FINAL REPORT | APRIL 2022

# City of Dixon
# 2020 Urban Water Management Plan

**JOINTLY PREPARED BY**

DIXON CALIFORNIA

WEST YOST
Water. Engineered.

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# 2020 Urban Water Management Plan

**Prepared for**

## City of Dixon

**Project No. 066-60-21-21**


Project Manager: Rhodora Biagtan, PE — April 26, 2022 (Date)

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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AB | Assembly Bill |
| ABAG | Association of Bay Area Governments |
| Act | Urban Water Management Planning Act |
| ACWA | Association of California Water Agencies |
| AFY | Acre-Feet Per Year |
| Cal Water | California Water Service |
| CAP | Climate Action Plan |
| CCF | Hundred Cubic Feet |
| CCR | California Code of Regulations |
| CDPH | California Department of Public Health |
| CEQA | California Environmental Quality Act |
| CII | Commercial, Industrial, and Institutional |
| CIMIS | California Irrigation Management Information System |
| CIP | Capital Improvement Projects |
| City | City of Dixon |
| CVA | Climate Vulnerability Assessment |
| CWC | California Water Code |
| DMC | Dixon Municipal Code |
| DMM | Demand Management Measures |
| DRA | Drought Risk Assessment |
| DWR | Department of Water Resources |
| EAR | Electronic Annual Report |
| DIR | Environmental Impact Report |
| ET | Evapotranspiration |
| °F | Fahrenheit |
| ft | Feet |
| GHGs | Greenhouse Gas Emissions |
| GP | General Plan |
| GPCD | Gallons Per Capita Per Day |
| gpm | Gallons per Minute |
| GSA | Groundwater Sustainability Agency |
| GSP | Groundwater Sustainability Plan |
| JPA | Joint Powers Agreement |
| kWh | Kilowatt Hour |
| MCL | Maximum Contaminant Level |
| MG | Million Gallons |
| mg/L | Milligrams per Liter |
| MSL | Mean Sea Level |
| NAICS | North American Industry Classification System |
| RCD | Resource Conservation District |
| RD | Reclamation District |

| | |
|---|---|
| RHNA | Regional Housing Needs Allocation |
| RUWMP | Regional Urban Water Management Plant |
| SB | Senate Bill |
| SB X7-7 | Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009 |
| SCWA | Solano County Water Agency |
| SGMA | Sustainable Groundwater Management Act |
| SID | Solano Irrigation District |
| SOI | Sphere of Influence |
| State Water Board | State Water Resources Control Board |
| TDS | Total Dissolved Solids |
| UWMP | Urban Water Management Plan |
| WRCC | Western Regional Climate Center |
| WSCP | Water Shortage Contingency Plan |
| WSMP | Water System Master Plan |
| WUE | Water Use Efficiency |
| WWTF | Wastewater Treatment Facility |

# EXECUTIVE SUMMARY

## INTRODUCTION

An Urban Water Management Plan (UWMP) helps water suppliers assess the availability and reliability of their water supplies and current and projected water use to help ensure reliable water service under different conditions. This water supply planning is especially critical for California currently, as climate change is resulting in changes in rainfall and snowfall which impact water supply availability and development is occurring throughout the State resulting in increased needs for reliable water supplies. The Urban Water Management Planning Act (Act) requires larger water suppliers that provide water to urban users (whether directly or indirectly) to develop UWMPs every five years. UWMPs evaluate conditions for the next 20 years, so these regular updates ensure continued long-term planning.

As of 2021, the City provides water service directly to more than 3,000 connections in its water service area and is therefore required to prepare a UWMP.

**This Executive Summary serves as a Lay Description of the City's UWMP, as required by California Water Code (CWC) §10630.5.**

## CALIFORNIA WATER CODE REQUIREMENTS

The CWC documents specific requirements for California water suppliers. The Act is included in the CWC and specifies the required elements of a UWMP, including discussing the City's water system and facilities, calculating how much water its customers use (i.e., water demand) and how much the City can supply, and detailing how the City 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 [SB] 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. In 2020, retail agencies are required to report on their compliance with SB X7-7. Because the City was not defined as an urban water supplier until 2021 when it connected its 3,000th customer, the City was not required to establish and meet baselines and targets for daily per capita water use, nor required to comply with SB X7-7.

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 the legislation include:

- Five Consecutive Dry-Year Water Reliability Assessment: Analyze water supply reliability for five consecutive dry years over the planning period of this UWMP (see Chapter 7).
- Drought Risk Assessment: Assess water supply reliability from 2021 to 2025 assuming that the next five years are dry years (see Chapter 7).
- 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 (see Chapter 8).
- Energy Use Information: Include reporting on the amount of electricity used to obtain, treat, and distribute water if data are available (see Chapter 6).

- 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 (see Chapter 8).
- Lay Description: Provide a lay description of the findings of the UWMP; this Executive Summary serves as the Lay Description for this 2020 UWMP.

The major components of the City's 2020 UWMP, including its findings, are summarized below.

## CITY WATER SERVICE AREA AND FACILITIES

The City is one of two water service purveyors within the City limits. It provides potable water to the residences and businesses within its water service area. The remaining residences and businesses within the City limits are served by California Water Service (Cal Water), and are not included in this plan.

The City's water facilities produce, treat, store, and deliver drinking water to its customers. The City produces water by pumping it from City-owned groundwater wells. Groundwater is treated before it enters the distribution system. The City also owns and operates an extensive network of pipelines, storage tanks, and pumping facilities to deliver drinking water to its customers.

## CITY WATER USE

The City's 2020 water service area population is 9,037 as reported in the City's 2020 Electronic Annual Report as submitted to the State Water Resources Control Board (State Water Board). It anticipates population growth and future planned development in its water service area, which would increase demand for water. Planned and future residential growth is expected in the Southwest and East Dixon areas, along with residential and non-residential growth in the Northeast. Thorough and accurate accounting of current and future water demands is critical for City planning efforts. To continue delivering safe and reliable drinking water, the City must know how much water its customers currently use and how much they expect to use in the future.

Projected future water demands have been estimated based on the anticipated growth as defined by the 2040 General Plan, adopted by the Dixon City Council in May 2021. Based on the anticipated growth, water demands in the City water service area are expected to increase approximately 228 percent from 2020 demands of 702 million gallons (MG) to 2045 demands of 2,307 MG. Most of that growth is expected in the next ten years.

## CITY WATER SUPPLIES

The City's existing potable water supply consist of groundwater pumped from City-owned and operated wells from the underlying Solano Groundwater Subbasin.

The City's groundwater supply is expected to meet its projected water demands. The City only uses as much groundwater as is necessary to meet its demands. The City will continue to monitor its existing

groundwater wells and continue to participate in the Solano Groundwater Sustainability Agency Board for groundwater management of the Solano Subbasin.

## CONSERVATION TARGET COMPLIANCE

The City was not defined as an urban water supplier until April 2021 when it connected its 3,000th customer connection. Therefore, the City was not required to adopt and meet 2015 and 2020 targets for daily per capita water use, nor required to complete the SB X7-7 Verification or 2020 Compliance Forms.

## WATER SERVICE RELIABILITY

The CWC requires water suppliers to evaluate their water service reliability by examining the impact of drought on their water supplies and comparing those reduced supplies to water demands. Specifically, agencies must project available water supplies during a single dry year and five consecutive dry years using historical records.

The City is well-positioned to withstand the effects of a single dry year and a five-year drought for any period between 2025 and 2045. The City's drought risk was specifically assessed between 2021 and 2025, assuming that the next five years are dry years. In each case, water supplies comfortably meet water demands. This remains true whether the drought occurs in 2021, 2045, or any year between, largely due to the region's careful management of the Solano Groundwater Subbasin.

## WATER SHORTAGE CONTINGENCY PLAN

A WSCP describes an agency's plan for preparing and responding to water shortages. The City prepared its WSCP to include its process for assessing potential gaps between planned water supply and demands for current year and the next potentially dry year. It aligned its water service area's water shortage levels with the State for consistent messaging and reporting and planned for locally appropriate water shortage responses. The WSCP may be used for foreseeable and unforeseeable events. The WSCP is adopted concurrently with this UWMP by separate resolution so that it may be updated as necessary to adapt to changing conditions.

## UWMP PREPARATION, REVIEW, AND ADOPTION

While preparing its UWMP, the City notified other stakeholders (e.g., Solano County and the general public) of its preparation, its availability for review, and the public hearing prior to adoption. The City encouraged community participation in the development of the 2020 UWMP using web-based communication. The City issued public notices in the local newspapers to encourage the public review of the UWMP and WSCP. The notices provided the location where the plan would be available for public inspection and the time and place of the public hearing.

The public hearing provided an opportunity for the City's water customers and the general public to become familiar with the 2020 UWMP and ask questions about the City's water supply, its continuing plans for providing a reliable, safe, high-quality water supply, and its plans to address potential water shortages. Following the public hearing, the Dixon City Council adopted the 2020 UWMP on April 19, 2022

by City Resolution No. 22-086. A copy of the adopted Plan was provided to the Department of Water Resources and is available on the City's website: https://www.cityofdixon.us/.

# CHAPTER 1
# Introduction

This chapter provides an introduction and overview of the City of Dixon (City) 2020 Urban Water Management Plan (UWMP) including the importance and extent of the City's water management planning efforts and the organization of the City's 2020 UWMP. This 2020 UWMP has been prepared jointly by City staff and West Yost.

## 1.1 INTRODUCTION

The Urban Water Management Planning Act (Act) was originally established by Assembly Bill (AB) 797 on September 21, 1983. Passage of the Act was recognition by State legislators that water is a limited resource and a declaration that efficient water use and conservation would be actively pursued throughout the state. The primary objective of the Act is to direct "urban water suppliers" to develop a UWMP which provides a framework for long-term water supply planning, and documents how urban water suppliers are carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future water demands. A copy of the current version of the Act, as incorporated in Sections 10608 through 10657 of the California Water Code (CWC), is provided in Appendix A of this plan.

## 1.2 IMPORTANCE AND EXTENT OF THE CITY'S WATER MANAGEMENT PLANNING EFFORTS

The purpose of the UWMP is to provide a planning tool for the City for developing and delivering municipal water supplies to the City's water service area. This UWMP provides the City with a water management action plan for guidance as water conditions change and management conditions arise. The City was not required to prepare a 2015 UWMP and WSCP since it did not meet the 3,000 customer connection threshold until 2021.

The City has prepared a UWMP and WSCP in accordance with the current version of the Act. The City's WSCP is part of this UWMP and provides a plan for response to various water supply shortage conditions. The City's UWMP is a comprehensive guide for planning for a safe and adequate water supply.

## 1.3 CHANGES TO URBAN WATER MANAGEMENT PLANNING ACT SINCE PASSAGE

The Urban Water Management Planning Act has been modified over the years in response to the State's water shortages, droughts, and other factors. A significant amendment was made in 2009, after the 2007 to 2009 drought, and as a result of the Governor's call for a statewide 20 percent reduction in urban water use by the year 2020. This was the Water Conservation Act of 2009, also known as Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009 (SB X7-7). This act required agencies to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. The City was not required to comply with SB X7-7 since the City did not become an urban water supplier until April 2021 and therefore was not required to adopt per capita water use targets to be met in 2015 and 2020.

The 2014 to 2016 drought led to further amendments to the CWC to improve on water supply planning for long-term reliability and resilience to drought and climate change. Summarized below are the major additions and changes to the CWC since the 2015 UWMP requirements.

- **Five Consecutive Dry-Year Water Reliability Assessment** [CWC §10635(a)]. The Legislature modified the dry-year water reliability planning from a "multiyear" time period to a "drought lasting five consecutive water years" designation. This statutory change requires the urban water supplier to analyze the reliability of its water supplies to meet its water use over an extended drought period. This requirement is addressed in the water use assessment presented in Chapter 4; the water supply analysis presented in Chapter 6; and the water reliability determinations in Chapter 7 of this plan.
- **Drought Risk Assessment** [CWC §10635(b)]. The California Legislature created a new UWMP requirement for drought planning because of the significant duration of recent California droughts and the predictions about hydrological variability attributable to climate change. The Drought Risk Assessment (DRA) requires the urban water supplier to assess water supply reliability over a five-year period from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years. The DRA is discussed in Chapter 7 based on the water use information in Chapter 4; the water supply analysis is presented in Chapter 6; and the water reliability determinations are discussed in Chapter 7 of this plan.
- **Seismic Risk** [CWC §10632.5]. The CWC now requires urban water suppliers to specifically address seismic risk to various water system facilities and to have a mitigation plan. Water supply infrastructure planning is correlated with the regional hazard mitigation plan associated with the urban water supplier. The City's seismic risk is discussed in Chapter 8 of this plan.
- **Energy Use Information** [CWC §10631.2]. The CWC now requires Suppliers to include readily obtainable information on estimated amounts of energy for their water supply extraction, treatment, distribution, storage, conveyance, and other water uses. The City's energy use information is provided in Chapter 6 of this plan.
- **Water Loss Reporting for Five Years** [CWC §10608.34]. The CWC added the requirement to include the past five years of water loss audit reports as part of this UWMP. The City was not required to conduct water loss audits in the past five years as it was not an urban water supplier until 2021. However, the City actively tracks its water loss and estimates are provided in Chapter 4 of this plan.
- **Water Shortage Contingency Plan** [CWC §10632]. In 2018, the Legislature modified the UWMP laws to require a Water Shortage Contingency Plan (WSCP) with specific elements. The WSCP is a document that provides the urban water supplier with an action plan for a drought or catastrophic water supply shortage. Although the new requirements are more prescriptive than previous versions, many of these elements have long been included in WSCPs, other sections of UWMPs, or as part of the urban water supplier's standard procedures and response actions. Many of these actions were implemented by the urban water suppliers during the last drought to successfully meet changing local water supply challenges. The WSCP is used by DWR, the State Water Board, and the Legislature in addressing extreme drought conditions or statewide calamities that impact water supply availability. The City's WSCP is presented in Chapter 8 of this plan.

- **Groundwater Supplies Coordination** [CWC §10631(b)(4)]. In 2014, the Legislature enacted the Sustainable Groundwater Management Act to address groundwater conditions throughout California. The CWC now requires 2020 UWMPs to be consistent with Groundwater Sustainability Plans in areas where those plans have been completed by Groundwater Sustainability Agencies. This requirement is addressed in Chapter 6 of this plan.
- **Lay Description** [CWC §10630.5]. The Legislature included a new statutory requirement for the urban water supplier to include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks. This section of the UWMP could be viewed as a go-to synopsis for new staff, new governing members, customers, and the media, and it can ensure a consistent representation of the Supplier's detailed analysis. This requirement is addressed in the Executive Summary of this plan.
- **Water Loss Management** [CWC §10608.34(a) (1)]. The Legislature included a requirement for urban water suppliers to report on their plan to meet the water loss performance standards in their 2020 UWMPs. This requirement is addressed in the Demand Management Measures presented in Chapter 9 of this plan.

## 1.4 PLAN ORGANIZATION

This 2020 UWMP contains the appropriate sections and tables required per CWC Division 6, Part 2.6 (Urban Water Management Planning Act), included in Appendix A of this 2020 UWMP, and has been prepared based on guidance provided by the California Department of Water Resources (DWR) in their "2020 Urban Water Management Plans Guidebook for Urban Water Suppliers" (DWR Guidebook).

This 2020 UWMP is organized into the following chapters:

- Chapter 1: Introduction
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: Water Use Characterization
- Chapter 5: SB X7-7 Baselines, Targets and 2020 Compliance
- Chapter 6: Water Supply Characterization
- Chapter 7: Water Service Reliability and Drought Risk Assessment
- Chapter 8: Water Shortage Contingency Plan
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal, and Implementation

This 2020 UWMP also contains the following appendices of supplemental information and data related to the City's 2020 UWMP:

- Appendix A: Legislative Requirements
- Appendix B: DWR 2020 Urban Water Management Plan Tables
- Appendix C: DWR 2020 Urban Water Management Plan Checklist
- Appendix D: Agency and Public Notices
- Appendix E: SB X7-7 Compliance Tables
- Appendix F: Water Shortage Contingency Plan
- Appendix G: Water Conservation Ordinance
- Appendix H: UWMP Adoption Resolution

Furthermore, this 2020 UWMP contains all the tables recommended in the DWR Guidebook, both embedded into the UWMP chapters where appropriate and included in Appendix B.

DWR's Urban Water Management Plan Checklist, as provided in the DWR Guidebook, has been completed by West Yost to demonstrate the plan's compliance with applicable requirements. A copy of the completed checklist is included in Appendix C.

# CHAPTER 2
# Plan Preparation

This chapter describes the preparation of the City's 2020 UWMP and WSCP, including the basis for the preparation of the plan, individual or regional planning, fiscal or calendar year reporting, units of measure, and plan coordination and outreach.

## 2.1 BASIS FOR PREPARING A PLAN

The Act requires every urban water supplier to prepare and adopt a UWMP, to periodically review its UWMP at least once every five years and make any amendments or changes which are indicated by the review. An urban water supplier is defined as a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually (AFY). In 2021, the City became an urban water supplier by meeting the 3,000 customer connection threshold with a total of 3,148 customer connections. The City was not required to prepare an UWMP in previous years.

