Code Requirements

The California Water Code (CWC) documents specific requirements for California water suppliers. The Urban Water Management Act (Act) is included in the CWC and specifies the required elements of a UWMP, including discussing the District's water system and facilities, calculating how much water its customers use (i.e., water demand) and how much the District

Figure 1.1.1 Sphere of Influence (SOI)



can supply, and detailing how the District would respond during a drought or other water supply shortage. Also, a UWMP must describe what specific coordination steps were taken to prepare, review, and adopt the plan.

The Act has been revised over the years. The Water Conservation Act of 2009 (also known as Senate Bill X7-7) required retail water agencies to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. Because the District is not defined as an urban water supplier, the District was not required to establish and meet baselines and targets for daily per capita water use, and is not required to comply with Senate Bill (SB) X7-7.

STRATEGIC GOAL A: PROTECT CURRENT WATER RIGHTS FROM EXTERNAL THREATS THROUGH OVERSITE AND COLLABORATION ON LEGISLATIVE ACTIONS.

The 2014 to 2016 drought has led to further revisions to the Act under the 2018 Water Conservation Legislation to improve water supply planning for long-term reliability and resilience to drought and climate change. Changes presented by legislation include:

- Five Consecutive Dry-Year Water Reliability Assessment: Analyze water supply reliability for five consecutive dry years over the planning period of this WMP/SP (see Chapter 6).

- Drought Risk Assessment: Assess water supply reliability from 2021 to 2025 assuming that the next five years are dry years.

- Seismic Risk: Identify the seismic risk to the water supplier's facilities and have a plan to address the identified risks; the region's Local Hazard Mitigation Plan may address this requirement.

- Energy Use information includes reporting on the amount of electricity used to obtain, treat and distribute water. With the activation of Well #2 and projected production use of 50% with Well #1 the KWH will dramatically change between the two Stations in the new fiscal year. See Figure 1.2.1 on the following page.

- Water Shortage Contingency Plan (WSCP): Prepare a WSCP to include an annual process for assessing potential gaps between planned supply and demands, conform with the State's standard water shortage levels (including a shortage level greater than 50 percent) for consistent messaging and reporting, and provide water shortage responses that are locally appropriate.

CHAPTER 2 Strategic Plan Preparation

2.1 Basis for Strategic Plan Preparation

The District served over 400 customers a total of 83,742 CCF of water in FY 2022/2023.

Table 1.2.1 Energy Use from PGE Billing Data

SITE	KILOWATT HOURS (KWH)
Well # 1	149,101
Well # 2	9,042
Station # 3	62,711
Station # 4	16,373
Station # 5	10,055
TOTAL	247,283
Total Water Production, FY 2022/23	83,742 CCF
2.9529 KWH to produce I CCF	

Information on the District's system is summarized in Table 2.1 and 2.2

Table 2-1. DWR Public water system summary

Type of Supplier	Public Water System Name	Number of Connections 2023	Volume of Water Supplied FY 2022, CCF
ID# 12054840000	RNVWD	417	83,742

2.2 Fiscal Year is the Unit of Measure

Data reported in this WMP/SP is on a fiscal July through June year basis, and volumes are in CCF that include nonrevenue water.

Table 2-2. Supplier Identification

e of Supplier	Fiscal or Calendar Year	Units of Measure
Retailer	Fiscal Year	100 Cubic Feet (CCF)

2.3 Strategic Planning Coordination and Outreach

The District's WMP/SP reports solely on its distribution service area. However, the District coordinates its efforts with local agencies in order to manage water sustainably in the region. The Solano County Water Agency (SCWA) is a wholesaler which supplies surface water to other agencies in the region. The District coordinates closely with the Solano Irrigation District and the Solano Local Agency Formation Commission (LAFCO). Every 5 years the District reviews the Sphere of Influence (SOI) and the Municipal Service Review with LAFCO.

STRATEGIC GOAL B: STRIVE FOR A UNIFIED WORK FORCE BY STREAMLINING INTERNAL

PROCESSES AND IMPROVING COMMUNICATION WITH OPERATIONS AND STAFF.

STRATEGIC GOAL C: CREATE STRONGER ALIGNMENT AMONG BOARD OF DIRECTORS, MANAGEMENT AND STAFF BY ALIGNING VISION AND GOALS.

STRATEGIC GOAL D: INCREASE KNOWLEDGE OF BEST MANAGEMENT PRACTICES FOR ASSET MANAGEMENT BY INTERACTING WITH OTHER AGENCIES AND PARTICIPATING IN EDUCATIONAL VENUES.

CHAPTER 3 System Description

3.1 General Description

Rural North Vacaville Water District is a Community Services District (CSD) that was formed in 1996, to provide potable water for domestic use and fire suppression purposes. The water system serves an unincorporated community in Solano County that lies north of the city of Vacaville in the Cantelow Road, English Hills, Gibson Canyon, and Steiger Hill neighborhoods (English Hills area). The District encompasses 5,162.7 acres of rural residential and agricultural lands and serves a population of approximately 1,118 residents.

According to the State Division of Drinking Water, the district provides a reliable and adequate water supply to meet the needs of its current customers based on the use of Well #1 and Well #2 as the primary sources. Well #2 is in compliance with the provisions of its domestic water supply permit, which became active on October 18, 2023.

The District operates and manages a public water system whose sole source of water comes from two groundwater wells, drilled to a depth of approximately 1,400 feet, located in the basal zone of the Tehama Formation aquifer. Each well is equipped with 75 horsepower pumps. Well #1 and Well #2 have standby generators (in the event of a PG&E outage) and Well #2 also has a pump capacity of 350 gpm. The District has taken action to bring Well #2 into compliance and it is now in active status. Groundwater from the wells is chlorinated before being pumped into two 300,000 gallon water storage tanks and gravity feed the distribution system aided by booster pumps. Treated water is then delivered to 417 customers, via some 40 miles of distribution mains consisting mostly of Class 150 and 200 PVC pipes ranging in size from 4 inches to 12 inches in diameter across five pressure zones. Water from this reservoir is lifted to another steel reservoir in Zone 4 using pumps at Station 3. Zones 1 and 2 can receive water directly from the wells or via gravity from the steel reservoir in Zone 3. Pressure reducing valves keep the pressure in zones 1 and 2 at usable levels. Water from the steel reservoir in Zone 3 is also lifted to zones 4 and 5 using pumps located at Station 4. The steel hydro-pneumatic tank at Station 4 provides pressure surge protection for zones 4 and 5. Additional pressure for water delivered to Zone 5 by Station 4 is provided by small booster pumps at Station 5. Station 5 is also equipped with a hydro-pneumatic tank to reduce hydraulic surge and maintain a more constant pressure in this zone. See Figures 3.1.1, 3.1.2, and 3.1.3 on the following pages. (Coastland DCCM Condition Assessment 4/2023)

3.2 Current Water Consumption and Future Demand

RNVWD's water was designed to have sufficient capacity to serve 800 households based on an Engineer's Report at the time of District formation. In addition to the parcels that benefit from

domestic water service, the system also provides water to 78 hydrants that serve as fire refill stations servicing approximately 711 parcels. The system has sufficient capacity to deliver a reliable and adequate water supply to the target population of 533 households. However,

3.1.1 - Water Rights (WR)/Connections Allocated (as of December 31, 2022) Municipal Service Review 4/22/2022

		Number of Parcels	Parcels with a Single Water Right	Parcels with Multiple Water Rights	Parcels with No Water Rights
CURRENT	In District	480	381	25	74
	In SOI (Sphere of Influence)	217	1	0	216
	Outside	2	2		
	Total	**699**	**384**	**25**	**290**

		Purchased		District Owned	Total Water Rights
WATER RIGHTS	In District	528			528
	In SOI	1			1
	Outside	2			2
	District Owned	2		2	2
	Total	**533**		**2**	**533**

		Lot Splits	Parcels without Water Rights	Potential Growth	Net Additional Water Rights
POTENTIAL GROWTH	In District	259	74	333	333
	In SOI	32	216	248	248
	Outside	Future long-range planning study regarding infrastructure needs			
	Multiple WRs	0	0	0	(25)
	District Owned	0	0	0	-25
	Total	**291**	**290**	**581**	**543**

future growth in the English Hills area will require a long term solution that addresses the need for a public water supply. Current hydrology modeling will assess the potential for increases in water rights made available within the Sphere of Influence for the inclusion of Additional Dwelling Units (ADU), other new constructions from parcel divisions and potential annexations to the District. This potential for growth with the sale of new water rights would certainly benefit the District's financial status. (See Figure 3.2.1 below)

