

State of California  
Natural Resources Agency  
DEPARTMENT OF WATER RESOURCES  
Division of Regional Assistance, Water Use Efficiency Branch

# ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT GUIDANCE



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## Definitions and Acronyms

**Annual Assessment** – Annual Water Supply and Demand Assessment to be conducted by urban water suppliers every year as required by California Water Code Section 10632(a).

**Annual Shortage Report** – Annual Water Shortage Assessment Report to be submitted annually by urban water suppliers on or before July 1 as required by California Water Code Section 10632.1. The Annual Shortage Report consists of information including anticipated shortages and triggered **shortage** response actions determined as a result of the Annual Assessment.

**Benefit from WSCP** – An additional quantity of water resulting from a Supply Augmentation Action or a reduction in water demand resulting from a Demand Reduction Action. Estimated benefits from Water Shortage Contingency Plan (WSCP) actions are provided in Tables 8-2 and 8-3 of the urban water supplier’s WSCP. The benefits are expressed as a volume or percentage to reduce the shortage gap.

**CII** – Commercial, Industrial, Institutional, water use sectors

**Current Year** – For the purpose of this Guidance, the Current Year is defined as the twelve-month period which ends on June 30<sup>th</sup>, preceding the July 1<sup>st</sup> due date of the Annual Shortage Report.

**CWC** – California Water Code

**Dedicated Non-Potable Demands** – Water demands that in general, always use non-potable supplies. Such dedicated non-potable applications often include golf courses, parks, medians, and crops only using recycled water.

**Demand Reduction Actions** – Measures taken to reduce water demand including outreach and education actions to promote voluntary reductions and water use restrictions. A Demand Reduction Action is considered a Water Shortage Response Action.

**Dry Year** – Characteristic of a dry year is at the discretion of the Supplier, but it should be adequately defined and ideally align with one of the WSCP water shortage levels. The assumed Dry Year conditions are often based on a previous historic dry year, such as the driest year on record. Suppliers presented their defined historic Dry Year in their UWMP Table 7-1. For the purpose of this Guidance, the Dry Year data will be applied over the twelve-month period beginning July 1<sup>st</sup> (the due date of the current Annual Shortage Report).

**DWR** – Department of Water Resources in the California Natural Resources Agency



**eAR** – Electronic Annual Report submitted to the Drinking Water Program of the State Water Resources Control Board. Unlike the Annual Shortage Report which projects water volumes and potential shortages into the next year, the eAR includes the actual volumes of potable and non-potable water volumes produced, purchased, sold, or transferred in the past years. For more eAR information go to:

[https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/ear.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/ear.html)

**Guidance** – Appendix Q of the UWMP Guidebook 2020, this document and is intended to only provide recommendations and suggested actions and does not supersede any CWC requirements for the preparation of an Annual Assessment and the submittal of an Annual Shortage Report to DWR.

**Next Year** – For the purpose of this Guidance, the Next Year is defined as the twelve-month period starting on the July 1st due date of the Annual Shortage Report.

**PWSS** – Public Water System Statistics Survey

**Supplier** – Urban Water Supplier

**Supply Augmentation Actions** – Specific, measurable, and identified alternative water supplies that can be obtained quickly, in the Current or Next Year, in order to reduce the anticipated or actual water shortages. These identified supplies have not already been included in the normal water management for reliability. Specific actions could be stated as: “Acquire emergency Dry Year Supply of Z units under Contract X with Water Supplier Y”. A Supply Augmentation Action is considered a Water Shortage Response Action. For more information go to Section 8.4.2 in the UWMP Guidebook 2020.

**UWMP** – Urban Water Management Plan

**UWMP Guidebook 2020** – Urban Water Management Plan Guidebook (March 2021)

**Urban Retail Water Supplier** – a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

**Urban Water Supplier** – an Urban Retail Water Supplier or an Urban Wholesale Water Supplier

**Urban Wholesale Water Supplier** – a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

**Water Shortage Response Actions** – A measure taken to reduce the gap between available water supplies and unconstrained demand and includes demand reduction actions, supply augmentation actions, operational changes, mandatory prohibitions, and other actions.

**WSCP** – Water Shortage Contingency Plan

**WUEdata Portal** – DWR’s online submittal tool allows urban water suppliers or local land use agencies to submit electronic data and reports: <https://wuedata.water.ca.gov/>.