The City manages Water System CA4810009. As shown in Table 2-1, the City supplied 702 MG of water in 2020 on a retail basis to its water customers. Because the City now supplies water to over 3,000 customer connections, it is required to prepare a UWMP.

**Table 2-1. Retail: Public Water Systems (DWR Table 2-1)**

| Public Water System Number | Public Water System Name | Number of Municipal Connections 2020[(b)] | Volume of Water Supplied 2020[(a,*)] |
|---|---|---|---|
| *Add additional rows as needed* | | | |
| CA4810009 | City of Dixon | 2,930 | 702 |
| | **TOTAL** | 2,930 | 702 |
| **** Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | | | |

NOTES:
(a) Volumes are in MG.
(b) The City became an urban water supplier in 2021 with a total of 3,148 customer connections.

## 2.2 REGIONAL PLANNING

As described in Section 2.3 below, the City has prepared this 2020 UWMP and associated WSCP on an individual reporting basis, not part of a regional planning process.

## 2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE

This 2020 UWMP has been prepared on an individual reporting basis covering only the City's water service area, as summarized in Table 2-2. The City did not participate in a regional alliance for the preparation of this 2020 UWMP and therefore, has not prepared a Regional Urban Water Management Plan (RUWMP).

As described below in Section 2.5, the City has notified and coordinated planning and compliance with appropriate regional agencies and constituents.

**Table 2-2. Plan Identification (DWR Table 2-2)**

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

## 2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

Per DWR's definition, the City is a water retailer. The City's 2020 UWMP has been prepared on a calendar year basis, with the calendar year starting on January 1 and ending on December 31 of each year. Water use and planning data for the entire calendar year of 2020 has been included. The water volumes in this 2020 UWMP are reported in units of MG. The City's reporting methods for this 2020 UWMP are summarized in Table 2-3.

**Table 2-3. Supplier Identification (DWR Table 2-3)**

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

## 2.5 COORDINATION AND OUTREACH

This section includes a discussion of the City's inter-agency coordination and coordination with the general public. The UWMP Act requires the City to coordinate the preparation of its UWMP and WSCP with other appropriate agencies and all departments within the City, including other water suppliers that share a common source, water management agencies, and relevant public agencies. These agencies, as well as the public, participated in the coordination and preparation of this 2020 UWMP and the associated WSCP, and are summarized below.

### 2.5.1 Wholesale and Retail Coordination

The City does not rely upon a wholesale agency for water supply. Therefore, Table 2-4 is intentionally blank.

**Table 2-4. Retail: Water Supplier Information Exchange (DWR Table 2-4)**

| The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631. |
|---|
| Wholesale Water Supplier Name[(a)] |
| NOTES:<br>(a) The City does not rely on a wholesale supplier. Table is left intentionally blank. |

## 2.5.2 Coordination with Other Agencies and the Community

The City actively encourages community participation in water management activities and specific water-related projects. The City's public participation program includes both active and passive means of obtaining input from the community, such as mailings, public meetings, and web-based communication. The City's website describes on-going projects and posts announcements of planned rate increases to fund these water projects.

As part of the 2020 UWMP and WSCP preparation, the City facilitated a public review period. Public noticing, pursuant to Section 6066 of the Government Code, was conducted prior to commencement of a public comment period. Public hearing notices are included in Appendix D of this plan. During the public comment period, the Draft 2020 UWMP and WSCP were made available on the City's website and at City offices and City Hall.

The City also coordinated the preparation of this 2020 UWMP and associated WSCP with several agencies, including relevant public agencies that utilize the same water supplies. These agencies included the following:

- City of Dixon
- California Water Service – Dixon (Cal Water)
- Solano County
- Solano County Water Agency
- Solano Irrigation District
- Solano Subbasin Groundwater Sustainability Agency

The public hearings provided an opportunity for the City's water customers and the general public to become familiar with the UWMP and ask questions about the City's water supply, in addition to the City's continuing plans for providing a reliable, safe, high-quality water supply.

## 2.5.3 Notice to Cities and Counties

CWC Section 10621 (b) requires agencies to notify the cities and counties to which they serve water at least 60 days in advance of the public hearing that the plan is being updated and reviewed. In November 2021, a notice of preparation was sent to the cities and counties and other stakeholders, to inform them of the UWMP and WSCP process and schedule, and to solicit input for the 2020 UWMP and WSCP. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10 of this UWMP.

# CHAPTER 3
# System Description

This chapter provides a description of the City's water system and service area. This description includes the water system facilities, climate, population, and housing within the City's water service area.

## 3.1 GENERAL DESCRIPTION

The City, incorporated in 1878, is located in the California Central Valley along Interstate Highway 80, and is surrounded by agricultural and open space lands. Located in the northeastern portion of Solano County, the City is approximately 20 miles west of the City of Sacramento and the Sacramento River and 65 miles northeast of the City of San Francisco. The City is relatively flat at an average elevation of 64 feet (ft) above mean sea level (MSL).

The City's water system is responsible for delivering potable water to residential, commercial, industrial, institutional/governmental and landscape customers. The City uses raw water from wells for irrigation at several local parks and several properties within the City's water service area have private groundwater wells. These irrigation wells and private wells, originally installed for agricultural use, are not connected to the City's water system and their use is excluded from this 2020 UWMP. However, the City has noted that the properties with private wells may eventually connect to the City's water system or Cal Water's water system should the private wells fail. As of 2021, the City serves 3,148 connections within its water service area.

## 3.2 SERVICE AREA BOUNDARY

The City is one of two water purveyors within the City limits. It provides potable water to the residences and businesses within its water service area. The remaining residences and businesses within the City limits are served by Cal Water. The City's water service area boundary and Cal Water's service area boundary are shown on Figure 3-1 (Page 3-3). Areas within the City that are served by Cal Water are excluded from this plan.

The City's water service area includes residential, commercial, industrial, institutional/governmental, landscape and fire service connections. Municipal water supply for the City is currently entirely groundwater (see more discussion in Chapter 6). The City also provides wastewater collection and treatment services for the entire City.

## 3.3 WATER SYSTEM DESCRIPTION

The City operates a water distribution system consisting of groundwater well, pumping facilities, storage tanks, and distribution/transmission pipelines. Each of these components are discussed in more detail below, and the locations of the major facilities are shown on Figure 3-2 (Page 3-4).

### 3.3.1 Groundwater Wells

The City has four (4) active groundwater wells, one (1) well on standby, and one (1) future well in its water service area. The Park Lane Well, School Well, Valley Glen Well, and Watson Ranch Well are active and the Industrial Well is on standby. The Homestead Well is currently under construction and is projected to be completed by 2023. The well capacities of each existing well and the total capacity of the active wells (6,600 gallons per minute (gpm)) are shown in Table 3-1.

| Table 3-1. Existing Groundwater Well Capacity | | | |
|---|---|---|---|
| Well No. | Facility Name | Status | Well Capacity, gpm |
| 1 | Park Lane Well | Active | 2,500 |
| 2 | School Well[(a)] | Active | 1,100 |
| 3 | Valley Glen Well | Active | 1,900 |
| 4 | Watson Ranch Well[(b)] | Active | 1,100 |
| 5 | Industrial Well[(c)] | Standby | 800 |
| | | **Total Capacity of Active Wells[(c)]** | **6,600** |

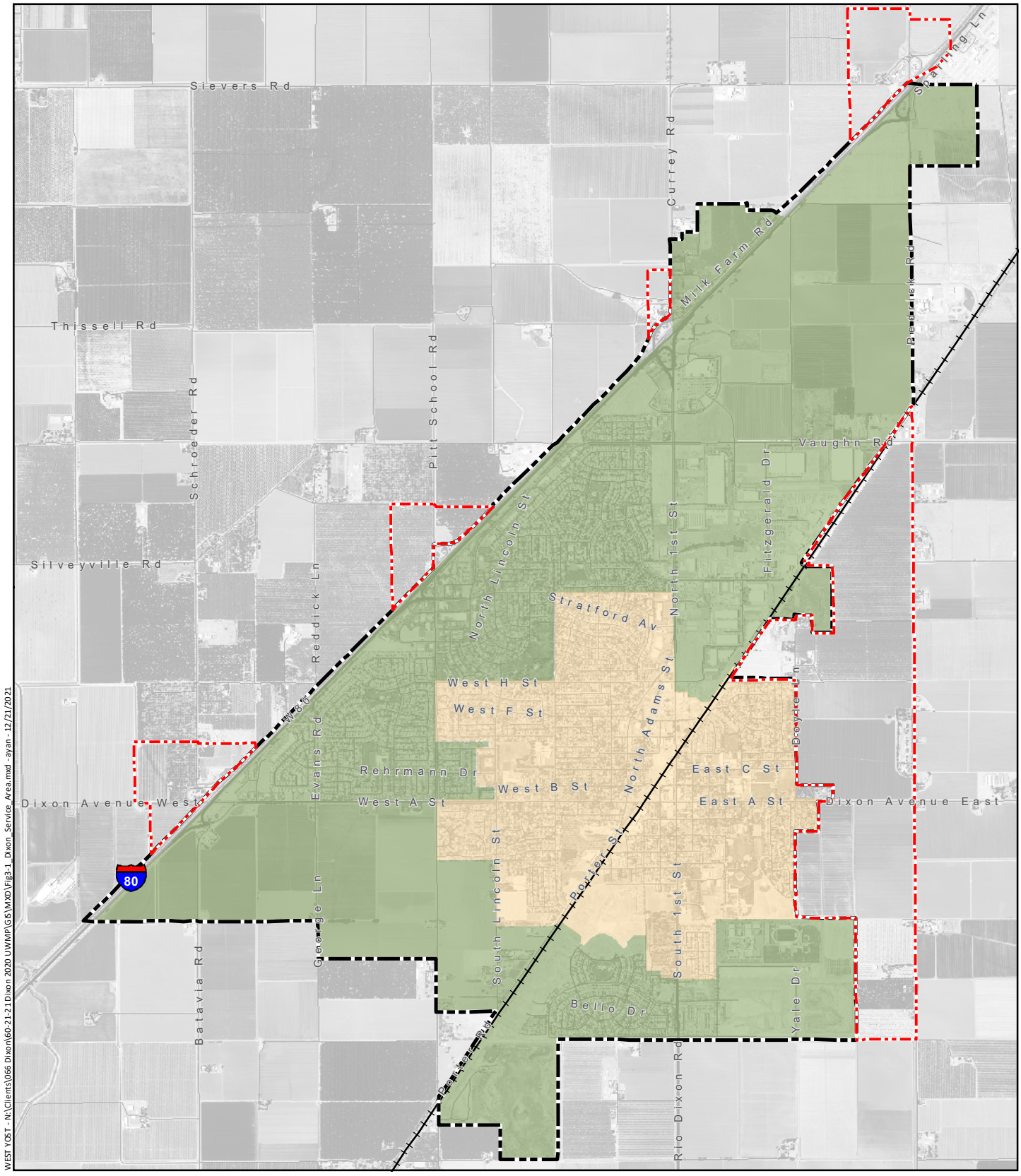
Notes:

(a) School Well capacity is 1,800 gpm however it is limited to 1,100 gpm to avoid draw down issues during peak summer month usage and can be increased to 1,500 gpm during lower demand usage (footnote from Table 2 of City's 2021 Water System Master Plan Update (WSMP Update)).

(b) Watson Well capacity is 1,500 gpm however it is limited to 1,100 gpm. This capacity differs from the capacity listed in Table 2 of the 2021 WSMP Update to reflect actual capacity.

(c) Total Capacity of Active Wells excludes Industrial Well capacity since it is on standby.

The Industrial Well is located in the northeast of the City's water service area, School Well in the west, Watson Ranch Well in the northwest, Park Lane Well in the southeast, and Valley Glen Well in the south. The Homestead Well will be located in the southeastern part of the City's water service area. The locations of the wells are shown on Figure 3-2 (Page 3-4).




WEST YOST - N:\Clients\066 Dixon\60-21-21 Dixon 2020 UWMP\GIS\MXD\Fig3-1_Dixon_Service_Area.mxd - ayan - 12/21/2021

Dixon City Limits
Dixon Sphere of Influence
City Water Service Area
California Water Service Area

N

0 1,500 3,000
Scale in Feet

**Figure 3-1**

**City of Dixon**
**Water Service Area**

**City of Dixon**
2020 Urban Water
Management Plan

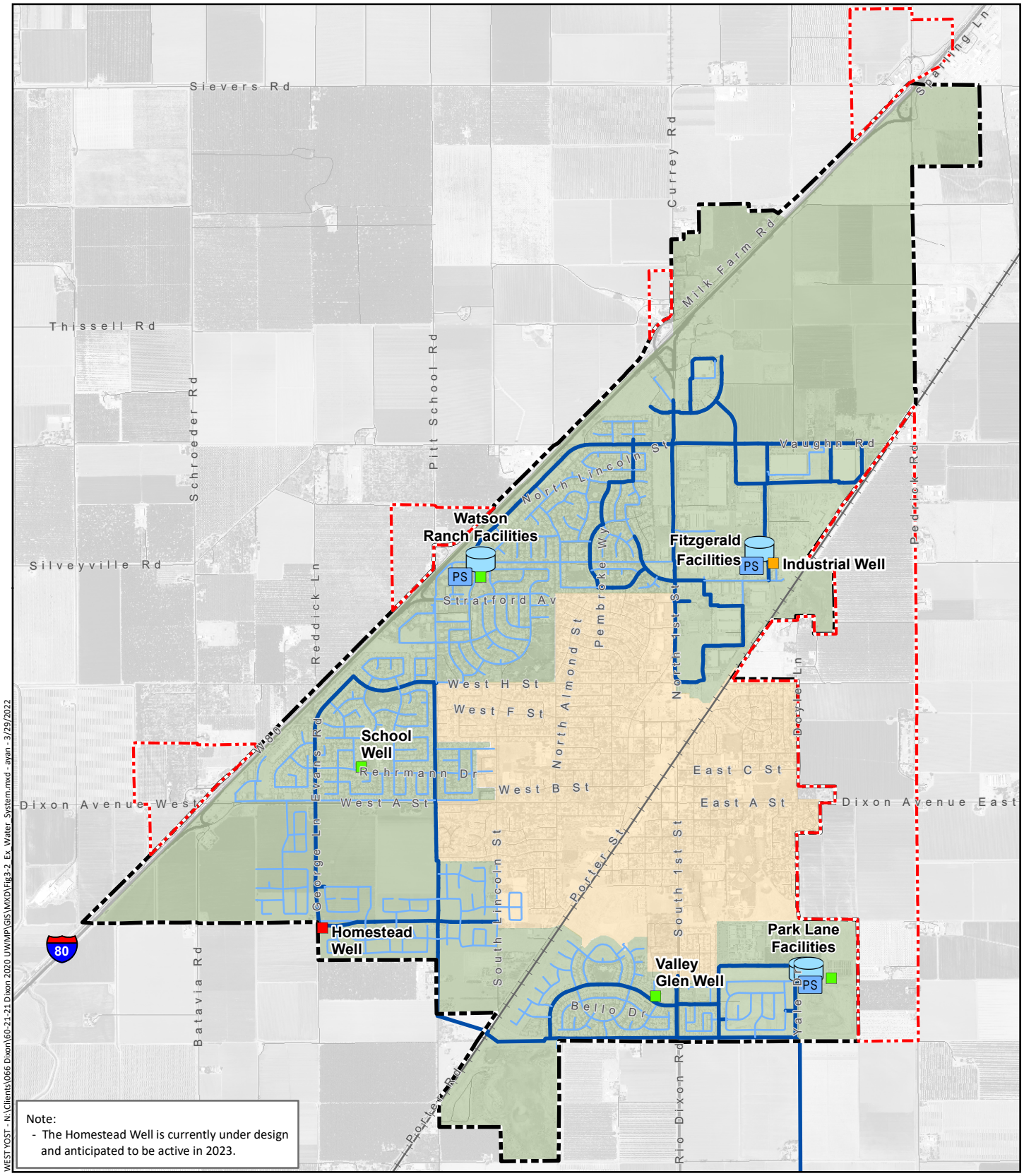



**Figure 3-2**

**Existing Water System**

**City of Dixon**
2020 Urban Water Management Plan

WEST YOST

### 3.3.2 Storage Tanks and Pump Stations

The City has a total of four (4) storage tanks: Park Lane Tank 1 (1 MG), Park Lane Tank 2 (1 MG), Watson Ranch Tank (0.8 MG), and Fitzgerald Tank (1.5 MG). The total storage capacity of the four tanks is approximately 4.3 MG.

A pump station is located at each of the tank sites to pump stored water from the tanks into the distribution system. Park Lane Tank 1 and 2 and Watson Ranch Tank are filled directly from their corresponding well. The Fitzgerald Tank is filled from the distribution system since the Industrial Well is now standby. The pump stations at Watson Ranch Tank and Park Lane Tanks are used to supply the groundwater supply into the distribution system as well as to pump the stored tank volume during high demands. Fitzgerald Tank is fed by the distribution system and used to meet peak demand periods. The City has a total pumping capacity of 8,650 gpm (12.5 MGD) and a total firm capacity of 5,650 gpm (8.1 MGD). The firm pumping capacity assumes the largest pump at each pump station is offline.