Figure 3.1.2 Water Distribution System Diagram

Municipal Service Review 4/22/2022

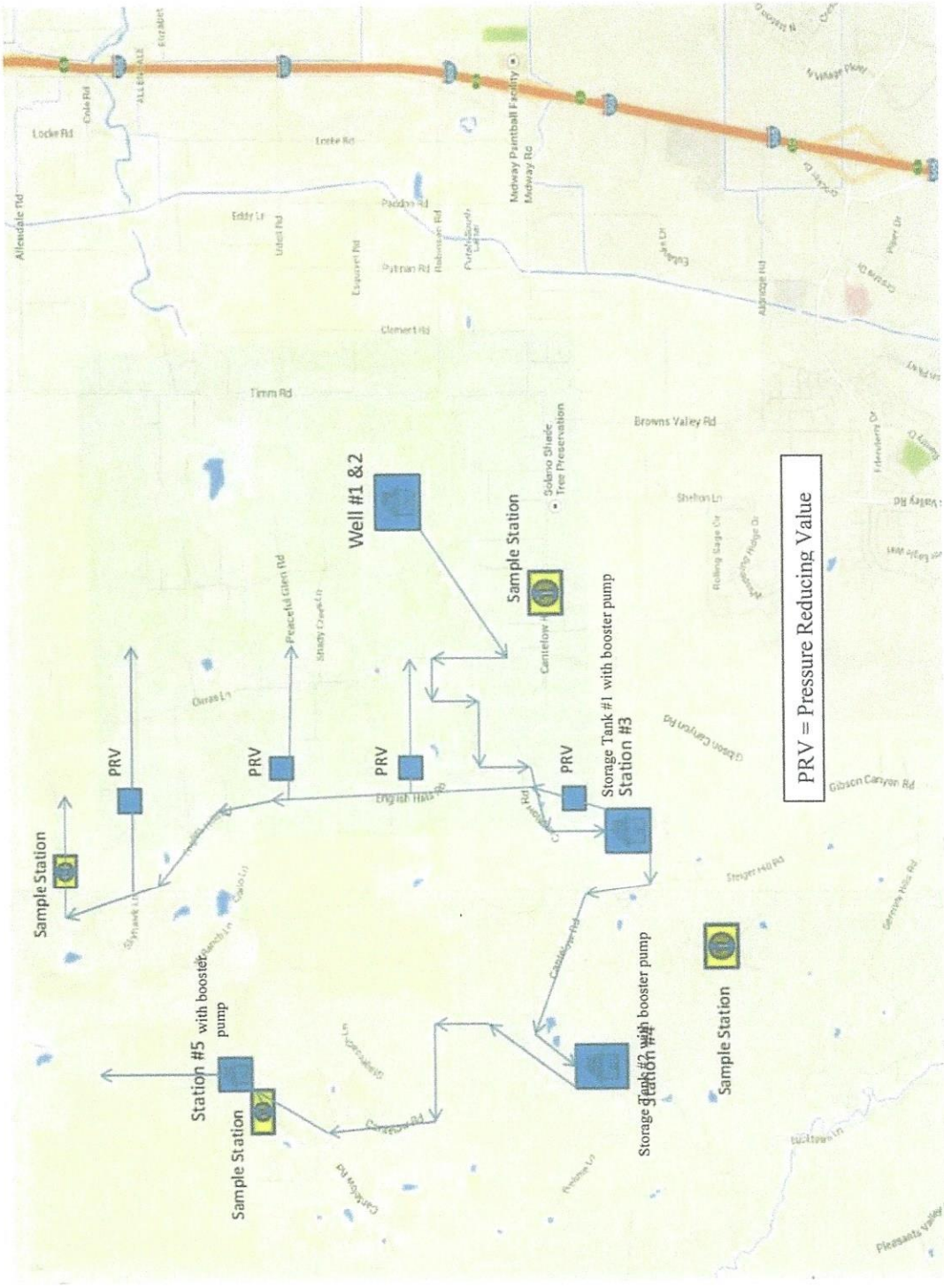


Figure 3.1.3 System Map CALCAD.COM

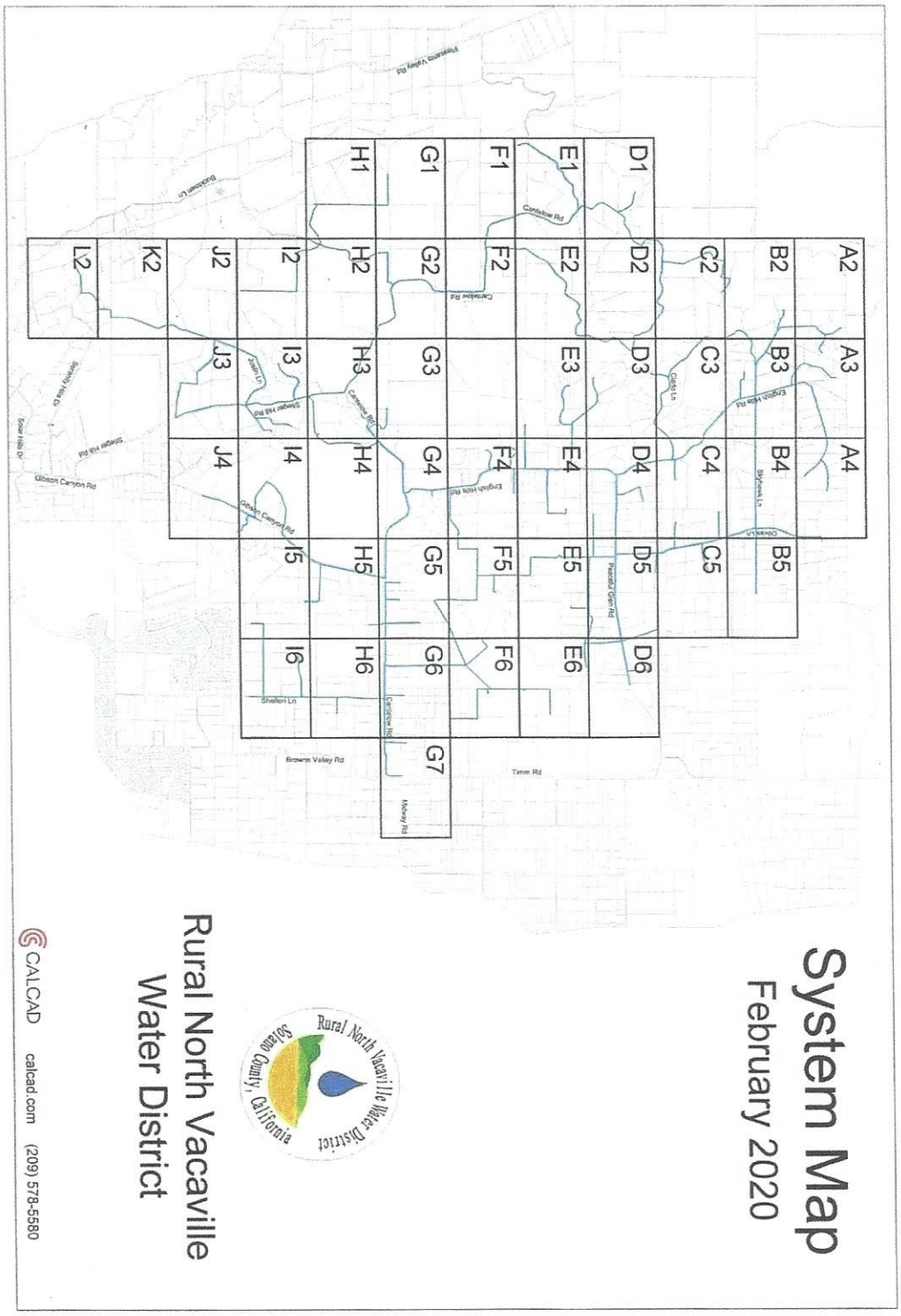


Table 3.2.1

Metered Water Use/Projected*	
2012/2013	44,693
2013/2014	39,763
2014/2015	55,904
2015/2016	51,655
2016/2017	54,050
2017/2018	45,928
2018/2019	58,463
2019/2020	50,431
2020/2021	72,687
2021/2022	73,437
2022/2023	70,798
2023/2024*	75,000
2024/2025*	81,000
2025/2026*	83,000
2026/2027*	87,000
2027/2028*	90,000

3.3 Replacement Capital Cost Projections

The District maintains a 10 year capital replacement strategic plan. The strategic plan includes projections to the useful life of the current system. Replacement of the facilities are usually smoothed over several years to limit the disruption to service and limit the financial burden on users of the system.