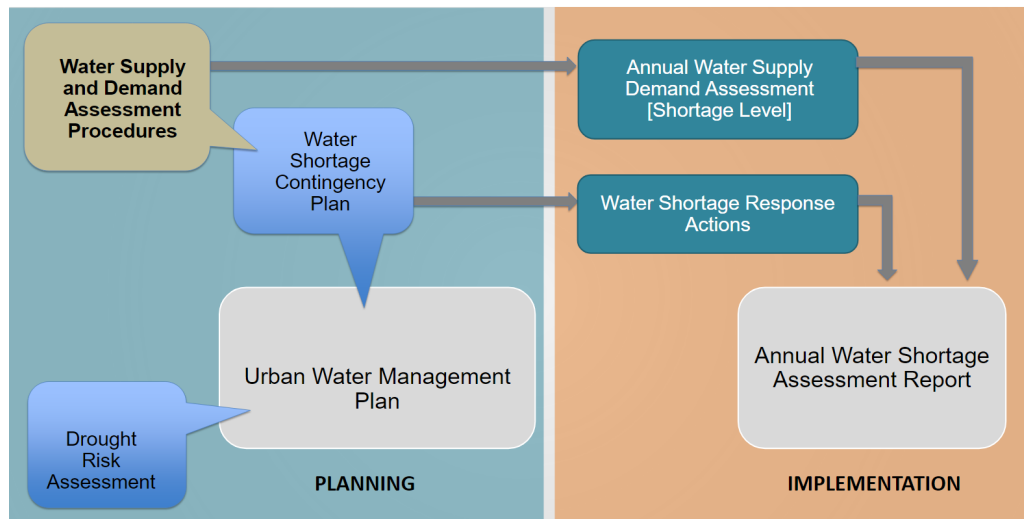
# ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT GUIDANCE

## 1. Guidance Purpose and Objectives

### A. Introduction

This Annual Water Supply and Demand Assessment Guidance (Guidance) is offered to help Urban Water Suppliers (Suppliers) prepare their Annual Water Supply and Demand Assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report (Annual Shortage Report) to the Department of Water Resources (DWR) in a way that is consistent with California Water Code (CWC) requirements. Note, this Guidance is intended to only provide recommendations and suggested actions and does not supersede any CWC requirements. Suppliers may use an alternative method to perform an Annual Assessment that meets CWC requirements. Suppliers must use the electronic submittal tool ([WUEdata Portal](#)) to submit an Annual Shortage Report.

In lieu of the methodology proposed in this Guidance, a Supplier may choose to use a different methodology for its Annual Assessment that better suits its supply and demand conditions and its planning cycle. Even when using an alternative methodology, the projected assessment data needs to be included in the WUEdata reporting tables for the twelve-month period specified from July through June to cover anticipated shortages and planned actions in the year ahead. The following Figure 1 demonstrates the relationship between the Annual Assessment, Annual Shortage Report, Urban Water Management Plan (UWMP), and Water Shortage Contingency Plan (WSCP). Suppliers use their water supply and demand assessment procedures from the WSCP, along with supporting information from their UWMP, to conduct the Annual Assessment and predict shortages. Next, they use the Water Shortage Response Actions from their WSCP to determine actions that will address the shortage gaps. The Annual Assessment is a recurring process to prepare Suppliers with tools to respond to anticipated water shortages.



**Figure 1. Annual Assessment in Relation to Urban Water Management Planning**

This Guidance includes the following components:

- Assessment and Reporting Guidance
  - Water Code Requirements and information pertaining to the Annual Assessment
  - Tables to help Suppliers comply with the statutory requirements of conducting an Annual Assessment and submitting an Annual Shortage Report to DWR
  - Table Instructions
  - Tips
- Optional Annual Assessment Tool
- Follow-up Actions
- Suggested Data Sources
- Suppliers' examples of Annual Assessments as reference

## B. Water Code Requirements

### *California Water Code*

#### **CWC §10632.1**

*An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage*

*contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.*

CWC states that on or before July 1, 2022, and every year after, each Supplier shall prepare its Annual Assessment and submit an Annual Shortage Report to DWR. The Annual Shortage Report is due by July 1 of every year, as required by Water Code Section 10632.1. (A Supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.)

The Annual Assessment and associated Annual Shortage Report are to be conducted based on the Supplier's procedures detailed in its adopted WSCP. In preparing for each year's Annual Assessment, Suppliers should reference and follow their procedures, which they have developed as part of the most recently adopted WSCP. The full text for that CWC section regarding the procedures is listed below for reference.