The locations of the tanks and pump stations are shown on Figure 3-2 (Page 3-4).

### 3.3.3 Distribution and Transmission Pipelines

The City maintains approximately 45 miles of transmission and distribution system mains ranging in size from 6 to 14 inches in diameter. The majority of the City's water system consists of 8-inch diameter pipelines at approximately 59 percent, followed by 12-inch diameter pipelines at approximately 34 percent. The remaining 7 percent consists of 4-inch, 10-inch, and 14-inch diameter pipelines. The locations of the pipelines are shown on Figure 3-2 (Page 3-4).

## 3.4 SERVICE AREA CLIMATE

The City has a Mediterranean climate. Summers are hot and dry while winters are cold and wet, with an annual average precipitation of approximately 17.5 inches. The climate ranges from summer temperatures occasionally exceeding 100 degrees Fahrenheit (°F) with low humidity, and winter temperatures dropping into the 30 °F range. Based on the historical data obtained from the California Irrigation Management Information System (CIMIS) and the Western Regional Climate Center (WRCC), the City's average monthly temperatures are as low as 37°F and as high as 94°F. Climate data, including temperature and precipitation, were obtained for Davis, California, which is located approximately 9 miles northeast of the City, along I-80.

The average rainfall over the last six years (2015-2020) was 18.7 inches. The region is subject to wide variations in annual precipitation. Water year 2017 (October 2016 through September 2017) and water year 2019 were relatively wet years with 35.3 and 29.4 inches of rainfall respectively, while water year 2018 and 2020 were relatively dry with only 12.7 and 12.4 inches of rain.

Evapotranspiration (ET) describes the combined water lost through evaporation from the soil and surface-water bodies and plant transpiration. In general, the ET is given for turf grass, and then corrected for a specific crop type. Although the City owns its own weather station located at their wastewater treatment facility (Dixon WWTF), this 2020 UWMP uses the local ET data from the nearest CIMIS monitoring station, which is located in Davis, California (Station #6). The historical climate characteristics affecting water management in the City's water service area are shown in Table 3-2.

**Table 3-2. Climate Data Summary**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average $ET_o$, inches[(a)] | 1.3 | 2.1 | 3.7 | 5.5 | 7.2 | 8.2 | 8.4 | 7.4 | 5.7 | 4.2 | 2.1 | 1.3 | **56.9** |
| Average Max Temperature, °F[(b)] | 54.2 | 60.7 | 65.9 | 72.6 | 80.6 | 88.6 | 94.1 | 92.9 | 88.8 | 79.2 | 65.6 | 55.1 | - |
| Average Min Temperature, °F[(b)] | 36.9 | 39.8 | 42.0 | 44.8 | 49.3 | 53.9 | 55.6 | 54.4 | 52.7 | 47.6 | 40.8 | 36.9 | - |
| Average Rainfall, inches[(b)] | 3.8 | 3.2 | 2.4 | 1.2 | 0.5 | 0.2 | 0.0 | 0.0 | 0.2 | 0.8 | 1.9 | 3.3 | **17.5** |

Notes:

(a) California Irrigation Management Information System (CIMIS) Website: www.cimis.water.ca.gov, Station 6 Davis, California (July 1982 to October 2021), Monthly Average $ET_o$ Report, Printed October 2021.

(b) Western Regional Climate Center (WRCC) website: www.wrcc.dri.edu, Station 042294 Davis 2 WSW Exp Farm, California. Period of record: 1/1/1893 to 10/13/2021.

These climate characteristics highly influence the City's water use. As described in Chapter 4, the City's water use in the summer months is significantly higher than that in the winter, reflecting increased water use for irrigation purposes during the hot, dry summers.

## 3.5 SERVICE AREA POPULATION AND DEMOGRAPHICS

The City is experiencing growth within its boundaries. A significant portion of the development is occurring within the City's water service area. On May 18, 2021, the City adopted its General Plan 2040 Update, which is available on its website: www.cityofdixon.us. The GP was used to project the City's water needs.

### 3.5.1 Service Area Population

Because the City's water service area does not align with the City's boundary, the City's current water service area population was estimated using the population data from the City's 2020 Electronic Annual Report (EAR) to the State Water Board, Cal Water's 2020 UWMP, and the City's 2040 GP, adopted May 2021. The City's 2020 service area population is 9,037 as reported in the City's 2020 EAR.

The City's 2040 GP contains the buildout population for the entire City, including both the Cal Water and City water service areas. The 2040 population for the City's water service area was obtained by subtracting Cal Water's 2040 projected population[1], 11,160 people, from the 2040 GP buildout projection, 28,450 people. The 2025 population was projected based on approved developments that are under construction. The interim years between 2025 and 2040 were linearly interpolated. The buildout of the City's GP is anticipated to be 2050. In anticipation of growth in the City's sphere of influence, the 2045

[1] Cal Water. June 2021. *2020 Urban Water Management Plan Dixon District.* Accessed at https://www.calwater.com/docs/uwmp2020/DIX_2020_UWMP_FINAL.pdf on October 21, 2021.

projected population was extrapolated based on the projected growth between 2025 and 2040. The City's current and projected populations for its water service area are shown in Table 3-3.

**Table 3-3. Retail. Population – Current and Projected (DWR Table 3-1)**

| Population Served | 2020[a] | 2025[b] | 2030[c] | 2035[c] | 2040[a] | 2045[d] *(opt)* |
|---|---|---|---|---|---|---|
| | 9,037 | 15,949 | 16,396 | 16,843 | 17,290 | 17,737 |

NOTES:
(a) The City's 2020 service area population was taken from the City's 2020 Electronic Annual Report (EAR) to the State Water Board and the 2040 projection was taken from the City's 2040 GP.
(b) The City's total population projections for 2025 was linearly interpolated and the Cal Water 2025 service area population was then subtracted from the City's total 2025 population projections to obtain the City's 2025 service area populations. The 2025 population includes the addition of the population of the Southwest development area projected to be built out by 2025.
(c) The City's service area population for 2030 and 2035 were linearly interpolated between the City's service area population for 2025 and 2040.
(d) The 2045 projected population was extrapolated based on the growth between 2025 and 2040.

## 3.5.2 Other Social, Economic, and Demographic Factors

The CWC now requires the inclusion of service area socioeconomic information as part of the system description in UWMPs. However, differences in household water use across sociodemographic groups in Dixon have not been studied. Therefore, the following social, economic, and demographic information is being provided to comply with the new CWC requirement. The information was derived from the US Census Bureau's profile of the entire City of Dixon for 2014-2018[2]. Although it provides water service only to a portion of the City, this data is considered representative for the City's water service area.

- The average number of people per household in the five-year period analyzed was 3.28.
- The median household income in Dixon was $77,203, while 12.1 percent of all individuals and 22.5 percent of youth under the age of 18 lived in poverty.
- The average unemployment rate was 7.1 percent.
- The owner-occupied housing unit rate was 68.7 percent, with a median home value of $357,800.
- The median gross rent was $1,386 per month.
- The median age was 34.0 years.
- Of persons 25 years or older in Dixon, 21.7 percent do not have a high school diploma or equivalent, 26.1 percent have a high school diploma or equivalent, 24.5 percent have some

[2] United States Census Bureau, American Community Survey, 2014-2018 ACS 5-Year Data Profile for Dixon, California.

college education but no degree, 10.2 percent have an Associate's degree, and 17.4 percent earned a Bachelor's degree or higher.

- Of persons under 65 years of age, 8.3 percent had a disability and 10.9 percent did not have health insurance.
- 93.7 percent of households had a computer, and 89.0 percent had a broadband internet subscription.
- By race/ethnicity, 69.3 percent of people were White, 2.3 percent were Black, 0.6 percent were American Indian or Alaska Native, 4.2 percent were Asian, 0.5 percent were Hawaiian Native or Pacific Islander, 7.0 percent were two or more races, and 16.2 percent were some other race.
- Of the total City population, 41.9 percent were Hispanic or Latino and 58.1 percent were not Hispanic or Latino.
- 21.0 percent of Dixon residents were foreign born, and 36.8 percent of people age five years and older spoke a language other than English at home.

## 3.6 LAND USES WITHIN SERVICE AREA

This section describes the City's current and projected land uses in its water service area.

### 3.6.1 Current Land Uses

The City's current land use ratios within City limits are as follows: 40 percent undeveloped, 22 percent residential, 12 percent public facilities, 7.5 percent industrial, and 3.6 percent commercial per the City's 2040 GP. The areas specifically within the City's water service area follow a similar breakdown as the General Plan land use designations, with the exception of the Downtown area and areas surrounding Downtown served by Cal Water. The Cal Water service area includes a mixture of low, medium, and high density residential, mixed use, commercial, industrial, and public facilities, and parks/open space.

### 3.6.2 Projected Land Uses

The City's 2040 GP discusses four key growth areas: Downtown, the SR-113/1st Street Corridor, the Northeast Quadrant, and the Southwest Quadrant. Figure 3-3 (Page 3-10) shows the City's projected land use within the City's water service area per the 2040 GP and Figure 3-4 (Page 3-11) shows the four growth areas from the 2040 GP.

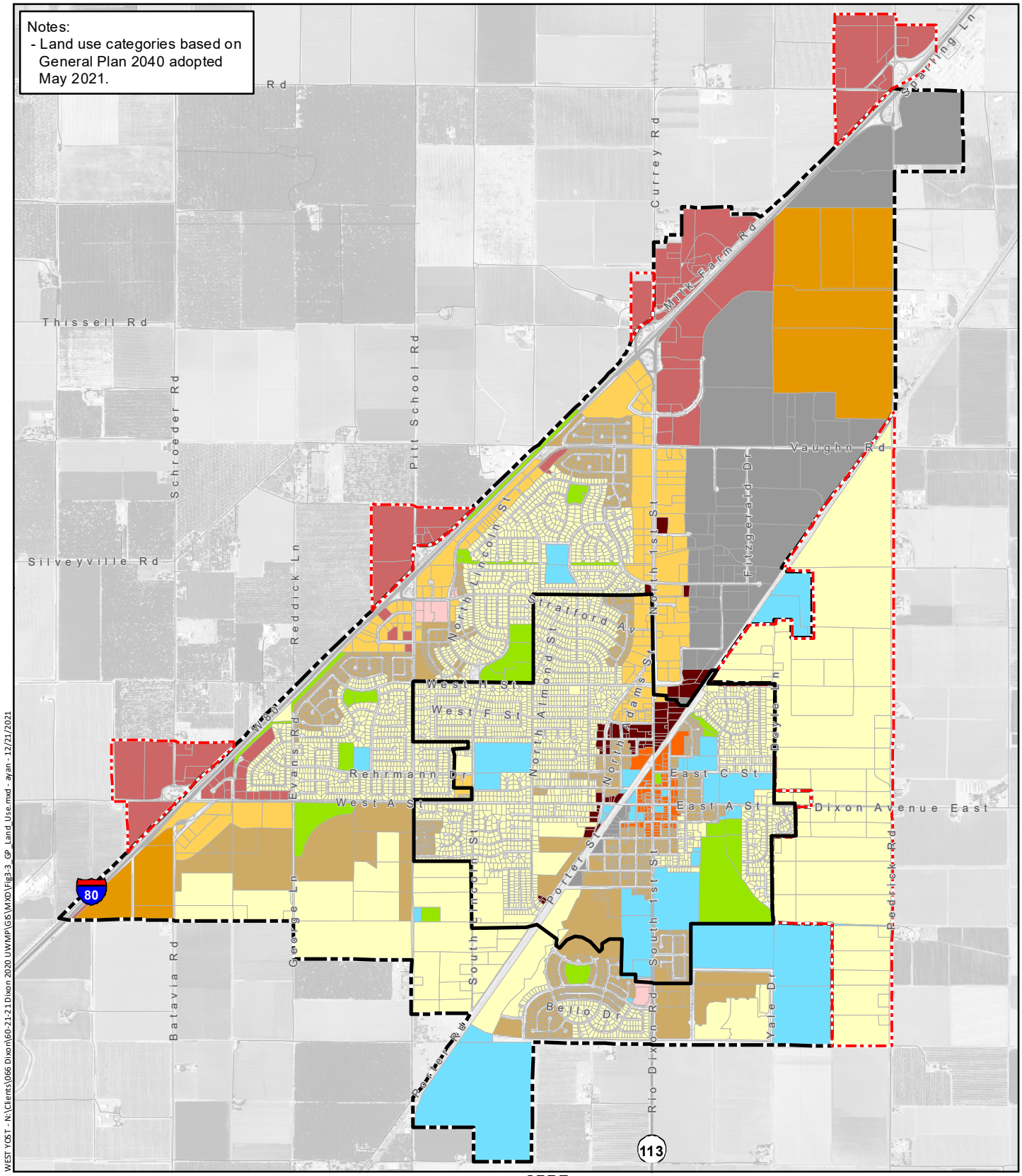
The City's water service area does not serve the Downtown area, which is served by Cal Water as shown in Figure 3-2 (Page 3-4). Downtown, designated as mixed use, will include new retail, commercial, and open space areas for dining and entertainment along with existing civic facilities.

The SR-113/1st Street Corridor, the Northeast Quadrant, and the Southwest Quadrant are within the City's water service area. The SR-113 corridor, designated as mixed use, is projected to be developed into retail, commercial, and residential uses. The Northeast Quadrant is projected to be developed into an employment area with a mix of regional commercial, industrial, and campus mixed use land uses to increase job generation in the City. The Southwest Quadrant will be primarily residential with low and medium density residential land use encompassing majority of the development with some retail and commercial use.

The City is a member of the Association of Bay Area Governments (ABAG) and participates in the Regional Housing Needs Allocation (RHNA) which allocates participating cities and counties their "fair share" of the region's projected housing needs. The RHNA is updated every eight years and provides the housing units that a city or county must plan for within an 8-year time period. The Solano County subregion of ABAG completed and adopted its final RHNA allocation on November 18, 2021.[3] The City's 2023-2031 RHNA allocation is 416 residential units.[4] The City's RHNA allocation is included in the 2040 GP planned land use, and therefore meets the RHNA requirements.

[3] ABAG, Final Regional Housing Needs Allocation (RHNA) Plan: San Francisco Bay Area, 2023-2031, p. 29, December 2021. https://abag.ca.gov/sites/default/files/documents/2021-12/Final_RHNA_Allocation_Report_2023-2031-approved_0.pdf

[4] ABAG Solano County Subregion, 6th Cycle Regional Housing Needs Allocation Final Methodology, Table 1, September 2021. https://www.solanocounty.com/depts/rm/planning/regional_housing_needs_allocation_and_housing_element.asp




**General Plan Land Use**

- Low Density Residential
- Medium Density Residential
- Corridor Mixed Use
- Downtown Mixed Use
- Campus Mixed Use
- Neighborhood Commercial
- Regional Commercial
- Service Commercial
- Industrial
- Public Facilities
- Parks
- Dixon City Limits
- Dixon Sphere of Influence
- California Water Service Area

N

0 1,500 3,000

Scale in Feet

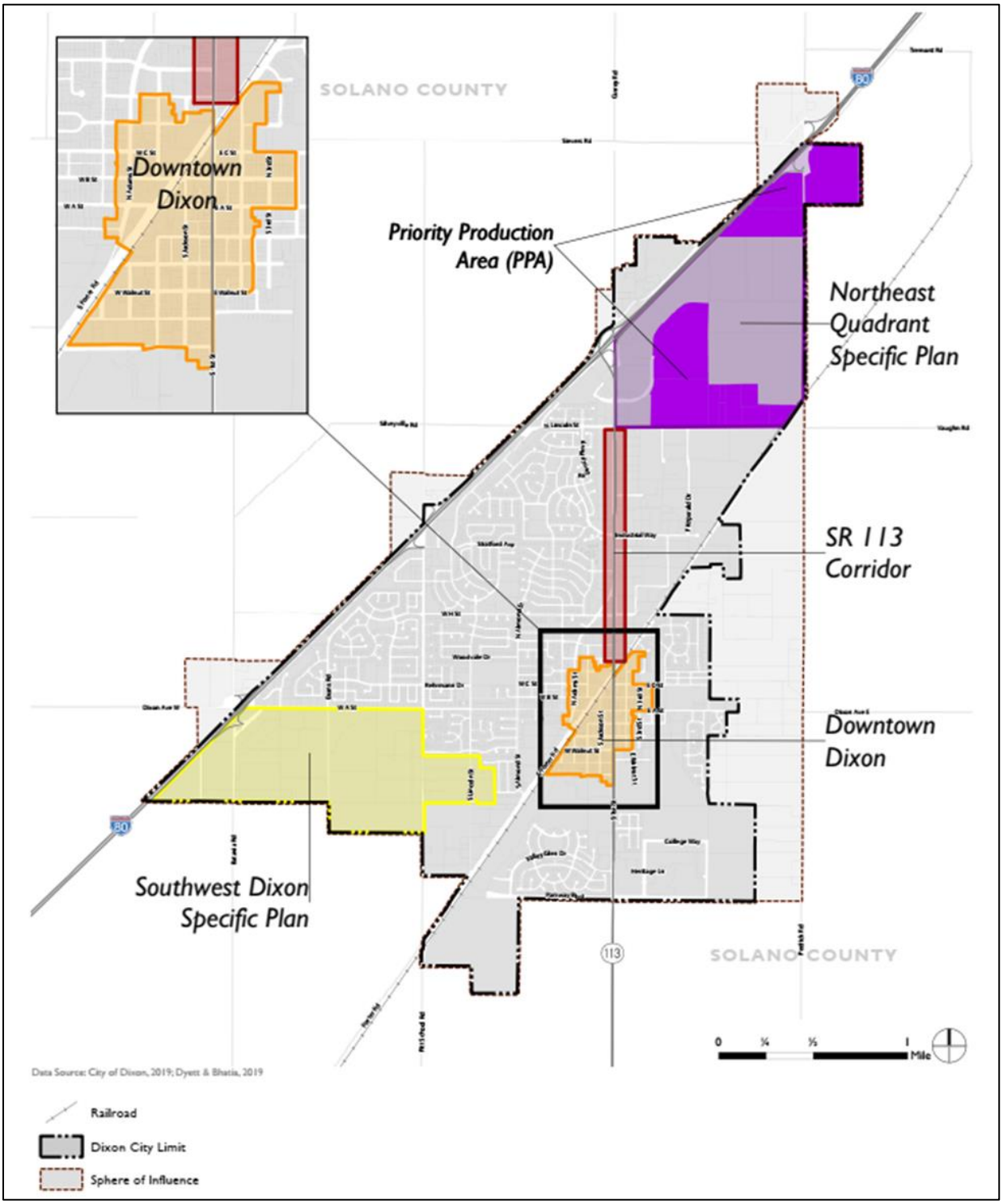
WEST YOST

**Figure 3-3**

**2040 General Plan Land Use**

**City of Dixon**
2020 Urban Water Management Plan

**Figure 3-4. 2040 General Plan Key Growth Areas[5]**




[5] City of Dixon. May 2021.General Plan 2040. *Section 3.3 Historical Growth Pattern.*

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# CHAPTER 4
# Water Use Characterization

This chapter describes and quantifies the City's past, current, and projected potable water use. Water demands are provided by customer sector. Water distribution system water losses, future passive water savings, and low-income household water use are quantified. Water demand projections are based on the projected growth within the City's water service area. Accurately tracking and reporting current water demands allows the City to properly analyze the use of their water resources and conduct good resource planning for the future.