Useful service of facilities depends on the quality of materials, original installation, and actual use conditions. Groundwater wells and hydro-pneumatic distribution systems generally

experience more wear than stored water gravity systems. Changes in groundwater levels increase horsepower requirements on a frequent basis generating additional heat in electrical components. Suspended solids in the aquifer water also wear impellers at the bottom of the well. Pressure surge transients occur frequently in hydro-pneumatic systems causing greater stress on pipe walls. Facilities are replaced sooner in water wells and distribution piping under these conditions.

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Funding options greatly affect the timing of future improvement. Accruing money over time is the cheapest funding approach. Large Capital improvements can be funded with bonds, loans or grants.

STRATEGIC GOAL E: CONTINUE UPDATING ESTABLISHED FISCAL/FUNDING MANAGEMENT PRACTICES.

STRATEGIC GOAL F: DEVELOP ANNUAL FINANCIAL PLANS THAT ALIGN CAPITAL IMPROVEMENT PROJECTS WITH THE APPROVED RATE STRUCTURE.

STRATEGIC GOAL G: PROVIDE SEMI-ANNUAL FORECASTING OF BUDGET-TO-ACTUAL FINANCIAL DATA TO THE PUBLIC AND BOARD OF DIRECTORS.

STRATEGIC GOAL H: SEEK OPPORTUNITIES FOR ALTERNATE FUNDING SOURCES TO AUGMENT REVENUE TO BUILD RESERVES INCLUDING ADDING MORE WATER RIGHTS FOR SALE.

STRATEGIC GOAL I: ENCOURAGE THE SPHERE OF INFLUENCE EXPANSION AND ANNEXATION.

3.4 Proposed Capital Improvements

Economics for a small district of fewer than 500 customers against the costs of the infrastructure maintenance and system age are not good. A Condition Assessment Report has been completed that looks 70 years ahead into the future of the District. Twenty years of daily operation has already resulted in major maintenance and replacement efforts for the system. Maintenance and replacements will continue as equipment approaches its useful life. Improvements to reduce operating effort and improve system reliability are also planned by the District.

Much of the District's recent repairs and maintenance have focused on the source wells. Pumps in wells #1 and #2 were replaced, the chlorine addition system located at supply well #1 was replaced, and an arsenic removal system added to well #2 could regularly be used in the system. A spare pump and motor were purchased for use in the supply wells to reduce the time these wells are out of service.

Capital improvements and major repairs forecast for the future include new coating and corrosion repairs for the steel reservoirs at Station 3 and 4, replacement piping in the landslide area on Cantelow Road and recurring pressure testing of the hydro-pneumatic tanks at Stations 4 and 5. Inspection of wells #1 and #2 could also result in major repairs. (Coastland DCCM Condition Assessment 4/2023). Other capital improvement projects pending are solar generation systems for all 5 stations and a potential wind turbine for station #4.

STRATEGIC GOAL J: DEVELOP AN ANNUAL CAPITAL IMPROVEMENT PROGRAM THAT IS

DEVELOPED AND PRIORITIZED ON RISK, CONDITION ASSESSMENT, CAPITAL ASSETS AND ALIGNED WITH APPROVED BUDGET.

STRATEGIC GOAL K: OPTIMIZE EQUIPMENT AND ASSETS MANAGEMENT (E.G. CREATE COLLECTIVE PURCHASING AGREEMENTS AND ANNUAL ASSET PURCHASING PLANS).

STRATEGIC GOAL L: DEVELOP RESOURCE (STAFFING/BUDGET) PLAN FOR ALL PROJECTS TO INFORM ON APPROPRIATE LEVELS OF OUTSOURCING.

3.5 Added Water Storage

Another failure point is limited storage in the system for unforeseen events, such as: fire, landslides or pipeline breaks. State required redundancy is satisfied by the existing tanks. However, the northerly portion of the distribution system lacks any storage. Additional storage in zones 4 and 5, or both, would provide needed fire storage in the northerly area that would also simplify operations if one of the existing tanks were emptied for repairs and maintenance. Modeling and operations assessment would determine the quantity and location for added storage. Bypassing potential failure points in the system is also an important criterion for the location of added storage. (Coastland DCCM Condition Assessment 4/2023)

3.6 Future Water Supply

Groundwater is the only supply for the system. The source has been reliable since 2003 and continues to approach a stable drawdown in the Solano Subbasin per the most recent groundwater monitoring report. Population growth in Solano County will increase the use of ground water in the future. Identifying secondary sources of water for the future is prudent because agreements for water sources can take years to negotiate and receive State approvals. Starting conversation with potential sources will be considered by the District. In addition to alternate long-term sources, providing a short-term emergency source of potable water will be considered for catastrophic events within the District's system. (Coastland DCCM Condition Assessment 4/2023)

STRATEGIC GOAL M: ENSURE SUSTAINABLE WATER SUPPLY.

STRATEGIC GOAL N: EVALUATE NEW WATER SUPPLY OPTIONS

3.7 Supervisory Control and Data Acquisition (SCADA) and System-Wide Computer Model

One method to increase reliability of the overall system is to integrate the data from remote monitoring into the computer model. Keeping the complexity of the model to a minimum would provide quick assessment of changes in water age and pressure throughout the system. Models can be used to evaluate locations where added storage or emergency water sources are effective. Databases within the models can also identify facilities maintenance and replacement schedules. These systems also provide continuity during changes in staff or transition in management.

STRATEGIC GOAL O: UPDATE OPERATIONS AND MAINTENANCE PROGRAMS AND ENHANCE TECHNOLOGY THAT FOCUSES ON PRIORITIZED, PROTECTIVE AND PREVENTATIVE MAINTENANCE.

STRATEGIC GOAL P: USE TECHNOLOGY/INNOVATION TO IMPROVE STAFF EFFICIENCY OF OPERATIONS (E.G. GIS, SCADA, GPS, ETC.).

3.8 Climate

The climate in the District is characterized by dry, warm to hot summers, with wet, cool winters. The District experiences warm springs, summers and early falls, winters can be foggy and cold, but snow is exceedingly rare. Average monthly temperatures range from lows around 40 degrees Fahrenheit to highs above 95 degrees Fahrenheit. (Western Regional Climate Center, 2010)

3.8 Climate Change

Changing climate has the potential to have significant impacts to the District's use of water resources. Impacts from climate change are still being determined, but projections for the regions include:

- Increased variability in temperature, with an overall increase in temperature. Daily average high temperatures are estimated to increase by 8-14 degrees Fahrenheit by the end of the century.
- Changes in timing and frequency of annual precipitation with more extreme wet and dry conditions, including more frequent, severe, and prolonged droughts.
- Increased wildfire frequency.

Potential impacts from climate change to water management were prioritized based on those likely to be of the most concern in the region. These included increased flooding, changes in water demand, decreased water supply reliability, and water quality changes. It is difficult to quantify expected climate related changes to water demand, but changes are expected.

Potential impacts of climate change are incorporated into water use projects, water supply projections and the District's drought risk assessment. (City of Vacaville UWMP 6/2021)

3.9 Land Use

Water use projections used in this WMP/SP, are based on the land uses identified in the Solano County Plan. Efforts were coordinated with the Coastland DCCM, April 21, 2023, Initial Conditions Assessment to best identify current and projected water uses within the existing service area and the anticipated growth areas. This information was used to develop water demand factors for existing and future land uses, as well as, identify overall water demand expected in the future.

CHAPTER 4 Customer Water Use

4.1 Water Use

Information on past, current water, and projected potable water use within the District is described in this chapter. The District currently provides only potable water. Water use within the District over the last five years has steadily increased 8%. Water is lost from the District's distribution system through leaks. Water meters continue to be replaced.

STRATEGIC GOAL Q: MEET OR EXCEED REGULATIONS FOR CLEAN AND SAFE WATER INCLUDING DEVELOPING A COMPREHENSIVE GROUNDWATER AND CONTAMINATES PLAN.

4.2 District System Water Loss

Projected water usage within the District's service area was determined based on a percentage increase each five year period consistent with the service area.

CHAPTER 5 System Supplies

This chapter describes and quantifies the District's existing water supply sources.

5.1 Groundwater

The District currently operates two wells to pump groundwater from the basin underlying the District. This section provides a description of this groundwater basin and how the groundwater is managed.