### **California Water Code**

#### **CWC §10632(a)(2)**

*The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:*

*(A) The written decision-making process that an urban water supplier will use each year to determine its water supply reliability.*

*(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:*

*(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.*

*(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.*

*(iii) Existing infrastructure capabilities and plausible constraints.*

*(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.*

*(v) A description and quantification of each source of water supply.*

CWC section 10632(a)(2) outlines the procedures to conduct an Annual Assessment. The specific requirements will be addressed in more detail in Section 2. Conducting an Annual Water Supply and Demand Assessment. The full text of that CWC section regarding the DWR summary report to the State Water Resources Control Board is presented below for reference.

### **California Water Code**

#### **CWC §10644 (c)(1)(B)**

*The department shall prepare and submit to the board, on or before September 30 of each year, a report summarizing the submitted water supply and demand assessment results along with appropriate reported water shortage conditions and the regional and statewide analysis of water supply conditions developed by the department. As part of the report, the department shall provide a summary and, as appropriate, urban water supplier specific information regarding various shortage response actions implemented as a result of annual supplier-specific water supply and demand assessments performed pursuant to Section 10632.1.*

CWC states that on or before September 30, 2022, and every year after, DWR shall prepare a summary report to the State Water Resources Control Board on DWR's review of the submitted Annual Assessment results. The DWR report will include water shortage information at the Supplier level, as well as regional and statewide analysis of water conditions. The report will also include information on water shortage response actions taken by Suppliers as a result of their Annual Assessments.