## 4.1 NON-POTABLE VERSUS POTABLE WATER USE

Potable water is water that is safe to drink which typically has had various levels of treatment and/or disinfection. The City provides treated potable water to customers within its water service area from City-owned and operated groundwater wells

Recycled water is municipal wastewater that has been treated to a specified quality for beneficial reuse. The City does not distribute recycled water for use within its water service area.

Raw water is untreated water that is used in its natural state or with minimal treatment. The City uses raw water from wells at several local parks to meet irrigation demands. These wells are not part of the City's water system, and their use is excluded from this 2020 UWMP.

## 4.2 WATER USE BY SECTOR

This section describes the City's past, current, and projected water use by water use sector, as listed in CWC §10631(d) and defined in the DWR Guidebook. These classifications were used to analyze current consumption patterns among the various types of City water customers. Each water use sector is listed and defined below.

- **Single Family Residential:** A single-family dwelling unit. A lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling.
- **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 (CWC 10608.12(d)). For consistency with the City's customer classification system, water use for churches is included under this classification instead of the Institutional and Governmental category.
- **Industrial:** A water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development (CWC 10608.12(h)).
- **Institutional/Governmental:** A water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions (CWC 10608.12(i)). Although the CWC defines church as "Institutional (and Governmental)," church water use is classified as "Commercial" for this 2020 UWMP to remain consistent with the City's customer classification system.

- **Landscape:** Water connections supplying water solely for landscape irrigation. Such landscapes may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation.
- **Other:** Any other water demand that is not adequately described by the water sectors defined above. System water losses are not to be reported in the "Other" category.

Several properties within the City's water service area have private groundwater wells. These wells are not connected to the City's water system and their use is excluded from this 2020 UWMP. The City has noted that these properties may eventually connect to the City's water system or Cal Water's water system should the private wells fail.

The City does not have any current plans to use water for groundwater recharge, saline water intrusion barriers, agricultural irrigation, wetlands, or wildlife habitat.

## 4.2.1 Historical Water Use

The 2015 through 2019 retail water use by sector is summarized in Table 4-1. The City has been fully metered for the years shown in Table 4-1.

**Table 4-1. Historical Water Demand by Water Use Sector, MG**

| Water Use Sector | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Single-Family | 274 | 301 | 302 | 344 | 315 |
| Multi-Family | 24.3 | 25.6 | 26.0 | 27.4 | 28.3 |
| Commercial[(a)] | 51.1 | 53.5 | 52.5 | 55.2 | 66.0 |
| Industrial | 52.3 | 49.4 | 52.1 | 50.7 | 51.2 |
| Institutional/Governmental | 2.32 | 2.70 | 2.48 | 2.32 | 1.99 |
| Landscape | 115 | 132 | 151 | 148 | 146 |
| Other[(b)] | 0.00 | 0.00 | 14.9 | 12.6 | 5.90 |
| Losses[(c)] | - | - | - | - | 28.2 |
| **Total** | **519** | **564** | **601** | **640** | **642** |

Notes:
(a) Church water use is classified as "Commercial" for this 2020 UWMP to remain consistent with the City's customer classification system.
(b) "Other" includes treated water delivered to the City's Wastewater Treatment Facility (WWTF) for treatment process, landscaping, and domestic use.
(c) Verifiable water loss data was available starting in 2019.

## 4.2.2 Current Water Use

At the end of December 2020, the City had approximately 2,930 customer connections. The City surpassed the 3,000$^{th}$ customer connection threshold for classification as an urban water supplier in April 2021 with 3,148 customer connections. The customer connection count does not include fire service connections.

The City does not yet have a full calendar year's actual water demand history as an urban water supplier. As a starting point, actual retail water demand by sector in 2020 is reported in Table 4-2.

**Table 4-2. Retail: Actual Demands for Potable and Non-Potable Water (DWR Table 4-1)**

| Use Type | 2020 Actual | | |
|---|---|---|---|
| **Drop down list** May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool | Additional Description (as needed) | Level of Treatment When Delivered Drop down list | Volume[a,2] |
| Add additional rows as needed | | | |
| Single Family | | Drinking Water | 335 |
| Multi-Family | | Drinking Water | 37 |
| Commercial | See Note (b) | Drinking Water | 60 |
| Industrial | | Drinking Water | 54 |
| Institutional/Governmental | | Drinking Water | 2 |
| Landscape | | Drinking Water | 119 |
| Other | See Note (c) | Drinking Water | 3 |
| Losses | | Drinking Water | 92 |
| | | **TOTAL** | 702 |

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

NOTES:
(a) Volumes are in MG.
(b) Church water use is classified as "Commercial" for this UWMP to remain consistent with the City's customer classification system.
(c) "Other" includes treated water delivered to the WWTF for treatment process, landscaping, and domestic use.

## 4.2.3 Projected Water Use

Demand projections provide the basis for sizing and phasing future water facilities to ensure adequate supply is available to all water customers. In May 2021, the City adopted its 2040 GP. The City subsequently completed a 2021 Water System Master Plan Update (WSMP Update), which is an addendum to the City's 2016 Water System Master Plan (WSMP). The 2021 WSMP Update included updates to the water demand projections, water system evaluations, and recommendations that were previously in the 2016 WSMP.

The 2021 WSMP Update includes updated water demand projections to 2040 and beyond to buildout, assumed to be 2050, using the land use projections adopted in the 2040 GP. The City's 2021 WSMP Update incorporates the most recent and accurate future development estimates and unit water use factors available to develop water demand projections. The projected water demands through 2050 are from the 2021 WSMP Update and are the basis for the projected water demands are summarized in Table 4-3.

The water demand projections shown in Table 4-3 (DWR Table 4-2) were estimated through linear interpolation. The water demand for 2025 was linearly interpolated using the 2021 actual water use and the 2021 WSMP Update water demand projections for 2040. The City has noted that development projects have accelerated since the development of its 2040 General Plan. The water demand projection for 2025 accounts for the accelerated development. The water demand projections between 2025 and 2045 were linearly interpolated using the 2025 projected water demand and the 2021 WSMP Update 2040 and buildout (2050) water demand projections. The City does not provide recycled water services for non-potable water use.

**Table 4-3. Retail: Projected Use for Potable and Non-Potable Water (DWR Table 4-2)**

| Use Type | Additional Description (as needed) | Projected Water Use[a,2] *Report To the Extent that Records are Available* | | | | |
|---|---|---|---|---|---|---|
| **Drop down list** May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool | | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
| Add additional rows as needed | | | | | | |
| Single Family | | 649 | 637 | 625 | 613 | 883 |
| Multi-Family | | 120 | 221 | 322 | 423 | 423 |
| Industrial | | 95 | 148 | 202 | 255 | 255 |
| Commercial | See Note (b) | 233 | 268 | 302 | 337 | 383 |
| Institutional/Governmental | | 5 | 9 | 13 | 17 | 17 |
| Landscape | | 232 | 172 | 113 | 53 | 53 |
| Other | See Note (c) and (d) | 5 | 6 | 8 | 9 | 11 |
| Losses | | 120 | 159 | 198 | 238 | 282 |
| **TOTAL** | | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*

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

NOTES:
(a) Volumes are in MG.
(b) Church water use is classified as "Commercial" for this UWMP to remain consistent with the City's customer classification system.
(c) "Other" includes treated water delivered to the WWTF for treatment process, landscaping, and domestic use.
(d) WWTF demands were projected to increase in proportion with the projected demand increases.

**Table 4-4. Retail: Total Potable and Non-Potable Water Use (DWR Table 4-3)**

| | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
|---|---|---|---|---|---|---|
| Potable Water, Raw, Other Non-potable[(a)] *From Tables 4-1 and 4-2* | 702 | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |
| Recycled Water Demand[(b,1)] *From Table 6-4* | 0 | 0 | 0 | 0 | 0 | 0 |
| Optional Deduction of Recycled Water Put Into Long-Term Storage[2] | | | | | | |
| **TOTAL WATER USE** | 702 | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |

*[1] Recycled water demand fields will be blank until Table 6-4 is complete*

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

NOTES:
(a) Volumes are in MG.
(b) The City does not produce or deliver recycled water.

### *4.2.3.1 20- or 25-Year Planning Horizon*

As previously mentioned, the land use adopted in the 2040 GP was used to update the projected City water demands in the City's 2021 WSMP Update. The 2021 WSMP Update assumes that parcels located within the City's existing water service area will be developed by 2040; the parcels located within the City's sphere of influence (SOI) will develop at a later time and will constitute a buildout of the entire City system.

Unit water demand factors developed in the 2021 WSMP Update were multiplied by the projected developed acreage from the City's 2040 GP to obtain the 2050 projected water demands. The total 2050 projected retail water demand is 2,658 MG.[1]

### *4.2.3.2 Characteristic Five-Year Water Use*

Water Code Section 10635(b) requires urban suppliers to include a five-year drought risk assessment (DRA) in their UWMP. A key component of the DRA is estimating water demands for the next five years (2021-2025) without drought conditions (i.e., unconstrained demand). Chapter 7 details the DRA, but the

[1] City of Dixon. December 2021. 2021 Water System Master Plan Update. *Water Demands.*

five-year demand projections are summarized in Table 4-5. Projected water demands for 2022 through 2024 were estimated as a linear interpolation between the actual 2021 consumption by use type, reported in Table 4-5, and the 2040 projected water use, reported in Table 4-3.

**Table 4-5. Projected Five-Year Water Use for Retail Customers, MG**

| Water Use Sector | 2021[d] | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| Single-Family | 342 | 356 | 370 | 385 | 649 |
| Multi-Family | 39.2 | 59.4 | 79.6 | 100 | 120 |
| Commercial[a] | 51.8 | 66.8 | 82 | 97 | 233 |
| Industrial | 52.2 | 62.9 | 73.6 | 84.3 | 95 |
| Institutional/Governmental | 2.01 | 2.78 | 3.55 | 4.31 | 5.08 |
| Landscape | 125 | 121 | 118 | 114 | 232 |
| Other[b,c] | 3.38 | 3.68 | 3.98 | 4.27 | 4.57 |
| Losses | 88.5 | 96.3 | 104 | 112 | 120 |
| **Total** | **704** | **769** | **835** | **900** | **1,458** |

Notes:
(a) Church water use is classified as "Commercial" for this UWMP to remain consistent with the City's customer classification system.
(b) "Other" includes treated water delivered to the WWTF for treatment process, landscaping, and domestic use.
(c) WWTF demands were projected to increase in proportion with the projected demand increases.
(d) Actual 2021 consumption data (not projected consumption).

## 4.3 DISTRIBUTION SYSTEM WATER LOSSES

System losses are the difference between the actual volume of water treated and delivered into the distribution system and the actual metered consumption. Such apparent losses are always present in a water system due to pipe leaks, unauthorized connections or use, faulty meters, unmetered services such as fire protection and training, and system and street flushing.

The City was not required to track water loss until it became an urban water supplier in 2021. However, the City has recorded the last two previous years of water loss, as presented in Table 4-6. For the 2020 calendar year, the City's water losses were estimated to be approximately 92 MG. These years' water losses have not been audited nor validated in accordance with Title 23 of the California Code of Regulations (CCR) §638.1 - §638.6 as the City was not required to conduct an audit because it was not classified as an urban water supplier until April 2021.

New regulations require retail water suppliers to include potable distribution system water losses for the preceding five years (to the extent records are available). At the time of preparation of this UWMP, DWR and the State Water Board are in the process of adopting water loss standards.

Starting in 2022, when the City has a full year's record of urban water use, it will conduct a water loss audit consistent with CWC requirements.

**Table 4-6. Retail Last Five Years of Water Loss Audit Reporting (DWR Table 4-4 Retail)**

| Reporting Period Start Date (mm/yyyy) | Volume of Water Loss [a,b,1,2] |
|---|---|
| 01/2019 | 28 |
| 01/2020 | 92 |
| 01/2021 | 88 |
| [1] *Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* [2] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.* | |
| NOTES: (a) Volumes are in MG. (b) The volumes of water loss provided have not been audited or validated because the City was not classified as an urban water supplier until 2021. | |

## 4.4 ESTIMATING FUTURE WATER SAVINGS

The water use projections presented in Table 4-4 are based on land use projections within the City's water service area. Additional water savings from codes, standards, ordinances, or transportation and land use plans, also known as passive savings, can decrease the water use for new and future customers. As indicated in Table 4-7 below, these potential passive savings have not been included in the City's water demand projections to be conservative.

**Table 4-7. Retail Only Inclusion in Water Use Projections (DWR Table 4-5 Retail)**

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

## 4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

This UWMP considers current adopted codes, plans, and other policies or laws to estimate water savings projections. As indicated in Table 4-7, it includes projected water use for lower income households in the City's water service area.

A lower income household has an income below 80 percent of an area median income, adjusted for family size. Projected water demands for low-income, single-family, and multi-family residential water uses are included in the total water demands described in Section 4.2.

The City's 2015 - 2023 Housing Element Update includes the number of existing lower income households. The Housing Element indicates approximately 53 percent of the City's households are Low Income (19 percent), Very-Low Income (23 percent), or Extremely-Low Income (11 percent).[2] Assuming that gross per capita water demand is equal for all residential housing units regardless of income, an estimated 372 MG (53 percent) of the City's residential water deliveries in 2020 (702 MG) were to lower income households. The City assumes that lower income households will continue to represent approximately 53 percent of the City's total residential customers through 2040 but is subject to change as demographic changes occur.

## 4.6 CLIMATE CHANGE CONSIDERATIONS

Climate change has the potential to alter local climatic patterns and meteorology. As described in the City's 2040 General Plan, Cal-Adapt predicts the average annual temperature to be 5 degrees hotter in Dixon between 2040 and 2060. Heat can already be dangerous in Dixon, with July temperatures often rising above 100 degrees, and hotter temperatures could present serious health risks to residents. [3]

The City's future water demand and use patterns may be impacted by climate change. Warmer temperatures are expected to increase landscaping and irrigation demand and lengthen the growing season. In addition, climate change may increase the frequency and intensity of wildfires, which would increase water demands for firefighting. The water demand projections included in this 2020 UWMP reflect anticipated increases in demands, along with current and on-going water use efficiencies and water conservation by the City's water customers.