The District's sole water supply source is from groundwater wells. The Solano Subbasin Groundwater Sustainability Plan (GSP) was completed in November 2021 and serves as a guide for the sustainable groundwater management of the Solano Subbasin (DWR Basin No. 5-21-66). The Solano Subbasin underlies the District and is a part of the Sacramento Valley Basin. The Sacramento Valley Groundwater Basin has been divided into several smaller subbasins using institutional boundaries established by DWR. The Sacramento Valley Groundwater basin is located in north central California and is bounded on the east by the Sierra Nevada and Cascade Ranges, and on the west by the North Coast Range. The Sacramento Valley Groundwater Basin also extends from about 5 miles north of Red Bluff southward for 150 miles to the Sacramento San Joaquin Delta and covers an area of approximately 6,000 square miles.
The Solano Subbasin is bounded by Putah Creek on the north, the Sacramento River on the east, the North Mokelumne River on the southeast, the San Joaquin River of the south, the non-water bearing geologic units of the Great Valley Sequence on the northwest and the Suisun-Fairfield Valley Basin on the south side. The western hydrologic divide corresponds to the crest of the English Hills and Montezuma Hills and separates the Solano Subbasin from the Suisun-Fairfield Groundwater Basin. (City of Dixon UWMP 2020)

The District has partnered with other local users through the Solano Subbasin Groundwater Sustainability Agency (GSA). The Solano Subbasin GSA is a part of the Solano Collaborative, which comprises a total of five GSAs to manage the groundwater basin. The following sections describe the groundwater basin management, historical groundwater use, and projected groundwater use.

5.2 Groundwater Basin Management

This section discusses historical groundwater management in the Solano Subbasin and evolving management structures required by the Sustainable Groundwater Management Act of 2014 (SGMA). The Solano Subbasin is not adjudicated, and DWR has not identified the subbasin as either in overdraft or expected to be in overdraft. Adjudication is defined as an action filed in the Superior or Federal District court to determine the rights to extract groundwater from a basin or store water within a basin, including but not limited to, actions to quit title respecting rights to extract or store groundwater or an action brought to impose physical solution on a basin.

Prior to the completion of the Solano Project in 1959, groundwater was extensively used in Solano County for municipal and agricultural supplies. The DWR Bulletin 118 reports that the groundwater elevations prior to 1912 represent the groundwater basin in its natural state. Between the years 1912 and 1932, precipitation was below average, which resulted in lower groundwater levels. In 1932 to 1941 groundwater levels recovered slightly because of above average precipitation. After 1941, groundwater levels declined due to increasing agricultural and urban development and the levels reached their lowest in the 1950s.[1]

The Solano Project refers to United States Bureau of Reclamation project to store surface water in Lake Berryessa for potable and non-potable uses primarily in Solano County. One of the primary reasons behind the Solano Project was to correct the overdraft of groundwater, which was occurring in agricultural areas. Since 1959, when the Solano Project began to supply surface water to Solano County, the overdraft of groundwater has halted, and the groundwater levels have rebounded in most areas of the Solano Subbasin. Groundwater level data presented in the North Central Solano County Groundwater Resources Report and additional data published by DWR, show that the subbasin is in a state of equilibrium. The groundwater levels are not permanently impacted by multiple dry years and data also shows slight variation in response to climatic conditions.

SGMA, a three-bill legislative package composed of Assembly Bill (AB) 1739 (Dickinson), and SB 1319 (Pavley) was passed in September 2014. The legislation provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention when necessary to protect the resource. The legislation lays out a process and a timeline for local authorities to achieve sustainable management of groundwater basins. It also provides tools, authorities, and deadlines to take the necessary steps to achieve the goal. For local agencies involved in implementation, the requirements are significant and can be expected to take years to accomplish. The State Water Resources Control Board (State Water Board) may intervene if local agencies do not form a GSA and/or fail to adopt and implement a GSP.

Since the Solano Subbasin was designated as a medium priority subbasin a GSP was required to be developed and submitted to DWR by January 31, 2022. The District is a part of the Solano Subbasin GSA. The Solano Subbasin GSA is a Joint Powers Agency representing the City of Dixon, City of Rio Vista, Solano County, Dixon Resource Conservation District (RCD), Solano RCD, Maine Prairie Water District and Reclamation District (RD) 2068 and associated members from the Solano Farm Bureau, Solano County Agricultural Advisory Committee, Cal Water Dixon, and RNVWD.

The Solano Subbasin GSA is part of the Solano Collaborative which is made up of a total of five GSAs located in the Solano Subbasin. The five GSAs include the following:

- Solano Subbasin GSA
- City of Vacaville GSA

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[1] DWR, 2004, California's Groundwater, Bulletin 118, Sacramento Valley Groundwater Basin, Solano Subbasin, February 27

- Northern Delta GSA
- Sacramento County GSA
- Solano Irrigation District GSA

The Collaboration Agreement, which formalizes the coordination between the five GSAs to develop a single GSP, was executed on February 4, 2020. Each of the GSAs in the Solano Collaborative has one appointed individual to represent the respective GSA in the development of the Solano Subbasin GSP. The Collaboration Agreement allows the various agencies to work collaboratively to meet the requirements of SGMA. Existing groundwater and surface water monitoring programs have been implemented by a variety of local, state, and federal agencies and are often dictated by statutory and regulatory requirements. The Solano Collaborative plans to continue using these monitoring programs to manage the Solano Subbasin. (City of Dixon UWMP 2020)

STRATEGIC GOAL R: MANAGE AQUIFER HEALTH THROUGH REGIONAL COLLABORATION.

5.3 Groundwater Monitoring

Groundwater monitoring efforts is a critical component of managing the District's water resources. The California Statewide Groundwater Elevation Monitoring (CASGEM) program establishes a permanent, locally managed program of regular and systematic monitoring in California's alluvial groundwater basins. SCWA is the designated monitoring entity for the Solano Subbasin and submits regular reports of groundwater elevation to DWR.

5.4 Sustainable Groundwater Management Act

In September 2014, the California Legislature passed the Sustainable Groundwater Management Act, which established a groundwater management structure within California and empowered local agencies to manage groundwater basins sustainably. The Sustainable Groundwater Management Act also required any agencies within medium and high priority basins to prepare Groundwater Sustainability Plans by January 2022. The District's GSA has been collaborating and continues to work with other GSAs within the Solano Subbasin to develop a single GSP which will identify how the agencies will manage local groundwater resources.

5.5 Historical Groundwater Pumping

Since Fiscal Year (FY) 2012/2013 the annual metered groundwater pumping within Solano Subbasin has varied from a low of 39,763 CCF to a high of 73,437 CCF in FY 2021/2022.

5.6 Summary of Existing and Planned Sources of Water

While the sources of water for the District will remain the same, the volume of water allocations will continue to increase over the years per the existing agreements to accommodate the projected growth in the District.

5.7 Energy Intensity of Water Supply

As required by California Water Code Section 110631.2 (a), information is provided on the energy used to manage the District's water supplies. All District facilities are billed for electricity

individually, and this metered usage was used to calculate the energy consumed. The volume of water is calculated from flowmeters at the District facilities. The District supplies treated water only and does not supply any untreated water.

CHAPTER 6 Water System Reliability

6.1 System Reliability

This chapter discusses the District's water supply reliability under varying conditions through 2028. The District's system reliability is also gaged by the age and condition of the system's pipes and pumps. Factors impacting long term reliability of water supplies are discussed. In assessing the District's water supply reliability, a comparison of projected water supplies and projected water demand in normal, single dry, and five consecutive dry years is provided for the District's water service area. This chapter also includes the District's Drought Risk Assessment (DRA) for the next five years. Findings show that the District's water supplies are sufficient to meet the existing and projected water demands during normal and dry conditions.

6.2 Groundwater Evaluation

Evaluation of groundwater supply sufficiency, based on 2022, the District has determined that in order to manage the local groundwater supply sustainably, around 100,000 CCF can be pumped annually. (Coastland DCCM Conditional Assessment 4/2023)

6.3 Constraints on Water Sources

The District's water supply is from District owned and operated groundwater wells located within the District's water service area. The District's groundwater supply is impacted by groundwater availability, groundwater quality, and climate change. Prior to 1959, the Solano Subbasin showed groundwater levels declining due to increased agricultural and urban development. After the implementation of the Solano Project in 1959 to store surface water in Lake Berryessa, groundwater levels in the Solano Subbasin have rebounded and the subbasin is in a state of equilibrium. Since the 1980s, the groundwater levels have been stable with low levels in the dry season and high levels in the wet season of each year. This trend is shown with monitoring well 07N01E12N002M, which is the closest monitoring well to the City of Dixon. Prior to 1980, groundwater levels ranged from 5 to 50 feet. The quality of groundwater underlying the District in the Solano Subbasin is good quality and is suitable for domestic purposes. Total dissolved solids (TDS) concentrations generally range from 250 to 500 milligrams per liter (mg/L) and are comprised predominantly of calcium, magnesium, arsenic and sodium cations and bicarbonate anions. The groundwater is hard to very hard. (City of Dixon UWMP 2020)

6.4 Water Service Reliability and Drought Risk Assessment

1) Normal Year – This condition represents the water supplies the District consider available during normal conditions. This could be a single year or averaged range of years in the historical

sequence that most closely represents the median or average water supply available. The year 2006 represents a normal year for the District. This year represents the District's typical year where all of its combined water supply sources are available to meet demands. Annual precipitation data from 2005 to 2020 was reviewed and precipitation data from 2005 to 2011 was selected to determine the District's normal year.