California State law, in SB 379, requires cities to identify local risks arising from climate change. The City is not subject to risks from sea level rise, but climate change-related risks arise mainly from increased heat and reduced rainfall, which could lead to more drought and increased fire risk. More extreme and unpredictable weather would also threaten the agricultural sector through unseasonable weather, frosts, heat, and loss of important pollinators.[3]

Solano County adopted the Solano County Climate Action Plan (CAP) in 2011 to identify how the County and the broader community can reduce greenhouse gas emissions (GHGs). The CAP identifies strategies and actions to adapt to the effects of climate change. Example of strategies and actions include planning

[2] City of Dixon. February 2015. Housing Element Update 2015 – 2023. *Table II-12 Household Income.*

[3] City of Dixon. May 2021. General Plan 2040. *Chapter 2 Natural Environment Section 5 - Community Resilience*.

for mixed-use developments that encourage walking and biking, use of public transit, or water conservation measures.

As discussed in the April 2021 Final Environmental Impact Report (EIR) for the City's 2040 GP, the City shall adopt and begin to implement a CAP within a goal of 18 months, but no later than 36 months, of adopting the 2040 GP. The CAP will lay out a series of goals, policies, and actions to reduce GHG emissions to a level that is consistent with State GHG reduction goals. Some examples of these actions include sourcing a specific percentage of the City's power through renewable sources, installing a specific length of bicycle lanes, or installing greywater systems in a specific percentage of homes in Dixon.[4]

The potential impacts of climate change on the City's water supplies are described in Chapter 6.

[4] City of Dixon. April 2021. Final Environmental Impact Report for the City of Dixon General Plan 2040. *Chapter 2: Public Comments and Responses.*

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# CHAPTER 5
# SB X7-7 Baselines, Targets, and 2020 Compliance

In November 2009, SB X7-7, the Water Conservation Act of 2009, was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addressed both urban and agricultural water conservation. The legislation set a goal of achieving a 20 percent statewide reduction in urban per capita water use by December 31, 2020 (i.e., "20 by 2020"). In order to meet the urban water use target requirement, each retail supplier was required to determine its baseline water use, as well as its target water use for the year 2020. Water use is measured in gallons per capita per day (GPCD).

## 5.1 OVERVIEW AND BACKGROUND

**The City was not defined as an urban water supplier until April 2021 when it connected its 3,000th customer. Therefore, the City was not required to establish and meet baselines and targets for daily per capita water use, nor required to complete the SB X7-7 Verification Forms.** However, the City is required to provide an assessment of present and proposed programs and policies that will help reduce water use. A discussion of the City's programs and policies for water conservation is provided in Chapter 9 Demand Management Measures of this plan.

In this Chapter, the tables required to demonstrate 2020 target reduction and compliance with the urban water use target requirement are intentionally left blank because the City was not yet an urban water supplier during the term of compliance to SB X7-7. The SB X7-7 Compliance Form, also left intentionally blank, is included as Appendix E in this plan.

## 5.2 GENERAL REQUIREMENTS FOR BASELINE AND TARGETS

SB X7-7 required each urban water retailer to determine its baseline daily per capita water use over a 10-year or 15-year baseline period. The 10-year baseline period is defined as a continuous 10-year period ending no earlier than December 31, 2004 and no later than December 31, 2010. SB X7-7 also defined that for those urban water retailers that met at least 10 percent of their 2008 water demand using recycled water, the urban water retailers can extend the baseline GPCD calculation for a maximum of a continuous 15-year baseline period, ending no earlier than December 31, 2004 and no later than December 31, 2010.

SB X7-7 and DWR provided four different methods for calculation of an urban water retailer's 2020 target. Three of these methods are defined in Water Code Section 10608.20(a)(1), and the fourth method was developed by DWR. The 2020 water use target may be calculated using one of the following four methods:

- **Method 1**: 80 percent of the City's base daily per capita water use
- **Method 2**: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and commercial, industrial, and institutional/governmental uses
- **Method 3**: 95 percent of the applicable State hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan
- **Method 4**: An approach that considers the water conservation potential from: 1) indoor residential savings, 2) metering savings, 3) commercial, industrial, and institutional/governmental savings, and 4) landscape and water loss savings

Urban water retailers chose one of the four methods above to calculate the 2020 target as part of the 2010 UWMPs and had the option to update the 2020 target during the 2015 UWMP. The City was not required to prepare a 2010 or 2015 UWMP. Therefore, the City was not required to calculate and meet a 2020 water use target.

## 5.3 SERVICE AREA POPULATION

To correctly calculate its compliance year water use, GPCD, water retailers must determine the population that it served in 2020. However, since the City is not required to calculate its compliance year GPCD, **Table 5-1 (SB X7-7 Table 2) and Table 5-2 (SB X7-7 Table 3) have been left intentionally blank**.

**Table 5-1. Method for Population Estimates**
**(SB X7-7 Table 2)**

| Method Used to Determine Population[a,b] (may check more than one) | |
|---|---|
| ☐ | **1. Department of Finance** (DOF) or **American Community Survey** (ACS) |
| ☐ | **2. Persons-per-Connection Method** |
| ☐ | **3. DWR Population Tool** |
| ☐ | **4. Other**<br>DWR recommends pre-review |
| NOTES:<br>(a) The City is not subject to SB X7-7 requirements since the City officially became an urban water supplier in 2021.<br>(b) This table is left intentionally blank. | |

**Table 5-2. Service Area Population**
**(SB X7-7 Table 3)**

| Year | | Population |
|---|---|---|
| 10 to 15 Year Baseline Population[a,b] | | |
| Year 1 | 0 | |
| Year 2 | | |
| Year 3 | | |
| Year 4 | | |
| Year 5 | | |
| Year 6 | | |
| Year 7 | | |
| Year 8 | | |
| Year 9 | | |
| Year 10 | | |
| *Year 11* | | |
| *Year 12* | | |
| *Year 13* | | |
| *Year 14* | | |
| *Year 15* | | |
| 5 Year Baseline Population | | |
| Year 1 | 0 | |
| Year 2 | | |
| Year 3 | | |
| Year 4 | | |
| Year 5 | | |

NOTES:
(a) The City is not subject to SB X7-7 requirements since the City officially became an urban water supplier in 2021.
(b) This table is left intentionally blank.

## 5.4 GROSS WATER USE

Annual gross water use, as defined in CWC §10608.12 (h), is the water that enters the City's distribution system over a 12-month period (calendar year) with certain exclusions. Although the City would have annual gross water use for each year in the previous baseline periods, the City was not required to report this annual gross water use data because the City did not become an urban water supplier until 2021.

## 5.5 BASELINES AND TARGETS SUMMARY

Daily per capita water use is reported in GPCD. Annual gross water use is divided by annual service area population to calculate the annual per capita water use for each year in the baseline periods. However, as discussed in previous sections, the City is not subject to SB X7-7 requirements. **Table 5-3 showing the City's baseline and targets summary is left intentionally blank.**

**Table 5-3. Retail Supplier: Baseline and Targets Summary (DWR Table 5-1)**

| Baseline Period[a,b] | Start Year * | End Year * | Average Baseline GPCD* | Confirmed 2020 Target* |
|---|---|---|---|---|
| 10-15 year | | | | |
| 5 Year | | | | |
| **All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)* | | | | |
| NOTES:<br>(a) The City is not subject to SB X7-7 requirements since the City officially became an urban water supplier in 2021.<br>(b) This table is left intentionally blank. | | | | |

## 5.6 2020 COMPLIANCE DAILY PER CAPITA WATER USE

The City is not required to meet 2020 daily per capita water use compliance and **Table 5-4 is left intentionally blank. The complete set of SB X7-7 compliance tables, included in Appendix E, are left intentionally blank.**

**Table 5-4. Retail Supplier: 2020 Compliance (DWR Table 5-2)**

| 2020 GPCD | | | 2020 Confirmed Target GPCD* | Did Supplier Achieve Targeted Reduction for 2020? Y/N |
|---|---|---|---|---|
| Actual 2020 GPCD* | 2020 TOTAL Adjustments* | Adjusted 2020 GPCD* *(Adjusted if applicable)* | | |
| | | | | |
| **All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)* | | | | |
| NOTES:<br>(a) The City is not subject to SB X7-7 requirements since the City officially became an urban water supplier in 2021.<br>(b) This table is left intentionally blank. | | | | |

As detailed in DWR's *Methodologies* document, adjustments are allowed that can be made to an agency's gross water use in 2020 for unusual weather, land use changes, or extraordinary institutional water use. Since the City is not subject to SB X7-7 requirements, the adjustments allowed by Water Code Section 10608.24 do not pertain to the City.

## 5.7 REGIONAL ALLIANCE

The City did not participate in a regional alliance for this 2020 UWMP.

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# CHAPTER 6
# Water Supply Characterization

This chapter characterizes the City's water supply portfolio. Currently available water supplies, as well as future anticipated water supplies, are described and quantified. The management of each supply in correlation with other supplies are discussed. Potential effects of climate change and regulations are also discussed. The energy intensity required to treat and distribute the City's water supply within the City's water service area is also provided.

## 6.1 WATER SUPPLY ANALYSIS OVERVIEW

The City's existing water supply comes solely from City-owned and operated groundwater wells throughout the City's water service area. The City's existing water system is shown on Figure 3-2 (Page 3-4).

In this section, the management of the groundwater supply is discussed. Anticipated availability of the City's water supplies under a normal water year is provided in this chapter. The availability of the City's water supplies under a single dry year and a drought lasting five years, as well as more frequent and severe periods of drought, are described in detail in Chapter 7 of this UWMP, along with the basis of those estimates.

## 6.2 WATER SUPPLY CHARACTERIZATION

### 6.2.1 Purchased or Imported Water

The City does not currently nor plans to purchase or import water.

### 6.2.2 Groundwater

As described in Chapter 3, the City'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 City and is a part of the Sacramento Valley Basin, as shown on Figure 6-1 (Page 6-2). 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 on 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.

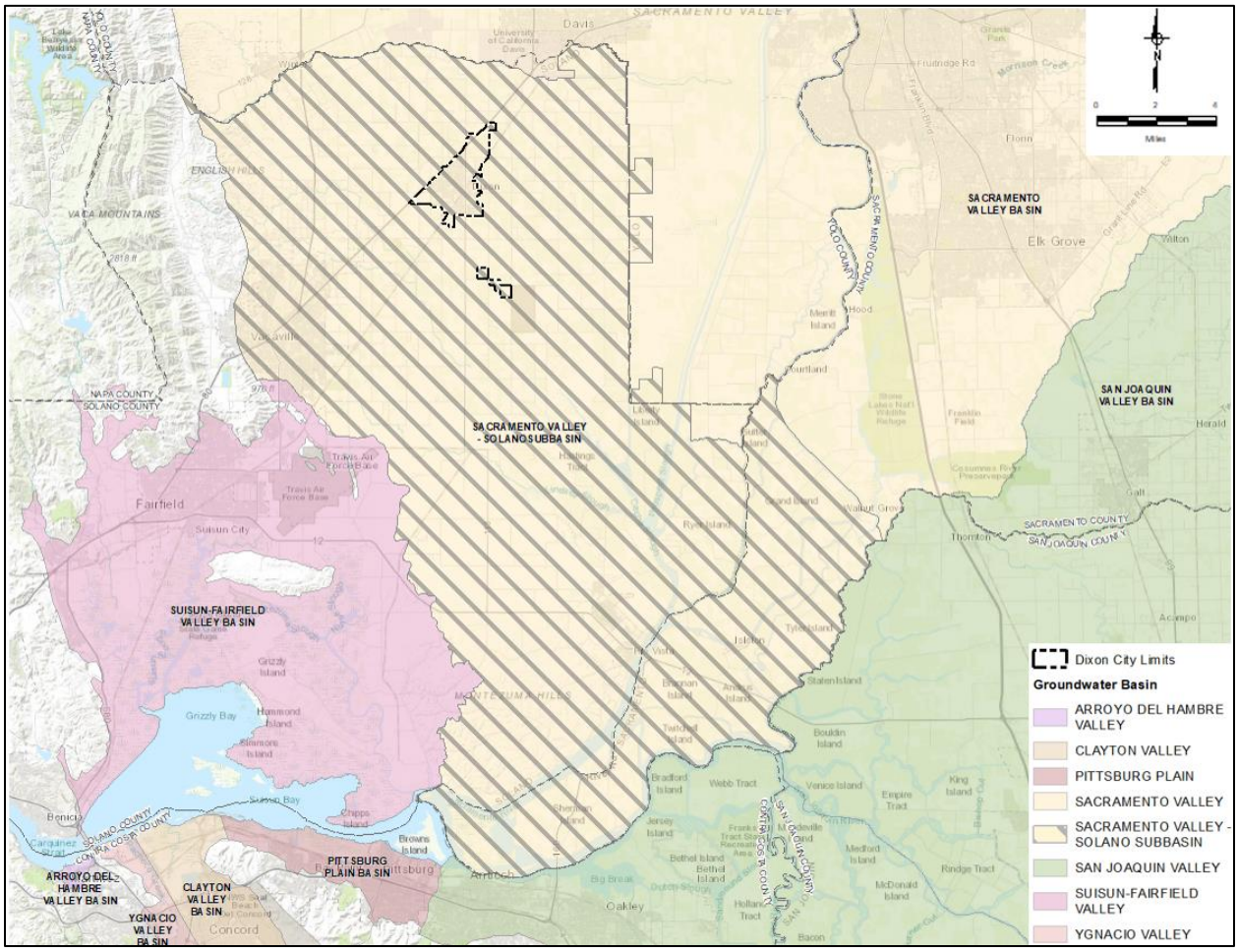


**Figure 6-1. Sacramento Valley Basin – Solano Subbasin – DWR Defined Boundary**

The City 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 (5) GSAs to manage the groundwater basin. The following sections describe the groundwater basin management, historical groundwater use, and projected groundwater use.

### *6.2.2.1 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 quiet title respecting rights to extract or store groundwater or an action brought to impose physical solution on a basin.[1]The City's 2016 WSMP describes the historical management of the Solano Subbasin before the passage of SGMA. Prior to the completion of the Solano

[1] Solano Subbasin. Solano Subbasin GSA. Solano Collaborative. November 2021. Solano Subbasin Groundwater Sustainability Plan. Glossary.

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.[2]

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 variations in response to climatic conditions.

SGMA, a three-bill legislative package composed of AB 1739 (Dickinson), SB 1168 (Pavley), 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 City 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, and Cal Water Dixon. The Joint Powers Agreement, effective June 8, 2017, created the Solano GSA.

The Solano Subbasin GSA is part of the Solano Collaborative which is made up of a total of five (5) GSAs located in the Solano Subbasin. The five GSAs include the following:

- Solano Subbasin GSA
- City of Vacaville GSA
- Northern Delta GSA
- Sacramento County GSA
- Solano Irrigation District GSA

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

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.

### *6.2.2.2 Groundwater Use – Past Five Years*

The City has historically relied solely on groundwater from the Solano Subbasin to meet its water demands. The volume of groundwater pumped over the last five years is summarized in Table 6-1.

**Table 6-1. Retail-Groundwater Pumped in Last Five Years (DWR Table 6-1)**

| | | | | | | |
|---|---|---|---|---|---|---|
| ☐ | Supplier does not pump groundwater.<br>The supplier will not complete the table below. | | | | | |
| ☐ | All or part of the groundwater described below is desalinated. | | | | | |
| Groundwater Type<br>***Drop Down List***<br>*May use each category multiple times* | Location or Basin Name | 2016* | 2017* | 2018* | 2019* | 2020* |
| *Add additional rows as needed* | | | | | | |
| Alluvial Basin | Solano Basin[(a)] | 564 | 601 | 640 | 642 | 702 |
| | **TOTAL** | 564 | 601 | 640 | 642 | 702 |
| **** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.* | | | | | | |
| NOTES:<br>(a) Volumes are in MG. | | | | | | |

### *6.2.2.3 Groundwater Use – Projected*

The City plans to use groundwater in the future to meet its demands. Table 6-2 summarizes the projected water supply through 2045. The projected water supply is equal to the projected water demand summarized in Table 4-3.

**Table 6-2. Groundwater Supplies – Projected**

| Groundwater Type | Location or Basin Name | Projected Water Supply Volume [a, b] | | | | |
|---|---|---|---|---|---|---|
| | | 2025 | 2030 | 2035 | 2040 | 2045 |
| Alluvial Basin | Solano Subbasin | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |

Notes:

(a) Volumes are in MG.

(b) Projected groundwater supply is equal to the projected water demand. The City's 2021 WSMP Update contains projected water demand for 2040 and 2050 (buildout). The projected water supply for 2025 was linearly interpolated between 2021 actual supply and 2040 projected water supply. It also includes additional development projects. The City has noted that the timing of development projects has accelerated since the finalization of the 2040 General Plan. Projected water supplies for 2030 and 2035 were linearly interpolated between the 2025 and 2040 projected water supply. Projected water supply for 2045 was linearly interpolated between 2040 and 2050 projected water supply.

## 6.2.3 Surface Water

The City does not currently use or plan to use surface water. Per the Solano Subbasin GSP, the primary surface water bodies within the subbasin include Putah Creek, Lake Berryessa, and waterways within the Delta (Sacramento River, San Joaquin River, North Mokelumne River, and various sloughs[3]. The Solano Subbasin GSP evaluated the interconnection between surface water and groundwater within the Solano Subbasin. Surface waterways can either gain flow from discharging groundwater or recharge groundwater through seepage. Areas where the groundwater is found close to the surface may suggest a direct connection between the groundwater and surface water. In areas where the groundwater is found at depths greater than 20 feet, the groundwater is more likely to be disconnected from the surface water. The Solano Subbasin GSP indicates that surface water and groundwater is most likely disconnected under the City.

## 6.2.4 Stormwater

The City does not currently use or plan to use stormwater for beneficial reuse.

## 6.2.5 Wastewater and Recycled Water

The City is responsible for the collection, treatment, and disposal of wastewater within the City limits. The City operates the wastewater treatment facility (Dixon WWTF), which is located south of the City. Currently, no wastewater is recycled for use within the City limits.

### *6.2.5.1 Recycled Water Coordination*

The City does not currently use recycled water nor plans to use recycled water for beneficial use.

### *6.2.5.2 Wastewater Collection, Treatment, and Disposal*

The City provides wastewater services within the City limits. In this section, the City's collection system, treatment, and disposal services are described.

[3] Solano Subbasin. Solano Subbasin GSA. Solano Collaborative. November 2021. Solano Subbasin Groundwater Sustainability Plan. Section 3.3.7 Interconnected Surface Water.

### 6.2.5.2.1 Wastewater Collected Within Service Area

The City is served by a system of gravity sewers, lift stations, and force mains to collect wastewater. The collection system transports wastewater to the Dixon WWTF, located in the southern portion of the City. Substantially all of the City is served by the wastewater collection system, providing service to a population to of approximately 19,000 persons, including the Cal Water water service area.[4] In 2020, the City collected 410 MG (equal to 1,258 acre-feet per year) of wastewater within the City limits. Even though the wastewater collected from the Cal Water water service area is not metered separately, Cal Water estimates that 67 percent of the wastewater collected by the City is from its water service area.[5] Thus, 33 percent of the wastewater collected within the City limits is estimated to be from the City's water service area.

A summary of the wastewater generated in the City's water service area is provided in Table 6-3 and excludes the volume of wastewater collected from Cal Water service area.

**Table 6-3. Retail – Wastewater Collected Within City's Water Service Area in 2020 (DWR Table 6-2)**

| | |
|---|---|
| ☑ | There is no wastewater collection system. The supplier will not complete the table below. |
| 100 | Percentage of 2020 service area covered by wastewater collection system *(optional)* |
| 100 | Percentage of 2020 service area population covered by wastewater collection system *(optional)* |

| Wastewater Collection | | | Recipient of Collected Wastewater | | | |
|---|---|---|---|---|---|---|
| Name of Wastewater Collection Agency | Wastewater Volume Metered or Estimated? *Drop Down List* | Volume of Wastewater Collected from UWMP Service Area 2020[(a,b)] * | Name of Wastewater Treatment Agency Receiving Collected Wastewater | Treatment Plant Name | Is WWTF Located Within UWMP Area? *Drop Down List* | Is WWTF Operation Contracted to a Third Party? *(optional)* *Drop Down List* |
| City of Dixon | Estimated | 135 | City of Dixon | Wastewater Treatment Facility | No | No |
| **Total Wastewater Collected from Service Area in 2020:** | | 135 | | | | |

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

NOTES:
(a) Volumes are in MG.
(b) The City's wastewater service area is larger than its water service area, as it includes the Cal Water water service area. The City collected 410 MG in 2020. According to Cal Water's 2020 UWMP, 67 percent of wastewater influent into the WWTF is from its service area. The remaining 33 percent of wastewater influent is assumed to come from the City's water service area.

[4] United States Census Bureau. April 2020. *Quick Facts Dixon City, California*. Assessed at https://www.census.gov/quickfacts/dixoncitycalifornia on October 21, 2021.

[5] California Water Service. June 2021. 2020 Urban Water Management Plan - Dixon District.

## Table 6-4. Retail – Wastewater Treatment and Disposal Within Area in 2020 (DWR Table 6-3)

| ☐ | **No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wastewater Treatment Plant Name | Discharge Location Name or Identifier | Discharge Location Description | Wastewater Discharge ID Number *(optional)* [2] | Method of Disposal ***Drop down list*** | Does This Plant Treat Wastewater Generated Outside the Service Area? ***Drop down list*** | Treatment Level ***Drop down list*** | **2020 volumes** [1, a] | | | | |
| | | | | | | | Wastewater Treated[(c)] | Discharged Treated Wastewater[(c)] | Recycled Within Service Area | Recycled Outside of Service Area | Instream Flow Permit Requirement |
| Dixon WWTF[(b)] | Land Percolation and Evaporation | Percolation Ponds | R5-2014-0098 | Percolation ponds | Yes | Secondary, Undisinfected | 410 | 399 | 0 | 0 | - |
| | | | | | | **Total** | 410 | 399 | 0 | 0 | 0 |

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

NOTES:
(a) Volumes are in MG.
(b) The City's wastewater service area is larger than its water service area, as it includes the Cal Water water service area. The Dixon WWTF is located to the south of the City and is outside both the City water service area and Cal Water water service area.
(c) The difference between the wastewater treated and the discharged treated wastewater is approximately 11 MG is effluent waste activated sludge and was sent back to the sludge stabilization basins for further treatment under aerobic digestion.

## Table 6-5. Retail-Current and Projected Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4R)

| | |
|---|---|
| ☑ | Recycled water is not used and is not planned for use within the service area of the supplier[(a)]. The supplier will not complete the table below. |
| Name of Supplier Producing (Treating) the Recycled Water: | |
| Name of Supplier Operating the Recycled Water Distribution System: | |
| Supplemental Water Added in 2020 (volume) *Include units* | |
| Source of 2020 Supplemental Water | |

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

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

NOTES:
(a) The City does not currently or plan to use recycled water for beneficial use. This table left intentionally blank.

**Table 6-6. Retail. 2015 Recycled Water Use Projection Compared to 2020 Actual (DWR Table 6-5R)**

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

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

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

NOTES:
(a) The City does not currently or plan to use recycled water for beneficial use. This table left intentionally blank.

**Table 6-7. Methods to Expand Future Recycled Water Use (DWR Table 6-6)**

| | |
|---|---|
| ☑ | Supplier does not plan to expand recycled water use in the future[(a)]. Supplier will not complete the table below but will provide narrative explanation. |
| 6-9 | Provide page location of narrative in UWMP |

| Name of Action | Description | Planned Implementation Year | Expected Increase in Recycled Water Use * |
|---|---|---|---|
| | | **Total** | 0 |

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

NOTES:
(a) The City does not currently or plan to use recycled water for beneficial use. This table left intentionally blank.

## 6.2.6 Desalinated Water

Desalination is the process of removing dissolved minerals from brackish or saltwater to produce freshwater that can be used for municipal needs such as drinking water and industrial uses. It is one of several elements that may be included in a community's water supply portfolio.

The City currently has no need to develop desalinated water supply sources for its long-term supply. Thus, the City has not included desalinated water in planning for its future water supply sources.

## 6.2.7 Water Exchanges and Transfers

Water exchanges or transfers between willing sellers and willing buyers supplement water supplies in dry times and move water to places of critical need. The City has a formal emergency water supply agreement with Cal Water (See Appendices to Appendix F - Water Shortage Contingency Plan). In anticipation of an emergency or disaster, water can be transferred through the interconnections between the two water systems.

The City does not plan to pursue water resource exchanges or transfers during this UWMP planning period unless there is an emergency or disaster. The City will continue to rely on its groundwater supply.

## 6.2.8 Future Water Projects

Water supply projects are recommended in the 2021 WSMP Update, an addendum to the 2016 WSMP, and are based on projected water demands and results from the existing and future water system capacity evaluations that were performed as part of the master plan update effort. The 2021 WSMP Update defines near-term as 2040 and buildout as 2050. The recommendations include rehabilitating the existing School Well and constructing new wells by near-term and buildout. The recommended projects would also replace the lost supply capacity of the Industrial Well, which is now on standby due to excessive sanding issues and water quality concerns.

The 2021 WSMP Update identified near-term improvements to the existing School Well. Due to the accelerated developments within the City's water service area, near-term improvements to the School Well have occurred sooner than projected. Improvements to the School Well are substantially complete and the well is anticipated to come online in 2022. The well depth was increased to add an additional capacity of 450 gpm to the City's water supply portfolio.

The recommended projects may be implemented by the City as the need arises and as funding is available. Table 6-8 summarizes the recommended groundwater projects to increase water supply.

**Table 6-8. Retail. Expected Future Water Supply Projects or Programs (DWR Table 6-7R)**

| | |
|---|---|
| ☐ | No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below. |
| ☐ | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. |
| 6-12 | Provide page location of narrative in the UWMP |

| Name of Future Projects or Programs | Joint Project with other suppliers? | | Description (if needed) | Planned Implementation Year | Planned for Use in Year Type | Expected Increase in Water Supply to Supplier[(a)]* |
|---|---|---|---|---|---|---|
| | *Drop Down List (y/n)* | *If Yes, Supplier Name* | | | *Drop Down List* | *This may be a range* |
| *Add additional rows as needed* | | | | | | |
| Near-Term New Wells[(b)] | No | | Construct 3 additional wells | By 2040 | All Year Types | 2,365 |
| Buildout Improvements to Existing Wells[(b)] | No | | Improvements to existing School Well | By 2050 | All Year Types | 210 |
| Buildout New Wells[(b)] | No | | Construct 2 additional wells | By 2050 | All Year Types | 1,577 |

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

NOTES:
(a) Volumes are in MG.
(b) Water supply projects are recommended groundwater projects per the City's 2021 WSMP Update (see Table 10) to meet projected water demands and replace lost supply capacity from the Industrial Well. The Industrial Well is now on standby due to excessive sanding issues and other water quality concerns. The recommended projects may be implemented by the City as the need arises and as funding is available.

Per the City's 2016 WSMP, the City may want to begin exploring the possibility of using its surface water rights in conjunction with groundwater. As regulations become more stringent and regional water resources become scarcer, integration of other water supply sources could be desirable to strengthen management and sustainability of the groundwater resources and provide the City with additional supply reliability.

## 6.2.9 Summary of Existing and Planned Sources of Water

The City's existing water supplies and future projected normal year water supplies are summarized in Table 6-9 and Table 6-10 (Page 6-14), respectively.

**Table 6-9. Retail. Water Supplies Actual (DWR Table 6-8)**

| Water Supply | | 2020 | | |
|---|---|---|---|---|
| **Drop down list** May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool | Additional Detail on Water Supply | Actual Volume[(a)]* | Water Quality Drop Down List | Total Right or Safe Yield[(b)]* (optional) |
| Add additional rows as needed | | | | |
| Groundwater (not desalinated) | City owned and operated wells | 702 | Drinking Water | |
| | **Total** | 702 | | 0 |
| ***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | | | | |

NOTES:
(a) Volumes are in MG.
(b) The total right or safe yield is intentionally left blank. The Solano Subbasin is not adjudicated and the City does not have a contract that limits its groundwater use. The City uses as much groundwater as is necessary to meet demands.

**Table 6-10. Retail. Water Supplies Projected (DWR Table 6-9)**

| Water Supply | Additional Detail on Water Supply | Projected Water Supply[a, b] * Report To the Extent Practicable | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Drop down list** May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool | | **2025** | | **2030** | | **2035** | | **2040** | | **2045** (opt) | |
| | | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) |
| Add additional rows as needed | | | | | | | | | | | |
| Groundwater (not desalinated) | City owned and operated wells | 1,458 | | 1,620 | | 1,782 | | 1,945 | | 2,307 | |
| | **Total** | 1,458 | 0 | 1,620 | 0 | 1,782 | 0 | 1,945 | 0 | 2,307 | 0 |
| ***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | | | | | | | | | | | |

NOTES:
(a) Volumes are in MG.
(b) The Solano Subbasin is not adjudicated and is not in overdraft or expected to be in overdraft. The City does not have a contract that limits its groundwater use and uses as much groundwater as is necessary to meet demands. The volumes shown are equal to the projected demands and are not intended to represent the City's maximum pumping volume.

## 6.2.10 Special Conditions

The City's water supply availability may be affected by climate change impacts and regulatory actions.

### *6.2.10.1 Climate Change Impacts*

In 2011, Solano County developed a Climate Action Plan (CAP) to evaluate the potential impacts of climate change for the county. The global climate change effects include increased average temperature, subsequent altered precipitation patterns, thermal expansion of the ocean, and reduced extent of polar and global sea ice. The CAP anticipates that these effects will translate to the following impacts to Solano County:

- Sea level rise with possible increases in coastal flooding
- Saltwater intrusion
- Water supply shortages
- Energy supply shortages
- Increased occurrence and severity of flooding, storms, and wildfires
- Habitat loss and species endangerment
- Decline in agricultural production

While not all the effects listed in the CAP may impact the City, the City's groundwater, its sole water supply source, may still be impacted.

The Solano County Multi-Jurisdictional Hazard Mitigation Plan (July 2021) included a Climate Vulnerability Assessment (CVA). The CVA evaluates each previously identified climate change-related vulnerability for the City. The CVA indicates that the City is vulnerable to increased intensity of storms, droughts, and fires.

The City has implemented strategies to efficiently use its groundwater supply in response to climate change effects. In cooperation with Solano County, the City conducts water conservation outreach and provides incentives for its customers. Installation of water-efficient plumbing fixtures in remodels, renovations, and new constructions are required. Furthermore, the City has adopted the State's model water landscape ordinance (DMC 13.02.275) and requires new construction to conform with these requirements, including the requirement to use drought-resistant landscaping. The City's efforts in reducing water demands are further described in Chapter 9.

### *6.2.10.2 Regulatory Conditions*

Emerging regulatory conditions and planned future projects may also affect the characterization of future water supply availability and analysis. As described in Section 6.2.8, the City plans to use its groundwater wells to meet future demands by rehabilitating existing wells and constructing new wells. Pending regulations associated with hexavalent chromium ((Cr(VI)) are of particular concern to the City. The City's existing groundwater wells all have Cr(VI) concentrations above 10 µg/l, the California maximum contaminant level (MCL) for Cr(VI) that became effective on July 1, 2014. Senate Bill 385 required full compliance with the Cr(VI) MCL "at the earliest feasible date prior to January 1, 2020". However, on May 31, 2017, the Superior Court of Sacramento County issued a judgement that invalidated the Cr(VI) MCL and the change became effective September 11, 2017. The court found the MCL invalid primarily

because the California Department of Public Health (CDPH) "failed to properly consider the economic feasibility of complying with the MCL." The State Water Board, who is responsible for the State's drinking water program, does not plan to appeal the court's decision. Instead, for expediency, the State Water Board began the process of adopting a new MCL rather than appeal the court's order. However, the State Water Board is anticipated to reinstate the 2014 Cr(VI) MCL of 10 µg/l in spring of 2022.

Although the State Water Board will not be enforcing any previously prepared compliance plans that public water systems entered into for Cr(VI) compliance, the MCL for total chromium of 50 µg/l will remain in place. The City had been actively studying treatment alternatives to address Cr(VI) in its groundwater supply to reduce it below the invalidated MCL and develop a Corrective Action Plan, prior to the court's decision. In anticipation that the State Water Board will establish a new MCL equivalent to the previously invalidated MCL, information on the actions previously taken by the City are summarized in the City's 2016 WSMP.

## 6.3 ENERGY INTENSITY

In accordance with CWC §10631.2(a), the energy intensity to provide water service to the City's water customers over a one-year period is presented in this section to the extent that the information is available. The amount of energy to pump, treat, and distribute the City's water supply within the system it owns and operates is included.

Water energy intensity is the total amount of energy in kilowatt hour (kWh), calculated on a whole-system basis, expended on a per million gallon basis, to deliver water from the City's sources to its water customers. Understanding the whole-system energy intensity would allow the City to make informed strategies in managing its water supplies and operating its system as follows:

- Identifying energy saving opportunities as energy consumption is often a large portion of the cost of delivering water
- Calculating energy savings and GHG emissions reductions associated with water conservation programs
- Potential opportunities for receiving energy efficiency funding for water conservation programs
- Informing climate change mitigation strategies
- Benchmarking of energy use at each water acquisition and delivery step and the ability to compare energy use among similar agencies

In Table 6-11 below, the energy intensity of City's water service is calculated for 2020. The total energy intensity for the City's water service area is 1,981 kWh/MG.

**Table 6-11. Energy Intensity – Total Utility Approach (DWR Table O-1B)**

| Enter Start Date for Reporting Period | 1/1/2020 | Urban Water Supplier Operational Control | | |
|---|---|---|---|---|
| End Date | 12/30/2020 | | | |
| Is upstream embedded in the values reported? | ☐ | Sum of All Water Management Processes | Non-Consequential Hydropower | |
| *Water Volume Units Used* | *MG* | Total Utility | Hydropower | Net Utility |
| *Volume of Water Entering Process (volume unit)* | | *702* | *0* | *702* |
| *Energy Consumed (kWh)* | | *1,390,960* | *0* | *1390960* |
| *Energy Intensity (kWh/volume)* | | *1,981.4* | *0.0* | *1,981.4* |

**Quantity of Self-Generated Renewable Energy**

0 kWh

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

*Metered Data*

**Data Quality Narrative:**

Monthly electrical energy data was provided for groundwater wells and storage tank pump stations.