More recent years have not been normal. A statewide drought occurred from 2012 to 2016. The 2017 to 2020 years were either wet years or dry years. Further, a post-drought rebound appears to occur after 2016.

2) Single Dry Year – This condition represents the year with the lowest water supply availability to the District. The year 2013 represents the Single Dry Year for the District

3) Five Consecutive Year Drought – This condition represents a five-consecutive-year drought period such as the lowest average water supply available. For five years in a row since 2005. The years 2011 through 2015 represent the Five-Consecutive-Year Drought years for the District.

The basis of the hydrologic years used precipitation data from CIMIS monitoring station to the District. Annual precipitation data from 2005 to 2020 was reviewed to determine the basis years. During a portion of this time period, the District was in a Joint Powers Agreement (JPA) with Solano Irrigation District (SID) from 2006 to present. The District managed the administrative aspect of the public water system, while SID conducted operation and maintenance. Years that the District identifies as the historical average, single driest year, and driest multi-year period are shown in Table 6.4 below.

Table 6.4 Basis of Water Year Data City of Dixon UWMP 2020

	Base Years
Normal Water Year	2006
Single Dry Water Year	2013
Five-Consecutive-Year Drought	2011 - 2015

Groundwater is monitored by the District and member agencies for SCWA that withdraw from the basal zone of the Tehama Formation in order to maintain groundwater levels and prevent overdraft conditions. The ongoing monitoring program and groundwater management efforts are being evaluated and described in more detail in the Solano Subbasin Groundwater Sustainability Plan. To date, none of these groundwater constraints are known to conflict with what will be outlined in the Groundwater Sustainability Plan.
Groundwater is typically higher in hardness and mineral content than surface water sources, but is less seasonally variable than surface water sources, so no seasonal constraints apply to groundwater quality. Groundwater treatment includes chlorination and fluoridation at the wellhead. The chlorination of groundwater is to ensure a sufficient chlorine residual in the distribution system to prevent proliferation of harmful organisms. (City of Dixon UWMP 2020)

6.5 Water Quality

High quality water is supplied to customers in the District as described in the District's Annual Drinking Water Quality Reports (www.RNVWD.com). The quality of the District's water supply is not expected to change significantly over the next five years. Water is drawn from the Sample Stations for quality testing. See Figure 6.5.1 on the following page.

STRATEGIC GOAL S: IMPROVE WATER QUALITY WITH SUCH ACTIONS AS DETERMINING FLUORIDATION PRACTICES PER CALIFORNIA DIVISION OF DRINKING WATER.

6.6 Water Service Reliability in Dry Years

In this chapter, the District's normal, single dry year, and five consecutive dry years projected supplies and demands are integrated and compared. Under the various water year types, the total annual water supply sources available are compared to the total annual projected water use for the District's water service area from 2025 to 2045 in five-year increments.
The District's groundwater supply is expected to meet the District's projected water demands. Per DWR, the Solano Subbasin is not adjudicated (i.e., no dispute over the legal rights to the groundwater in which a court must issue a ruling), and DWR has not identified this basin (Basin 5-21.66) as either in overdraft or expected to be in overdraft. The Solano Substation is not in overdraft due to the completion of the Solano Project, which has allowed for the storage and use of surface water and the rebound of groundwater levels. The Solano Subbasin is also monitored and managed by the Solano Collaborative. (City of Dixon UWMP 2020). The District is not limited in how much groundwater it can use. The District only uses as much groundwater as is necessary to meet its demands. Thus, the projected water supply and demand are equal for each base year type.

6.7 Water Service Reliability – Single Dry Year

No water supply shortage is anticipated during single dry years through 2045. The District's water supplies are reliable during single dry years.

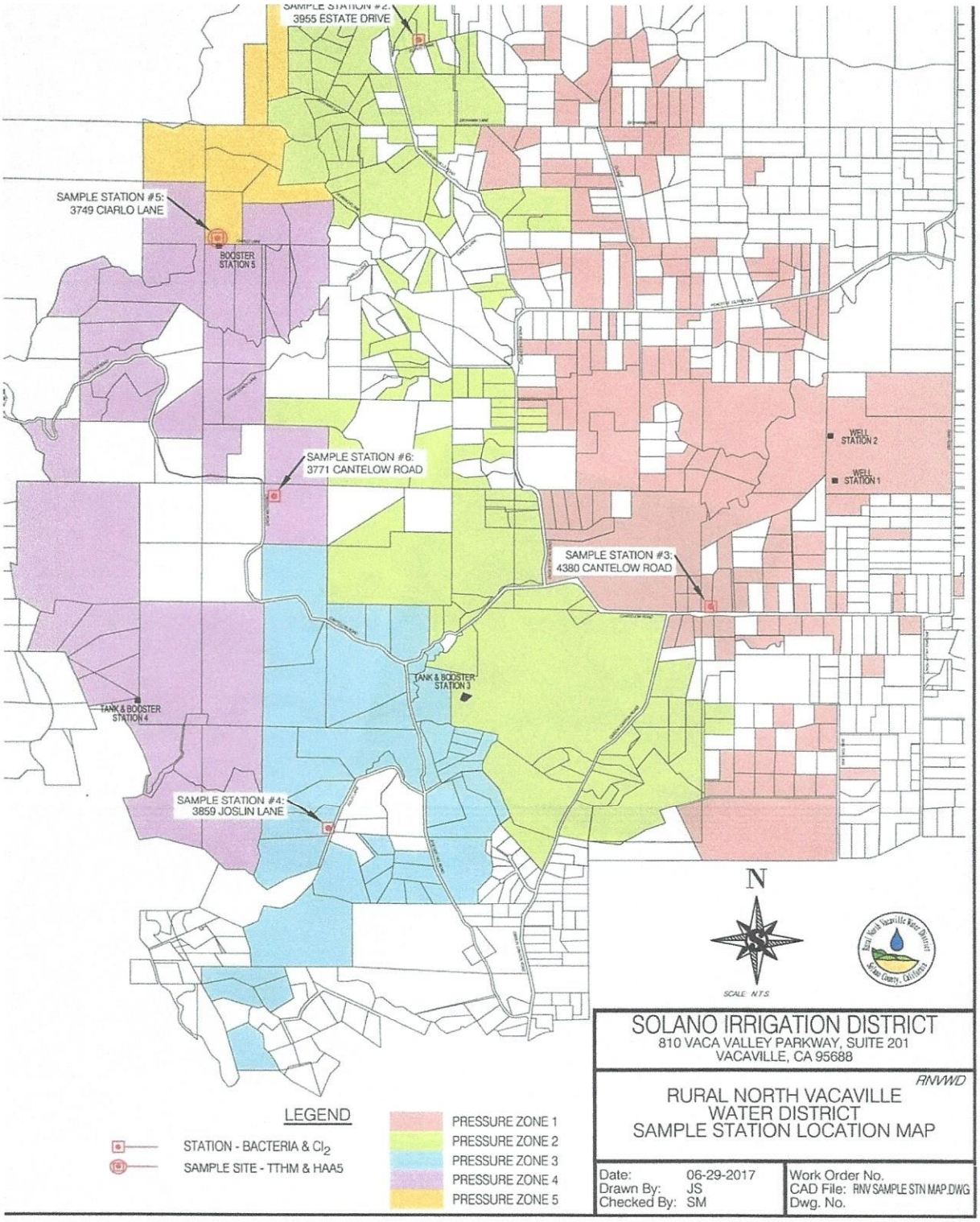
6.8 Water Service Reliability – Five Consecutive Dry Years

No water supply shortage is anticipated during the five consecutive dry years through 2045. The District's water supplies are reliable during five consecutive dry year period.

6.9 Description of Management Tools and Options

The District plans to continue to use groundwater as necessary to meet its projected water

Figure 6.5.1 Sample Station Location Map Municipal Service Review 4/22/2022



demands during the different base years. Groundwater is expected to be sufficient to meet allprojected demands, assuming the District rehabilitates existing groundwater wells and constructs new groundwater wells as the need arises.

STRATEGIC GOAL T: THE DISTRICT WILL CONTINUE TO MONITOR ITS EXISTING GROUNDWATER SUPPLIES.

6.10 Groundwater

Available supply of groundwater is described in detail; see Groundwater Sources in Northern Solano County map (Luhdorff & Scalmanini, Consulting Engineers). Increased pumping during dry years will cause groundwater levels to decrease, but based on the results of the groundwater model, groundwater levels will return to normal levels once pumping decreases to normal year rates.

Groundwater supplies are projected to meet or exceed projected water demands, even during extended drought conditions. Future water supply will be adequate to offset future water demands during a normal year, a single dry year, and a five-consecutive-year drought. See Figure 6.10.1 on the following page.

CHAPTER 7 Water Shortage Contingency Planning

This chapter discusses the District's Water Shortage Contingency Plan (WSCP), and WSCP adoption procedures.

7.1 Background

Water shortages occur whenever the available water supply cannot meet the normally expected customer water use. This can be due to several reasons, including climate change, drought, and catastrophic events. Drought, regulatory action constraints, and natural and manmade disasters may occur at any time. A WSCP presents how an urban water supplier plans to respond to a water shortage condition and help prevent catastrophic service disruptions.

In 2018, the California State Legislature enacted two policy bills, (SB 606 (Hertzberg) and AB 1668 (Friedman)) (2018 Water Conservation Legislation), to establish a new foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning; the District's WSCP has been prepared to be consistent with these requirements.

7.2 District Water Shortage Contingency Plan

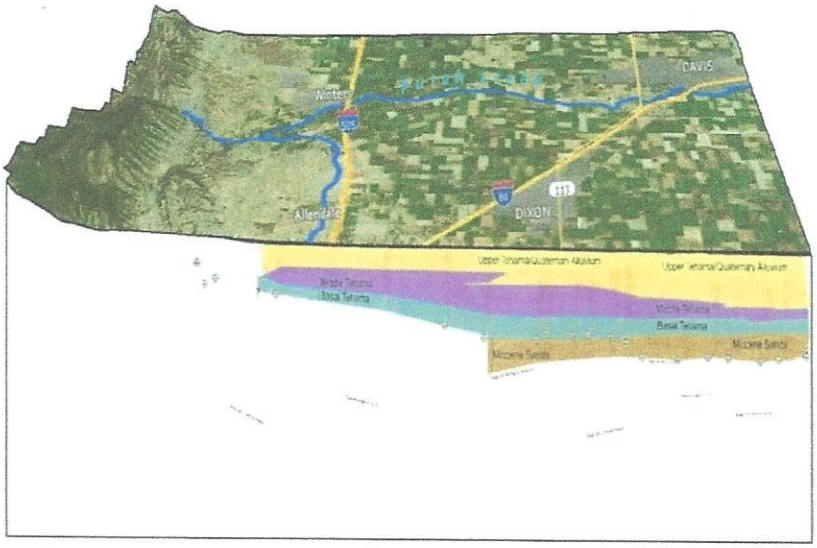
The District's WSCP was developed to provide a strategic plan for preparing and responding to water shortages. The WSCP includes water shortage stages and associated shortage response actions, as well as the District's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting.

STRATEGIC GOAL U: THE DISTRICT INTENDS FOR ITS WSCP TO BE AN ADAPTIVE MANAGEMENT PLAN SO THAT IT MAY ASSESS RESPONSE ACTION EFFECTIVENESS AND ADAPT

Figure 6.10.1

GROUNDWATER SOURCES IN NORTHERN SOLANO COUNTY

Tehama Formation Cross Section



Source: Luhdorff & Scalmanini, Solano Sub-basin Groundwater Sustainability Plan

7.3 Drought Risk Assessment

This drought risk assessment identifies the data and methods used, the basis for supply shortage conditions, a determination of the reliability of each water supply source, and a comparison of total water supplies and use during a potential drought.

7.4 Basis for Water Shortage Conditions

Water shortage conditions for this drought risk assessment are based on increased frequency and severity of drought condition seen in recent years, conditions that are projected to continue due to climate change. The District has also seen reduced availability of State Water Project water and Settlement Water in recent years due to constraints on the Sacramento Delta, and expects the reliability of these sources to decrease significantly under drought conditions. Based on conjunctive use of the District's groundwater from the Basal Tehama formation, groundwater is a reliable source. This makes the overall water system reliability relatively high.

7.5 Groundwater Levels

Increased pumping during dry years will cause groundwater levels to decrease, but groundwater levels are expected to return to normal levels once pumping decreases to normal year rates. Consequently, reliability of groundwater was also determined to be excellent (Coastland DCCM 4/23).

In summary, the WMP/SP concluded that based on 2020 demand and supply data, projected supply is sufficient to meet projected demand for the next five years. (Coastland DCCM Condition Assessment 4/2023)

7.6 Supply and Demand Assessment Procedures

Beginning in 2024, the District will conduct an Annual Water Supply and Demand Assessment in order to 1) submit an annual report to DWR on July 1, 2024 and each July 1 thereafter, and 2) to determine if a water shortage condition exists requiring an appropriate water shortage response action.

7.7 Supply and Demand Assessment

The procedures for the supply and demand assessment that will be conducted each year will include the following elements:

- The District will evaluate the water supply reliability for the current year and one dry year.
- A report on the water supply reliability for the current and projected water supply reliability for the next year will be prepared and posted to the District's web site.
- The report will include a determination as to whether or not a water shortage condition exists and if a water shortage response action is recommended.
- The annual Supply and Demand Assessment report will be prepared and submitted to DWR by July 1. The format for the report is expected to be finalized in 2024.

7.8 Supply and Demand Assessment Key Data Inputs

The evaluation of the District's water supply reliability for the current year and one dry year will include the following key data inputs:

- Current year unrestrained demand (no conservation measures) considering weather/climate impacts, population growth projections, and any policies which may impact the ability to meet future or projected demands.
- Current year available supply, considering any hydrological and/or regulatory conditions in the current year and at least one dry year.
- Existing water system infrastructure and if there are any potential constraints.
- Description and quantification of each water supply source included in the WMP.

7.9 Evaluation Criteria and Methodology

The following criteria shall be utilized when conducting the annual Supply and Demand assessment:

- The water reliability evaluation will generally commence in March each year. However, nothing in this plan will prohibit the assessment to start sooner if conditions warrant it.
- Data used in the evaluation will be captured via spreadsheet, computer model, or other available tools.
- Any local conditions or uncertainties that impact supply or demand conditions will be taken into consideration.

7.10 Drought Risk Assessment

This drought risk assessment identifies the data and methods used, the basis for supply shortage conditions, a determination of the reliability of each water supply source, and a comparison of total water supplies and use during a potential drought.

7.11 Basis for Water Shortage Conditions

Water shortage conditions for this drought risk assessment are based on increased frequency and severity of drought conditions seen in recent years, conditions that are projected to continue due to climate change. Based on conjunctive use of the District's groundwater from the Basal Tehama formation, groundwater is a reliable source. This makes the overall water system reliability relatively high in Drought Conditions (VMC Section 13.20.050)

Drought conditions will be in effect when there is a water shortage necessitating a reduction in water use within the District.

Water shortage stages may be declared by the RNVWD Board in response to one or more water supply conditions or events.

Each stage of water shortage corresponds with a water conservation response to a specified reduction in water supply. Each stage requires either a voluntary or mandatory reduction in water use by all customers which may include, mandatory limitations or prohibitions on specific types of water use.

These stages have been updated to comply with the six Standard Water Shortage Stages established by DWR in 2019. The criteria for triggering the District's water shortage stages based on water supply is shown in Table 7.11.1.

Table 7.11.1 DWR Water shortage contingency plan levels

Shortage Stage	Percent Shortage Range	Water Shortage Response Action
Normal	0%	Voluntary Conservation
1	0% - 10%	Conservation measures including outreach, education, and incentives
2	11% - 20%	Promotion of incentives, water use surveys; water waste monitoring and reporting; improved billing and tracking of usage; suspended hydrant flushing; accelerated system leak detection
3	21% - 30%	Restrictions on outdoor irrigation; water usage patrols; high water use reporting; cease operation of non-recirculating water features
4	31% - 40%	Restriction on outdoor irrigation; restrict/cease outdoor water use; residential and commercial water use allocations; excessive use penalties; restrictions on development and landscaping; curtail business use
5	41% - 50%	Require covers and other restrictions on pools; decrease water use allocation; restrict installation of turf grass; supply augmentation
6	50%+	Decrease water use allocation

Normal Conditions: At this stage there is no identified reduction in available water supply sources. Water customers are encouraged through multiple outreach sources to use water efficiently in order to achieve voluntary water conservation.

Stage 1 (voluntary): This stage may be declared when a reduction in total available water supply sources of 10% occurs. At this stage water customers shall be asked to conserve water through a voluntary reduction in water use of up to 10%.

Stage 2 (voluntary to mandatory): This stage may be declared when a reduction in total available water supply sources of 11% up to 20% occurs. At this stage water customers shall be asked to conserve water by up to 20% through employment of both voluntary and mandatory conservation measures including incentives, water use surveys, improved billing, and suspension of hydrant flushing.