**Narrative:**

The City's water service area is supplied by groundwater from City-owned wells. Refer to Section 6.2 for an in-depth explanation of the City's groundwater supply. The energy data provided summarized the monthly energy consumption for operating the groundwater wells and storage tanks.

As discussed in Section 6.2.5, the City provides wastewater collection, treatment, and disposal services to customers within its limits, including the City water service area and Cal Water water service area. The City owns and operates the wastewater collection, treatment, and disposal system. The energy intensity associated with the City's wastewater services for 2020 is provided in Table 6-12. The energy intensity associated with the collection and conveyance is 32 kWh/MG. The energy intensity associated with the wastewater treatment process is 2.625 kWh/MG.

## Table 6-12. Energy Intensity – Wastewater & Recycled Water (DWR Table O-2)

| | | Urban Water Supplier Operational Control | | | |
|---|---|---|---|---|---|
| Enter Start Date for Reporting Period | 1/1/2020 | Water Management Process | | | |
| End Date | 12/30/2020 | | | | |
| Is upstream embedded in the values reported? | ☑ | Collection / Conveyance | Treatment | Discharge / Distribution | Total |
| **Volume** of Water Units Used | MG | | | | |
| *Volume of Wastewater Entering Process (volume units selected above)* | | *410* | *410* | *399* | *410* |
| *Wastewater Energy Consumed (kWh)* | | *13,048* | *1,076,312* | *0* | *1089360* |
| *Wastewater Energy Intensity (kWh/volume)* | | *31.8* | *2,625.2* | *0.0* | *2,657.0* |
| *Volume of Recycled Water Entering Process (volume units selected above)* | | *0* | *0* | *0* | *0* |
| *Recycled Water Energy Consumed (kWh)* | | *0* | *0* | *0* | *0* |
| *Recycled Water Energy Intensity (kWh/volume)* | | *0.0* | *0.0* | *0.0* | *0.0* |

**Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations**

N/A kWh

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

*Metered Data*

**Data Quality Narrative:**

City of Dixon provided the energy consumed for the collection/conveyance process and the wastewater treatment process at the City's wastewater treatment facility (WWTF) for the 2020 calendar year. The total energy consumed for the collection/conveyance process is for the City's one lift station, Lincoln Street lift station. The energy data is missing data for February 2020 and May 2020. The energy for these months was estimated based on historical energy data.

**Narrative:**

The City is responsible for the collection, treatment, and disposal of wastewater for the City, including its water service area and Cal Water's service area. The WWTF uses an activated sludge process and the treated wastewater discharged from the facility is used to recharge the local aquifer through percolation ponds located at the WWTF. The difference between the wastewater treated and the discharged treated wastewater of approximately 11 MG is effluent waste activated sludge, which is sent back to the sludge stabilization basins for further treatment under aerobic digestion. The City does not produce or distribute recycled water.

# CHAPTER 7
# Water Service Reliability and Drought Risk Assessment

This chapter discusses the City's water supply reliability under varying conditions through 2045. Factors impacting long-term reliability of water supplies are discussed. In assessing the City'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 City's water service area. This chapter also includes the City's Drought Risk Assessment (DRA) for the next five years. Findings show that the City's water supplies are sufficient to meet the existing and projected water demands during normal and dry conditions.

## 7.1 WATER SERVICE RELIABILITY ASSESSMENT

The City's water supply reliability reflects its ability to meet the needs of its water customers with its water supply under varying conditions. Details from Chapter 4, which describes the City's water use, and Chapter 6, which describes the City's water supply, are incorporated in this chapter to conduct the assessment. Findings from this assessment influence the City's water management decisions.

### 7.1.1 Constraints on Water Sources

The City's water supply is from City-owned and operated groundwater wells located within the City's water service area. The City'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[1]. Prior to 1980, groundwater levels (depth to water) ranged from 50 to 90 feet in the alluvial zone. After 1980, groundwater levels ranged from 5 to 50 feet. Per the City's 2016 WSMP, the quality of groundwater underlying the City in the Solano Subbasin is good quality and is suitable for domestic and agricultural purposes. Total dissolved solids (TDS) concentrations generally range from 250 to 500 milligrams per liter (mg/L) and are comprised predominantly of calcium, magnesium and sodium cations and bicarbonate anions. The groundwater is hard to very hard. Section 6.2.10.2 discusses the growing concern for Cr(VI) for the City's groundwater supply, pending regulations.

As part of the City's 2021 WSMP Update (addendum to 2016 WSMP) effort, the future system capacity was evaluated with the updated projected water demands through 2050. The City's groundwater supply may be constrained based on the ability of the existing groundwater wells to meet the future demands. The City's 2021 WSMP Update includes rehabilitation of existing groundwater wells and the construction of new groundwater wells to meet the projected water demands.

### 7.1.2 Year Type Characterization

Water supply reliability is assessed based on the characteristics of the City's water supplies during various water year types which are provided in this section. CWC §10635(a) requires that the City's water service reliability be assessed based on the following three water year types:

[1] Solano Subbasin. Solano Subbasin GSA. Solano Collaborative. November 2021. Solano Subbasin Groundwater Sustainability Plan. *Figure 3-10a Groundwater Level Hydrographs: Alluvial Zone and Other Shallow Deposits.*

1. **Normal Year** – This condition represents the water supplies the City considers 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 City. This year represents the City'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 City'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 City. The year 2013 represents the Single Dry Year for the City.

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

The basis of the hydrologic years used precipitation data from CIMIS Station 6 located in Davis, California, the closest CIMIS monitoring station to the City. The City does have a weather station at the Dixon WWTF but this 2020 UWMP references the closest CIMIS monitoring station. Annual precipitation data from 2005 to 2020 was reviewed to determine the base years. During a portion of this time period, the City was in a Joint Powers Agreement (JPA) with Solano Irrigation District (SID) from 1984 to 2014. The City managed the administrative aspect of the public water system, while SID conducted operations and maintenance. When the JPA expired in 2014, the City assumed full ownership and operations of the public water system after the State Water Board issued a permit to operate the water system directly to the City. Years that the City identifies as the historical average, single driest year, and driest multi-year period are shown in Table 7-1.

**Table 7-1. Basis of Water Year Data**

| Water Year Type | Base Year(s) |
|---|---|
| Normal Water Year | 2006 |
| Single Dry Water Year | 2013 |
| Five-Consecutive-Year Drought | 2011 - 2015 |

Table 7-2 summarizes each year type for the City's water supply portfolio. These years are also known as the "Base Years". Since the City's sole water supply source is groundwater, the volumes shown in Table 7-2 are the actual volume of water supplied during each of those years rather than the groundwater volume that is available. The City uses as much groundwater as necessary to meet demands and the water supply volumes in Table 7-2 indicate that the groundwater supply is sufficient to meet demands as needed.

**Table 7-2. Retail-Basis of Water Year Data for Groundwater Supply (DWR Table 7-1)**

| Year Type | Base Year<br>If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | ☐ | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP.<br>Location _____ |
| | | ☑ | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available[a, b] * | % of Average Supply |
| Average Year | 2006 | 742 | 100% |
| Single-Dry Year | 2013 | 519 | 100% |
| Consecutive Dry Years 1st Year | 2011 | 694 | 100% |
| Consecutive Dry Years 2nd Year | 2012 | 730 | 100% |
| Consecutive Dry Years 3rd Year | 2013 | 777 | 100% |
| Consecutive Dry Years 4th Year | 2014 | 578 | 100% |
| Consecutive Dry Years 5th Year | 2015 | 519 | 100% |
| ***Units of measure (AF, CCF, MG**) must remain consistent throughout the UWMP as reported in Table 2-3.* | | | |

NOTES:
(a) Volumes are in MG.
(b) The volumes shown is the actual water volume supplied during the respective year and not the water supply available during each base year. The City uses as much groundwater as is necessary to meet demands and therefore, the volumes shown indicate that the groundwater supply is sufficient to meet demands as needed.

## 7.1.3 Water Service Reliability

In this section, the City's normal, single dry, and five consecutive dry years projected supplies and demands are integrated and compared. Projected water demands are detailed in Chapter 4 and projected water supplies are detailed in Chapter 6. Under the various water year types, the total annual water supply sources available are compared to the total annual projected water use for the City's water service area from 2025 to 2045 in five-year increments.

As explained in Chapter 6, the City's groundwater supply is expected to meet the City'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 Subbasin 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.

The City is not limited in how much groundwater it can use. The City 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.

### *7.1.3.1 Water Service Reliability – Normal Year*

Projected normal year supply from Chapter 6 and projected demands from Chapter 4 are compared in Table 7-3. The City's water supplies are reliable during normal years. No water supply shortage is anticipated during normal years through 2045.

**Table 7-3. Normal Year Supply and Demand Comparison (DWR Table 7-2)**

| | 2025 | 2030 | 2035 | 2040 | 2045 *(Opt)* |
|---|---|---|---|---|---|
| Supply totals[a, b] *(autofill from Table 6-9)* | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |
| Demand totals[a, b] *(autofill from Table 4-3)* | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |
| Difference | 0 | 0 | 0 | 0 | 0 |

NOTES:
(a) Volumes are in MG.
(b) The Solano Subbasin is not adjudicated and is not in overdraft or expected to be in overdraft. The City uses as much groundwater as is necessary to meet demands and therefore, the volumes shown are equal to the projected demands. This indicates that the groundwater supply is sufficient to meet demands as needed.

### *7.1.3.2 Water Service Reliability – Single Dry Year*

Projected single dry year supply and projected demands are compared in Table 7-4. No water supply shortage is anticipated during single dry years through 2045. The City's water supplies are reliable during single dry years.

**Table 7-4. Single Dry Year Supply and Demand Comparison (DWR Table 7-3)**

| | 2025 | 2030 | 2035 | 2040 | 2045 (Opt) |
|---|---|---|---|---|---|
| Supply totals[(a, b)]* | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |
| Demand totals[(a, b)]* | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |
| Difference | 0 | 0 | 0 | 0 | 0 |

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

NOTES:
(a) Volumes are in MG.
(b) The Solano Subbasin is not adjudicated and is not in overdraft or expected to be in overdraft. The City uses as much groundwater as is necessary to meet demands and therefore, the volumes shown are equal to the projected demands. This indicates that the groundwater supply is sufficient to meet demands as needed.

### *7.1.3.3 Water Service Reliability – Five Consecutive Dry Years*

Projected five consecutive dry years supply and projected demands are compared in Table 7-5. No water supply shortage is anticipated during the five consecutive dry years through 2045. The City's water supplies are reliable during five consecutive dry year period.

**Table 7-5. Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)**

| | | 2025* | 2030* | 2035* | 2040* | 2045* (Opt) |
|---|---|---|---|---|---|---|
| First year | Supply totals[a, b] | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |
| | Demand totals[a, b] | 1,458 | 1,620 | 1,782 | 1,945 | 2,307 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Second year | Supply totals[a, b] | 1,490 | 1,653 | 1,815 | 2,017 | 2,369 |
| | Demand totals[a, b] | 1,490 | 1,653 | 1,815 | 2,017 | 2,369 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Third year | Supply totals[a, b] | 1,523 | 1,685 | 1,847 | 2,090 | 2,441 |
| | Demand totals[a, b] | 1,523 | 1,685 | 1,847 | 2,090 | 2,441 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Fourth year | Supply totals[a, b] | 1,555 | 1,717 | 1,880 | 2,162 | 2,513 |
| | Demand totals[a, b] | 1,555 | 1,717 | 1,880 | 2,162 | 2,513 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Fifth year | Supply totals[a, b] | 1,588 | 1,750 | 1,912 | 2,235 | 2,586 |
| | Demand totals[a, b] | 1,588 | 1,750 | 1,912 | 2,235 | 2,586 |
| | Difference | 0 | 0 | 0 | 0 | 0 |

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

NOTES:
(a) Volumes are in MG.
(b) The Solano Subbasin is not adjudicated and is not in overdraft or expected to be in overdraft. The City uses as much groundwater as is necessary to meet demands and therefore, the volumes shown are equal to the projected demands. This indicates that the groundwater supply is sufficient to meet demands as needed.

## 7.2 DESCRIPTION OF MANAGEMENT TOOLS AND OPTIONS

As described in Chapter 6, the City plans to continue to use groundwater as necessary to meet its projected water demands during the different base years. Per the City's 2021 WSMP Update, groundwater is expected to be sufficient to meet all projected demands, assuming the City rehabilitates existing groundwater wells and constructs new groundwater wells as the need arises. The City will continue to monitor its existing

groundwater wells and continue to participate in the Solano Subbasin GSA and the Solano Collaborative to continue groundwater management of the Solano Subbasin.

## 7.3 DROUGHT RISK ASSESSMENT

CWC §10635(b) requires that the City prepare a DRA based on the supply condition associated with the five driest consecutive years on record. This supply condition is to be assumed to occur over the next five years, from 2021 through 2025.

This section reviews the data and methods used to define the DRA water shortage condition and evaluates each water source's reliability under the proposed drought condition. Total water supplies during the five-year drought are compared to projected demands, accounting for any applicable supply augmentation or demand reduction measures available to the City.

This DRA would allow the City to prepare for a potential water shortage and for implementation of its Water Shortage Contingency Plan, if necessary. Findings show that, should the region experience a five-consecutive-dry-years period starting in 2021, adequate water supplies are available to meet projected demands.

### 7.3.1 Data, Methods, and Basis for Water Shortage Condition

The DRA was performed for 2021 through 2025 using the same five-consecutive-dry-years period conditions presented in Section 7.1.3.3. The 2025 projected water demand is based on water demand projections developed for the City's 2021 WSMP Update[2] combined with known approved, accelerated developments within the City's water service area. The City's 2021 WSMP Update incorporated the most recent and accurate future development estimates and unit water use factors available to develop water demand projections. Future water demands for 2022 through 2025 were linearly interpolated between the 2021 actual water demand and the 2025water demand projections.

### 7.3.2 DRA Water Source Reliability

Chapter 6 provides an in-depth discussion on the reliability of the City's groundwater supply. The City pumps groundwater from the Solano Subbasin. The Solano Subbasin is not adjudicated and is not in overdraft or expected to be in overdraft. The City uses as much groundwater as is necessary to meet demands and therefore, the volumes shown are equal to the projected demands. Per the City's 2021 WSMP Update, groundwater is expected to be sufficient to meet all projected demands, assuming the City rehabilitates existing groundwater wells and constructs new groundwater wells as the need arises.

### 7.3.3 Total Water Supply and Use Comparison

As shown in Table 7-6, during five-year drought beginning in 2021, the City's groundwater supply is projected to be adequate to meet projected demands through 2025, even without water conservation.

[2] West Yost, December 2021. City of Dixon Water System Master Plan Update.

**Table 7-6. Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b) (DWR Table 7-5)**

| 2021 | Total[a, b] |
|---|---|
| Total Water Use | 704 |
| Total Supplies | 704 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |
| | |
| **2022** | **Total[a]** |
| Total Water Use | 769 |
| Total Supplies | 769 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |
| | |
| **2023** | **Total[a]** |
| Total Water Use | 835 |
| Total Supplies | 835 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |

NOTES:
(a) Volumes are in MG.
(b) The total water use of 704 MG for 2021 is the actual water use. Total water use for 2022 through 2025 is projected.

**Table 7-6. Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b) (DWR Table 7-5) Continued**

| 2024 | Total[(a)] |
|---|---|
| Total Water Use | 900 |
| Total Supplies | 900 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |
| | |
| **2025** | **Total[(a)]** |
| Total Water Use | 1,458 |
| Total Supplies | 1,458 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |

NOTES:
(a) Volumes are in MG.

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# CHAPTER 8
# Water Shortage Contingency Plan

This chapter discusses the City's Water Shortage Contingency Plan (WSCP), seismic risk to City facilities, and WSCP adoption procedures. To allow for WSCP updates to be made outside of the UWMP preparation process, the City's WSCP is included in this plan as Appendix F.

## 8.1 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 helps 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 City's WSCP has been prepared to be consistent with these requirements.

## 8.2 CITY WATER SHORTAGE CONTINGENCY PLAN

The City'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 City's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting.

The City 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. Therefore, the City's WSCP is included in this plan as Appendix F to allow for updates to be made outside of the UWMP preparation process. When an update to the WSCP is proposed, the revised WSCP will undergo the process described in Section 8.4.

## 8.3 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

CWC §10632.5(a) requires that UWMPs include a seismic risk assessment and mitigation plan to assess and mitigate a water system's seismic vulnerabilities. Details of the City's seismic risk assessment and mitigation plan are provided in Appendix F, Section 4.6.

## 8.4 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

The City's WSCP (Appendix F) is adopted concurrently with this 2020 UWMP, by separate resolution. Prior to adoption, a duly noticed public hearing was conducted. An electronic copy of the WSCP will be submitted to DWR within 30 days of adoption.

No later than 30 days after adoption, an electronic copy of the WSCP will be available for public review and download on the City's website, www.cityofdixon.us. A copy will also be provided to Solano County.