Stage 3 (mandatory): This stage may be declared when a reduction in total available water supply sources of 21% up to 30% occurs. At this stage water customers shall be required to conserve water through a mandatory reduction in water use of up to 30%. In addition to the measure taken in Stage 2, customer usage may be monitored, and communications made to customers to reduce their water use. Limitations may be placed on outdoor irrigation.
Stage 4 (mandatory to emergency): This stage may be declared when a reduction in total available water supply sources of 31% up to 40% occurs. At this stage water customers shall be

required to conserve water through a mandatory reduction in water use of up to 40%. Additional limitations and/or restrictions to outdoor irrigation may be implemented. In addition to the measures taken in Stage 3, residential water use allocation may be implemented and penalties for use of in excess of those allocations may be levied. Shortage Response Actions may be applied as needed to achieve the desired water use target.

Stage 5 (mandatory, emergency): This stage may be declared when a reduction in total available water supply sources of 41% up to 50% occurs. Residents will be required to cease all non-essential use of water. In addition to the measure taken in Stage 4, residential water use allocation may be adjusted to achieve the desired water use target. The District may enact measures to augment the available water supply sources.

Stage 6 (mandatory, emergency): This stage may be declared when a reduction in total water supply sources exceeds 50%. In addition to the steps taken at Stage 5, residential water use allocations will be adjusted to achieve the desired water use target. (DWR)

7.12 Water Emergency:

A water supply emergency may be declared at any time when there is a reduction in total available water supply sources resulting from an emergency drought condition, catastrophic interruption such as a natural disaster, power outage or bio-terrorism attack on the District's water treatment and distribution system occurs. At this stage water use may be restricted based on the impact to the available water supply.
Water conservation action stages may also be triggered by local, state, or federal action impacting the management of the District's water supply sources. The General Manager or his/her Designee, shall use multiple sources of information to make a recommendation to the RNVWD Board on the implementation of one or more specific water shortage stages.

7.13 Water Waste Prohibitions

No user of the District's water system may knowingly make, cause, use or permit the use of water from the system in a manner that violates the District's Rules and Regulations.

- Excessive water runoff due to landscape irrigation activities.
- Washing of vehicles, equipment, structures, and other items without the use of a shutoff nozzle.
- The escape of water through breaks or leaks within the water users' plumbing or system that is not repaired within 48 hours of discovery.
- Fire hydrants used for purposes other than firefighting, water quality, maintenance, sanitation, and construction.

7.14 Water Conservation Measures

The District has an established Water Conservation program which promotes the efficient use of water through public outreach, education, and effective management of its water supply and distribution system. The program is consistent with industry best practices and includes the following measures:

- Water Efficiency Use information and education through the District's website and utility

billing.
- Distribution of water efficient fixtures and resources.

In the event a water shortage stage is declared, in addition to the ongoing water conservation measure employed by the District the additional measures below may be taken:

- Expansion of public information campaign.
- Directed promotion of water use surveys.
- Enhanced water conservation information on billing.
- Enhanced water efficiency education.
- Encourage customers to identify and repair leaks in a timely manner.

STRATEGIC GOAL V: ENSURE WATER CONSERVATION AND USE EFFICIENCY STRATEGIES THROUGH PROVEN COST-EFFICIENT MEASURES.

7.15 Water Use Restrictions

During drought stages, the Board can implement additional water use restrictions as appropriate to achieve the desired level of conservation. Potential and additional restrictions include:

- Decrease or stop hydrant flushing (see Figure 7.15.1 on the following page).
- Expand system leak detection program.
- Limit watering and irrigation of plants, trees, and landscaping to specified days and/or hours of the day. Depending upon the severity of the water shortage, this may include limiting water buckets/hoses or prohibition of all irrigation completely.
- Depending upon the severity of the water shortage, limit other outdoor water use such as, but not limited to, the washing of equipment or vehicles to specified times during the day, on specified days only, or prohibit all outdoor uses of water altogether.

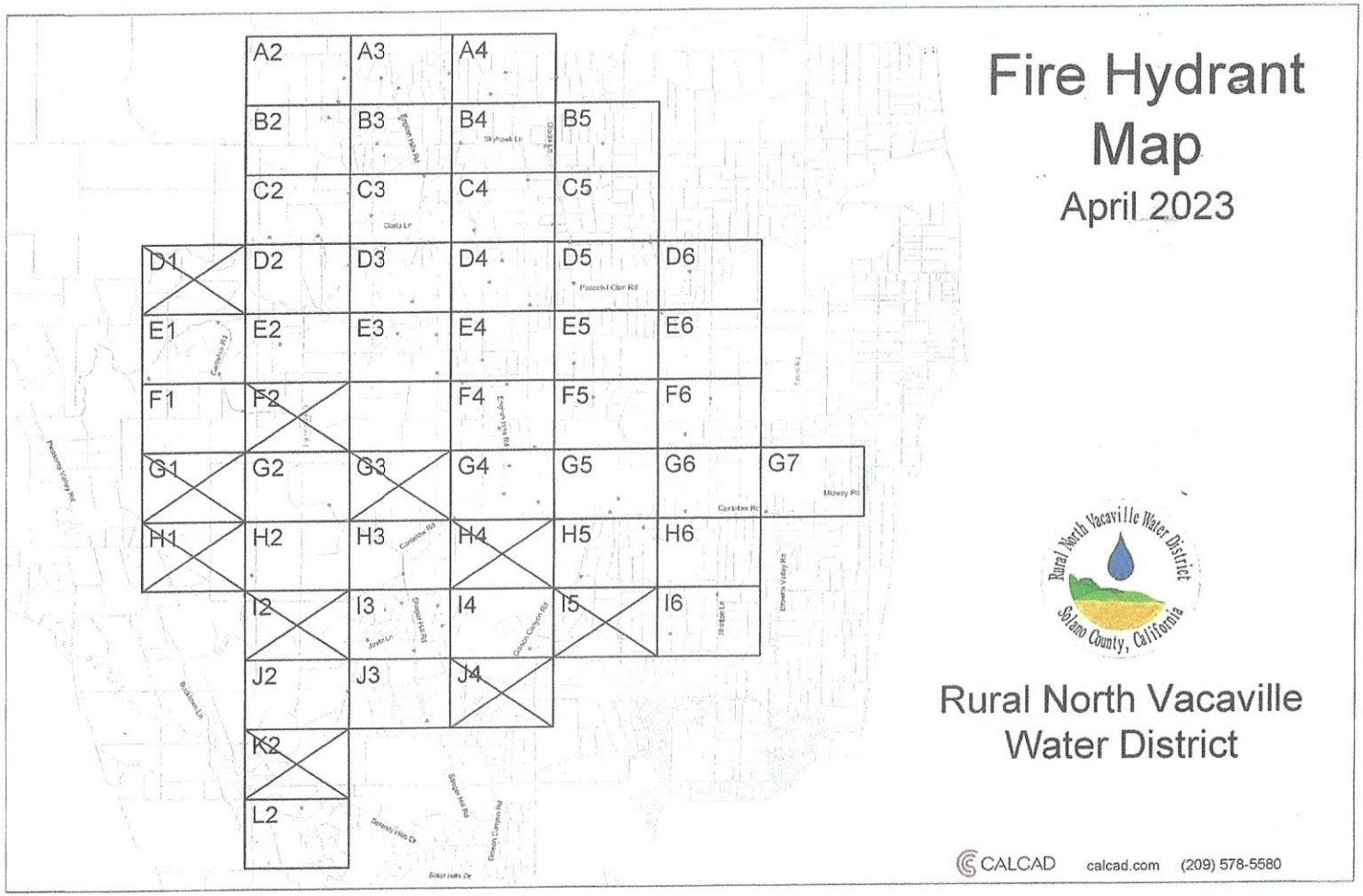
7.16 Operational Changes

The District will continue to evaluate operational and maintenance procedures in order to identify opportunities for improved efficiency in water delivery and reduce nonrevenue system water loss.

7.17 Emergency Response Plan

The Emergency Response Plan includes the following elements:

- List of water system components (wells, distribution system, storage tanks).
- Measures to be taken prior to and following an emergency event.
- List of emergency operation personnel.
- Information regarding coordination with police and fire department personnel.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J4
K2
L2
Fire Hydrant Map
April 2023
Rural North Vacaville Water District
Solano County, California
Rural North Vacaville Water District
CALCAD
calcad.com
(209) 578-5580

- List of water testing laboratories, water system contractors, and pipe repair and installation contractors.

In the event of a catastrophic interruption or other emergency, the RNVWD Board can direct the implementation of the Emergency stage of water conservation action.