The City's WSCP is an adaptive management plan and is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. When a revised WSCP is proposed, the revised WSCP will undergo the process described above for adoption by City Council and distribution to Solano County, the City's water customers, and the general public.

# CHAPTER 9
# Demand Management Measures

The City implements demand management measures to sustainably manage its water resources. If not mitigated, reliability may be reduced from an increase in water demand and/or changes in water supplies due to climate change and other factors. The implementation of demand management measures can help improve water service reliability and help meet City and State water conservation goals. This chapter describes the City's historical and existing water conservation program, status of implementation of Demand Management Measures (DMMs), and projected future conservation implementation.

## 9.1 DEMAND MANAGEMENT MEASURES

The City is required to describe the following six DMMs in this UWMP:

- Water waste prevention ordinances
- Metering
- Conservation pricing
- Public education and outreach
- Programs to assess and manage distribution system real loss
- Water conservation program coordination and staffing support

The City is also required to describe any other implemented DMMs that have had significant impact on water use.

For each of the DMMs, the current program is described along with plans for continued implementation. Since the City became an urban water supplier in 2021, the City is not required to describe how the DMM was implemented over the previous five years to achieve water use targets.

### 9.1.1 Water Waste Prevention Ordinances

#### *9.1.1.1 DMM Description*

Dixon Municipal Code (DMC) Section 14.02. Article IX (Appendix G) is dedicated to water conservation. DMC Section 14.02.905 prohibits water waste by restricting specific uses, including watering lawns in a manner that causes runoff, washing motor vehicles with hoses not equipped with a shutoff nozzle, and hosing off driveways and sidewalks. The restrictions are enforceable per DMC Section 09.01.600 and are administered by the City. Other water conservation efforts in DMC Section 14.02.900 include requiring operators of hotels or motels to provide guests with the option of choosing not to have towels and linens laundered daily and ceasing the watering of turf areas located on public right-of-way.

#### *9.1.1.2 Plans for Continued Implementation*

The City will continue to implement this DMM. Although water savings from this program cannot be directly quantified, this DMM is expected to help the City achieve its future water use objectives by minimizing the non-essential uses of water so that water is available to be used for human consumption, sanitation, and fire protection.

The City anticipates revising its DMC to support its WSCP (Appendix F). At that time, the Sections discussed herein may be refined.

## 9.1.2 Metering

### *9.1.2.1 DMM Description*

The City's entire water service area is fully metered. In accordance with DMC Section 14.02.630, all connections are billed based on user class, reflecting the different capacity and water volume requirements for each class. Per DMC Section 14.02.630, each user in a class pays charges in two (2) parts: a service charge based on the size of the water meter regardless of water use and a volumetric charge at the rate that applies to the customer's volume of use during the applicable billing cycle. The water rate structure for the volumetric charge consists of three tiers for single-family residential customers and uniform rates for all other customers.

In 2018, the City completed a multi-year water rate study and adopted and implemented updated water rates starting in Fiscal Year 2019. However, the updated water rates were repealed by general election on November 3, 2020. The City's current water rate schedule and meter fees are provided in Table 9-1 and Table 9-2, respectively.

**Table 9-1. City of Dixon Water Rates (Volumetric Charge)**

| Tier | Water Use (CCF) | Rate ($/CCF) |
|---|---|---|
| Single Family Residential – Tier 1 | 0-10 | $1.24 |
| Single Family Residential – Tier 2 | 11-40 | $1.54 |
| Single Family Residential – Tier 3 | 41+ | $2.32 |
| All other customer classes for all water use | | $1.40 |
| CCF = hundred cubic feet | | |

**Table 9-2. City of Dixon Meter Fees (Service Charge)**

| Meter Size (inches) | Rate ($/bi-monthly) |
|---|---|
| ¾ | $14.34 |
| 1 | $23.90 |
| 1.5 | $47.79 |
| 2 | $76.47 |
| 3 | $160.10 |
| 4 | $270.02 |
| 6 | $573.49 |

### *9.1.2.2 Plans for Continued Implementation*

Continued implementation of this DMM is expected to help the City achieve its water efficiency goals by providing accurate water use information to the customer and the City. The meters allow the City 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.

## 9.1.3 Conservation Pricing

### *9.1.3.1 DMM Description*

The City's water operations are organized as an Enterprise Fund in which the costs of providing goods or services to the general public on a continuing basis are financed or recovered primarily through user charges. As discussed above, single-family residential customers are billed based on a fixed charge and a tiered volumetric charge, while all other customers are billed based on a fixed charge and a uniform volumetric charge. During times of drought, the City may consider implementing drought rates to maintain financial stability.

### *9.1.3.2 Plans for Continued Implementation*

This DMM was expected to help the City achieve its water efficiency goals by ensuring water customers pay the true cost of water and to adequately fund water system operations and maintenance, including repair and replacement programs, and water conservation programs. However, as previously mentioned, the updated water rates implemented by the City in 2019 were repealed in the 2020 general election. The repeal of these water rates has created economic hardship for City water operations. The City is currently considering other options for resolving the imbalance of revenues and expenditures.

## 9.1.4 Public Education and Outreach

### *9.1.4.1 DMM Description*

The City interacts with the public through a water conservation website for its customers (https://www.cityofdixon.us/departments/Water/WaterConservation). The City partners with Solano County Water Agency (SCWA) to promote water conservation and the rebate programs described in Section 9.1.7. The City's website provides information on rebates and links to valuable water conservation information as follows:

- Solano County Water Agency, which provides real-time data, interactive maps, and flood monitoring in Solano County: https://www.scwamonitoring.com/
- Sacramento Tree Foundation's Caring for Trees in a Drought, which provides tips on how to conserve water and grow healthy trees in a drought: https://bewatersmart.info/wp-content/uploads/2014/07/STF_TreesInDrought_English.pdf
- Association of California Water Agencies (ACWA) and DWR's Save Our Water Program, which provides water conservation tips: https://saveourwater.com/en/
- University of California Davis Arboretum and Public Garden's Sustainable Gardening Toolkit, which provides sustainable horticulture resources and tips: https://arboretum.ucdavis.edu/sustainable-gardening-toolkit
- Cal Water's conservation webpage, which provides water conservation tips and other informational resources: https://www.calwater.com/conservation/

### *9.1.4.2 Plans for Continued Implementation*

Continued implementation of this DMM is expected to help the City achieve its water efficiency goals by educating water users about the importance of maintaining water use efficiency and avoiding water waste.

## 9.1.5 Programs to Assess and Manage Distribution System Real Loss

### *9.1.5.1 DMM Description*

The City continuously monitors its water distribution system for water loss. When water loss appears abnormally high, the City will attempt to identify the location of the loss and resolve the problem. High water loss is determined though customer and production well meters that are specific to a geographical area showing abnormal high demand, or a specific customer showing high consumption or continued use. If a leak is identified, the City will fix the leak immediately.

Furthermore, the City performs courtesy leak checks monthly after water bills are sent out to customers. For example, accounts of customers who use 50 units or more in a month will be flagged. The City will then check the customer's historical water use to determine if the customer is just a normal high use customer or if the high water use is due to a potential leak.

The City started tracking hydrant meter and construction meter use in January 2020 and added these uses to their water consumption data. Starting in January 2021, the City began tracking water use through large fire backflows (i.e., private fire hydrant use, hydrant flushing, cross connections, and theft). The City will also start calculating water use for new subdivision filling, hydrant flushing, and unmetered water use. This will allow for the City to further track and identify unmetered water use not accounted for by leaks.

Specific areas of the water distribution system have been identified as susceptible to leakage from components used during construction. These areas have been identified and put on a list of long-term Capital Improvement Projects (CIP) for pipeline replacements. However, this CIP program is currently on hold with the water rate repeal.

### *9.1.5.2 Plans for Continued Implementation*

Implementation of this DMM is expected to help the City achieve its water efficiency goals by identifying sources of water loss quickly so repairs can be made, and losses are minimized.

## 9.1.6 Water Conservation Program Coordination and Staffing Support

### *9.1.6.1 DMM Description*

The City coordinates with SCWA for its Water Conservation Program and is a member of the Urban Water Conservation Committee. The City Engineer attends the SCWA meetings, while the Water Operations Supervisor attends the Urban Water Conservation Committee meetings.

The City Engineer and Water Operations Supervisor work collaboratively to implement the various demand management measures discussed in this chapter.

### *9.1.6.2 Plans for Continued Implementation*

The implementation of this DMM is ongoing and is expected to help the City achieve its water efficiency targets by making water conservation and implementation of its water conservation program a priority within the City. It also allows consistency in messaging of the value of water throughout the region.

## 9.1.7 Other Demand Management Measures

The City collaborates with SCWA to promote water conservation. SCWA offers rebate programs to encourage water use efficiency. The SCWA rebates are summarized in Table 9-3.

**Table 9-3. SCWA Rebate Programs**

| Program | Rebate Amount |
|---|---|
| Flume App - helps customers manage, monitor, and conserve water | $65 |
| Pool covers | $50 |
| Hot water recirculating system components | $50 |
| Laundry-to-landscape system components | $50 |
| Rain barrels | $50 |
| Rain sensors | $50 |
| High-efficiency washers | $100 |
| Smart irrigation controllers | $300 - $1,000 |
| Water-efficiency landscapes | $1 per square foot (up to $1,000) |
| Free residential water survey | N/A |

## 9.2 WATER USE OBJECTIVES (FUTURE REQUIREMENTS)

In 2018, the State Legislature enacted two policy bills, SB 606 (Hertzberg) and AB 1668 (Friedman), to establish long-term water conservation and drought planning to adapt to climate change and the associated longer and more intense droughts in California. These two policy bills build on SB X7-7 and set authorities and requirements for urban water use efficiency. The legislation sets standards for indoor residential use and requires the State Water Board, in coordination with DWR, to adopt efficiency standards for outdoor residential use, water losses, and Commercial, Industrial, and Institutional (CII) outdoor landscape areas with dedicated irrigation meters. At the time of preparation of this UWMP, DWR and the State Water Board are in the process of finalizing water loss standards and are in the process of developing new standards for indoor and outdoor residential water use. These standards will require urban water retailers to develop agency-wide water use objectives and provide annual reports.

The State Legislature established indoor residential water use standards as 55 GPCD until January 2025, 52.5 GPCD from 2025 to 2029, and 50 GPCD in January 2030, or a greater standard recommended by DWR and the State Water Board. By June 30, 2022, the State Water Board is anticipated to adopt an outdoor residential use standard, a standard for CII outdoor landscape area with dedicated irrigation meters, and performance measures for CII water uses. At that time, the State Water Board will adopt guidelines and methodologies for calculating the water use objectives. In accordance with CWC §10609.20(c), the water use objective for urban water retailers will be based on the estimated efficient indoor and outdoor residential water use, efficient outdoor irrigation of CII landscaped areas, estimated water losses, and estimated water use for variances approved by the State Water Board aggregated across the population in its water service area.

By November 1, 2023, and November 1 of every year thereafter, the City will calculate its urban water use objective and actual water use and provide an annual report to the State.

# CHAPTER 10
# Plan Adoption, Submittal, and Implementation

This chapter provides information regarding the notification, public hearing, adoption, and submittal of the City's 2020 UWMP and WSCP. It also includes discussion on plan implementation and the process of amending the UWMP and the WSCP.

## 10.1 INCLUSION OF ALL 2020 DATA

Because 2020 is the final compliance year for SB X7-7, the 2020 UWMPs must contain data through the end of 2020. If a water supplier bases its accounting on a fiscal year (July through June) the data must be through the end of the 2020 fiscal year (June 2020). If the water supplier bases its accounting on a calendar year, the data must be through the end of the 2020 calendar year (December 2020).

As indicated in Section 2.4 of this plan, the City uses a calendar year for water supply and demand accounting, and; therefore this 2020 UWMP includes data through December 2020.

## 10.2 NOTICE OF PUBLIC HEARING

In accordance with the UWMP Act, the City must provide an opportunity for the public to provide input on this 2020 UWMP and associated WSCP. The City must consider all public input prior to its adoption. There are two audiences to be notified for the public hearing; cities and counties, and the public.

### 10.2.1 Notices to Cities and Counties

The City provided greater than a 60-day notice regarding the preparation of its 2020 UWMP and WSCP to cities and counties in its service area as discussed in Section 2.5 of this plan. In addition, the City provided notices to the following agencies:

- Cal Water – Dixon District
- Solano County Water Agency
- Solano Irrigation District
- Solano Sub-basin Groundwater Sustainability Agency

The City coordinated the preparation of its UWMP and WSCP internally, with Solano County, and with the above listed agencies. The notices of preparation are included in Appendix D. Upon substantial completion of this 2020 UWMP, the City provided the agencies listed above, including internally within the City and Solano County, the Notice of Public Hearing (Appendix D).

Notifications to cities and counties, in accordance with the UWMP Act, are summarized in Table 10-1.

**Table 10-1. Retail: Notification to Cities and Counties (DWR Table 10-1)**

| City Name | 60 Day Notice | Notice of Public Hearing |
|---|---|---|
| City of Dixon | Yes | Yes |
| County Name *Drop Down List* | 60 Day Notice | Notice of Public Hearing |
| Solano County | Yes | Yes |

## 10.2.2 Notice to the Public

The City issued a notice of public hearing to the public and provided a public review period following the notice, and prior to adoption, to allow ample time for public comments to be prepared and received.

A notice of public hearing was issued in accordance with Government Code Section 6066 and was published twice in the Dixon Tribune and Independence Voice newspapers to notify all customers and local governments of the public hearing. In addition, the notice was posted on the City's website, https://www.cityofdixon.us/. A copy of the published Notice of Public Hearing is included in Appendix D.

## 10.3 PUBLIC HEARING AND ADOPTION

The City encouraged community participation in the development of this 2020 UWMP, including its WSCP, using public notices and web-based communication. The notice included the time and place of the public hearing, as well as the location where the plan is available for public inspection.

The public hearing provided an opportunity for City water customers and the general public to become familiar with the 2020 UWMP and ask questions about the City's water supply, its continuing plans for providing a reliable, safe, high-quality water supply, and plans to mitigate various potential water shortage conditions. Copies of the draft 2020 UWMP and WSCP were made available for public inspection at the City's offices and on the City website.

## 10.3.1 Public Hearing

A public hearing was held on April 19, 2022. As part of the public hearing, the City provided an overview of its first UWMP and WSCP.

## 10.3.2 Adoption

Subsequent to the public hearing, this 2020 UWMP and the associated WSCP was adopted by the City Council on April 19, 2022 by Resolution No. 22-086 and Resolution No. 22-087, respectively. The City adopted the WSCP separately so that the City may update it as necessary. A copy of the adoption resolutions are included in Appendix H.

## 10.4 PLAN SUBMITTAL

The 2020 UWMPs were officially due to DWR on July 1, 2021, but the City was not required to submit an UWMP at that time because it was not an urban water supplier in 2020.

This 2020 UWMP and the WSCP will be submitted to DWR within 30 days of adoption. The adopted 2020 UWMP and WSCP will be submitted electronically to DWR using the Water Use Efficiency (WUE) data portal. A CD or hardcopy of the adopted 2020 UWMP and WSCP will also be submitted to the California State Library.

No later than 30 days after adoption, a copy of the adopted 2020 UWMP, including the WSCP, will be provided to the cities and counties to which the City provides water.

## 10.5 PUBLIC AVAILABILITY

No later than 30 days after submittal to DWR, an electronic copy of this 2020 UWMP, including the adopted WSCP, will be available on the City's website for public review and download. (https://www.cityofdixon.us/departments/water)

## 10.6 AMENDING AN ADOPTED UWMP OR WATER SHORTAGE CONTINGENCY PLAN

The City may amend its 2020 UWMP and WSCP jointly or separately. If the City amends one or both documents, the City will follow the notification, public hearing, adoption, and submittal process described in Sections 10.2 through 10.4 above. In addition to submitting amendments to DWR through the WUEdata portal, copies of amendments or changes to the plans will be submitted to the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

## Concord

1001 Galaxy Way, Suite 310
Concord CA 94520
925-949-5800

## Davis

2020 Research Park Drive, Suite 100
Davis CA 95618
530-756-5905

## Eugene

1650 W 11th Avenue, Suite 1-A
Eugene OR 97402
541-431-1280

## Lake Forest

23692 Birtcher Drive
Lake Forest CA 92630
949-420-3030

## Lake Oswego

5 Centerpointe Drive, Suite 130
Lake Oswego OR 97035
503-451-4500

## Oceanside

804 Pier View Way, Suite 100
Oceanside CA 92054
760-795-0365

## Olympia

825 Legion Way SE, Suite A6
Olympia WA 98501
360-350-4523

## Phoenix

4505 E Chandler Boulevard, Suite 230
Phoenix AZ 85048
602-337-6110

## Pleasanton

6800 Koll Center Parkway, Suite 150
Pleasanton CA 94566
925-426-2580

## Sacramento

8950 Cal Center Drive, Bldg. 1, Suite 363
Sacramento CA 95826
916-306-2250

## San Diego

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San Diego CA 92128
858-505-0075

## Santa Rosa

2235 Mercury Way, Suite 105
Santa Rosa CA 95407
707-543-8506