7.18 Communication Protocols

The District will communicate any significant changes to, or shortages in, available water supply sources, as well as any disruption of service, to its water customers; the general public; and local, regional, and state government agencies as required and necessary. Communications and/or updates may be made through the District's website, utility billing inserts or press releases in local newspapers, radio or television stations.

7.19 Compliance and Enforcement

The District will endeavor to achieve water use reduction targets when possible through voluntary compliance measure which will include existing and enhance water conservation communication, education, outreach and incentive programs.

7.20 Compliance and Enforcement Protocols

In the event that water target reductions are not met and/or water shortages occur that cannot be met simply through voluntary measure, the District may enact compliance and enforcement protocols to ensure compliance. This measure may include penalties/surcharges for excessive water use in the event of a declaration of water shortage and implementation of water use restrictions or allocations.

Under the Normal conditions, water rates shall be established and modified from time to time with the objective of fully compensating for the acquisition, treatment, and distribution of water through revenues collected from customers, and promoting beneficial use of the water. There are no penalties for high water use under the Normal condition.

In Drought and Emergency conditions in which a water conservation stage is declared and conservation goals set, penalties, in the form of surcharges on the water bill, may be assessed for water use in excess of the conservation goal and/or water use allocation. For any instance the customer will be assessed a surcharge of the variable water charges for that billing period as a penalty for excessive water use.

7.21 Monitoring and Reporting

7.21.1 Normal Conditions

In Normal stage water supply conditions, production figures are recorded and reviewed by the Water Operations Section of the Solano Irrigation District. Totals are reported monthly and incorporated into the water supply report.

7.21.2 Drought Conditions

During Drought stage water supply condition production figures are provided to the Water Operations Section of the Solano Irrigation District. The Water Operations Section provides the

production figures to the General Manager. The General Manager compares the monthly production to the 2023 base year data to verify reduction goals are being met. Monthly reports are generated and provided to the General Manager. The SID will notify the General Manager if water reduction goals are not met, so corrective action can be taken.
During an Emergency, conditions shortage or interruption of service, Drought stage procedure will be followed, with the addition of a weekly production report to the General Manager.
During a disaster shortage the Emergency stage applies.

7.21.3 Emergency Water Shortage Conditions

During Drought and Emergency stages, RNVWD Board may add supplemental water use restrictions, as appropriate, to achieve the desired level of conservation.

7.21.4 Metering

The District is fully metered and therefore usage for all new and existing water connections is tracked and all customers are billed based on their volume of use.
The District maintains a database to ensure every new and existing connection is metered and billed for water use.

CHAPTER 8 Demand Management Measures

During Drought and Emergency stages, the RNVWD Board may add supplemental water use restrictions, as appropriate, to achieve the desired level of conservation.

8.1 Education and Outreach

The District's public information program includes the following components:

- Maintaining a dedicated water conservation webpage on the District's website to educate the public on the District's water conservation practices, policies, and procedures as well as provide tips and resources for promoting water conservation www.RNVWD.com.
- Providing current and comparative water use information on water bills.
- Providing billing samples with easy to follow instructions.
- Providing water conservation education and information through water billing inserts or printing directly on bills.

8.2 Programs to Assess and Manage Distribution System Real Loss

The District conducts validated distribution system water audits annually in order to reconcile water production figures with consumption records. After accounting for unmetered uses, the District estimates its system's losses and performs distribution system leak detection in an attempt to minimize those losses. The District's system audit program consists of the following:

- Determination of metered sales.
- Determination of other system verifiable uses.
- Determination of total supply into system wide.
- Determination of estimated loss based on the above data.

STRATEGIC GOAL W: REVIEW APPROVED WATER RATES ANNUALLY IN CONCERT WITH THE BUDGET SETTING PROCESS.

8.3 Metering

The District's entire water service area is fully metered. The water rate structure for the volumetric charge consists of three tiers.
In 2023, the District completed a multi-year water rate study and adopted and implemented updated water rates starting in September 2023.

RURAL NORTH VACAVILLE WATER DISTRICT
Table 8.3.1 WATER RATE SCHEDULE
3 Year Plan

Rate Description	Current	Year 1	Year 2
Base Fee	$74.00	$79.18	$84.72
CRC, Capital Recovery Charge	$78.00	$83.46	$89.30
Tier 1, 2 & 3 Usage	$3.00	$3.21	$3.43
Supplemental Fee	$78.00	$83.46	$89.30

Year 1 increase is needed to balance the budget.

Current rate will increase the fixed monthly Base Rate by $1.10
Current 1 rate will increase fixed monthly CRC by $33.00
Usage rate will increase 92 cents per month, the monthly usage increase will be $9.20 for a 10 CCF usage.

Proposed 7% increase for year 2 and year 3. 7% is to cover the cost of inflation and the remaining amount is to build reserves. (www.rnvwd.com)

8.4 Plans for Continued Implementation

Continued implementation of this DMM is expected to help the District achieve its water efficiency goals by providing accurate water use information to the customer and the District. The meters allow the District to track customer water use and compare current use to historical data. They also allow customers to make informed decisions in managing their water use.

8.5 Planned Implementation to Achieve Water Use Targets

The District plans to continue to administer its existing DMMs in order to achieve and maintain water conservation.
Specifically, the District will continue to maintain and implement the following programs:

- Maintenance and enforcement of Water Waste Prohibitions;
- Replacement of existing meters as required and installation of new meters on all District water connections;
- The use of water pricing and when warranted, penalties for excessive use, to promote conservation;
- Voluntary and mandatory water conservation measures, including irrigation restrictions and water use allocations, to promote and/or mandate conservation

- Maintenance of a system leak detection sensors and loss prevention program to identify and repair leaks in order to maintain and improve upon the current system loss amount.

CHAPTER 9 Operations Management Planning

This chapter discusses succession, operations training and staff changes.

In order to maintain a smooth transition with the District's board, management and staff, the Board must be prepared to appoint alternates to temporary positions due to emergency or forewarned vacancies of those positions. The procedure for filling a vacancy in an appointive board position is found at Government Code Sections 1778 and 1779.

The Solano Irrigation District has maintained a satisfactory relationship with RNVWD for several years. SID has provided guidance, engineering, operations, maintenance and emergency repair crews for the benefit of RNVWD. SID has worked with our staff to minimize costs throughout their operations and performance especially when their staff changes effect RNVWD operation. However, SID's first priority is to their district. RNVWD must have alternate sources of emergency contractors when in need.

STRATEGIC GOAL X: MAINTAIN COMMUNICATION AND COORDINATION WITH A MINIMUM OF 3 CLASS A CONTRACTORS TO SERVE THE DISTRICT.

CHAPTER 10 Strategic Goals

A. Protect current water rights from external threats through oversight and collaboration on legislation.
B. Strive for a unified work force by streamlining internal processes and improving communication.
C. Create stronger alignment among Board of Directors, Management and Staff by aligning vision and goals.
D. Increase knowledge of best management practices for asset management by interacting with other agencies and participating in educational venues.
E. Continue updating established Fiscal/Funding management practices.
F. Develop Annual Financial Plans that align Capital Improvement Projects (CIP) with the approved rate structure.
G. Provide semi-annual forecasting of budget-to-actual financial data to the public and Board of Directors.
H. Seek opportunities for alternate funding sources to augment revenue to build reserves including adding more water rights for sale.
I. Encourage the Sphere of Influence expansion and annexations.
J. Develop an annual Capital Improvement Program that is developed and prioritized based on risk, condition assessment, capital assets and aligned with approved budget.
K. Optimize Equipment and Assets (e.g. create collective purchasing agreements and annual

asset purchasing plans).

L. Develop resource (staffing/budget) plan for all projects to inform on appropriate levels of outsourcing.
M. Ensure Sustainable Water Supply.
N. Evaluate new water supply options.
O. Update Operations and Maintenance Programs and enhance technology that focuses on Prioritized, Protective and Preventative Maintenance.
P. Use technology/innovation to improve staff efficiency of operations (e.g. GIS, SCADA, GPS, etc.).
Q. Meet or exceed regulations for clean and safe water including developing a comprehensive groundwater and contaminates plan.
R. Manage aquifer health through regional collaboration.
S. Improve water quality with such actions as determining fluoridation practices per California Division of Drinking Water.
T. The District will continue to monitor existing groundwater supplies.
U. The District intends for its WSCP to be an adaptive management plan so that it may assess response action effectiveness and adapt to foreseeable and unforeseeable events.
V. Ensure water conservation and use efficiency strategies through proven cost-effective measures.
W. Review approved water rates annually in concert with the Budget setting process.
X. Maintain communication and coordination with a minimum of 3 Class A contractors to serve the District.

Electronic copies will be made available for review on the District's website at www.rnvwd.com/GeneralDocuments/WMP/SP.

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