## **2. Conducting an Annual Water Supply and Demand Assessment**

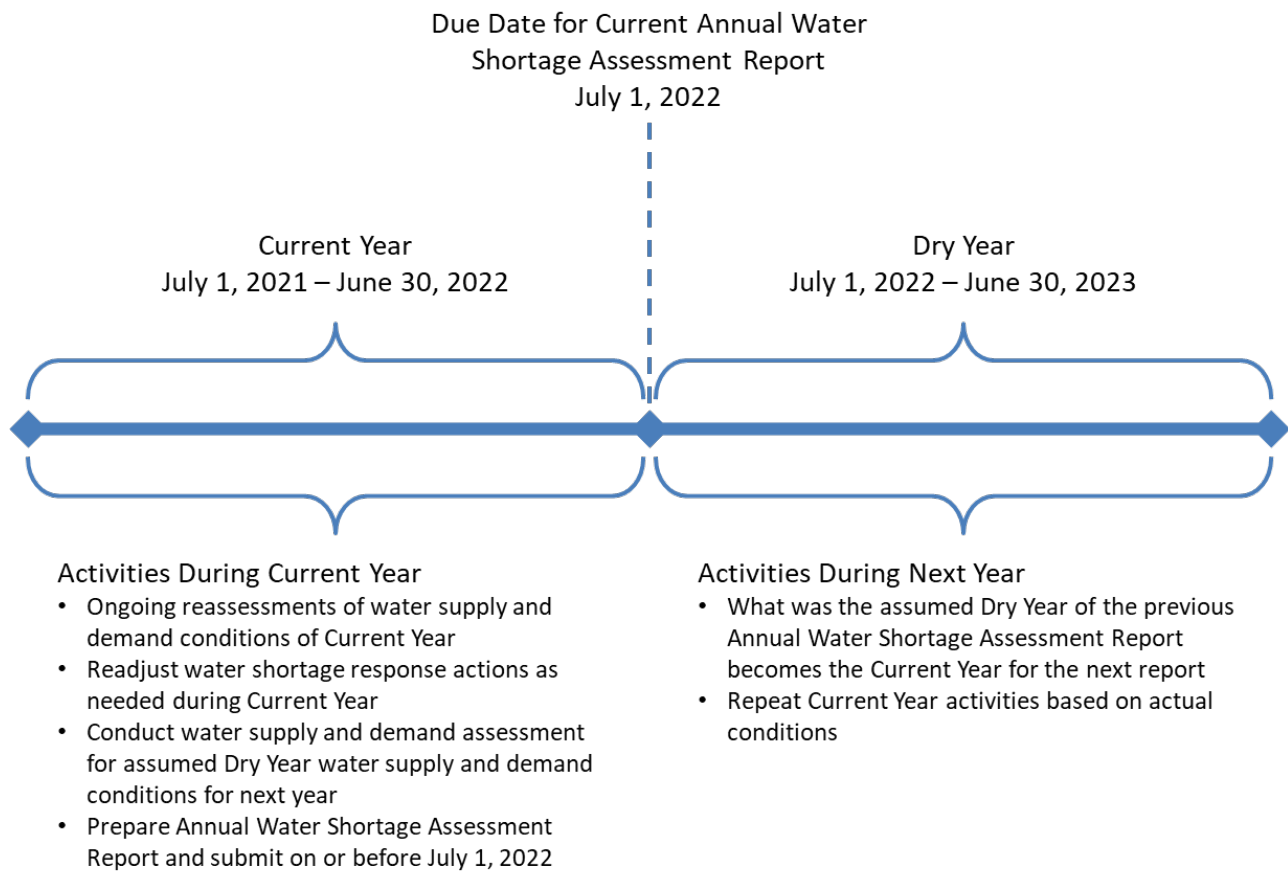
### **A. Introduction**

The urban water supplier is required to conduct an Annual Assessment for the purpose of (i) evaluating its water supply reliability for the current year and one dry year and (ii) generating and submitting an Annual Shortage Report by July 1 every year starting July 1, 2022. The Supplier's Annual Shortage Report will present information on their Annual Assessment and assessment results regarding any anticipated shortages and actions to DWR. In the WSCP, each Supplier is required to provide a description of the procedures it will employ each year to conduct its Annual Assessment. Those procedures must include a written decision-making process as well as key data inputs and the assessment methodology used to evaluate the water supply reliability.

While the Supplier is to rely on its own developed procedures for conducting its Annual

Assessment, this section highlights tips on the type of information and data sources the Supplier may consider in conducting its assessment.

CWC does not specify the type of year the Suppliers should use to do the assessment (Calendar, Fiscal, or Other). However, CWC §10632(a)(2)(B)(ii) does require the Annual Assessment to include, at a minimum, one dry year. For the purposes of this Guidance, DWR is proposing/recommending that the current year’s conditions will be assessed as known prior to the July 1<sup>st</sup> due date and the one Dry Year conditions begin on July 1<sup>st</sup> will be assessed and projected over the following twelve months. The first required Annual Shortage Report, which will be submitted by July 1, 2022, will therefore cover the twelve months from July 2022 to June 2023. Therefore, in following this Guidance, it follows that each subsequent Annual Assessment and Annual Shortage Report must include at least one Dry Year period starting July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year. This is illustrated in Figure 2. The dates in Figure 2 will advance one year for each subsequent Annual Shortage Report.



**Figure 2. Timeline for First Annual Water Shortage Assessment Report**

The Supplier is required to submit an Annual Shortage Report. Submittal tables are provided in the WUEdata Portal. Suppliers need to provide the yearly estimates of demands, supplies, shortages, and actions. In addition, the tables also contain columns to list highly encouraged monthly tallies of unconstrained water demands and water supplies (recommended) to facilitate the determination of anticipated shortages over the entire year. The Supplier may also upload optional attachments into the WUEdata Portal with additional information detailing its Annual Assessment.

As stated in the Introduction, a Supplier may use an alternative method to perform an Annual Assessment that meets CWC requirements. The alternative method may include a different planning cycle: calendar year, water year, or other. The Supplier may continue to use its own planning cycle, however, for reporting consistency, the Supplier needs to report projected data covering the twelve-month period beginning on the due date of the Annual Shortage Report. As a result, the Supplier may need to extend its analysis to cover more than one planning cycle in order to provide the needed data for the Annual Shortage Report.

## **B. Decision Making Process to Determine Water Supply Reliability**

### ***California Water Code***

#### ***CWC §10632(a)(2)***

*The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:*

*(A) The written decision-making process that an urban water supplier will use each year to determine its water supply reliability.*

CWC requires each Supplier to describe how its water supply reliability is determined. As described in Section 8.2 of the Urban Water Management Plan Guidebook 2020 (March 2021) (UWMP Guidebook 2020), the written decision-making process describes “the functional steps to determine the Supplier’s water supply reliability each year. For example, a Supplier’s process may include a schedule or timeline for when certain steps occur that include a formal presentation to its governing body (e.g., at a Board or Council meeting) with a request that the body vote on the findings of the Annual Assessment and appropriately trigger any recommendations for specific shortage response actions resulting from the assessment.”

### ***Reporting Table***

Supplier’s Annual Assessment information is provided in Table 1.



**Table 1. Annual Assessment Information**

<b>Annual Assessment Information (Required)</b>	
<b>Year Covered by This Shortage Report</b>	
Start: July 1,	2022
End: June 30,	2023
<b>Supplier's Annual Assessment Planning Cycle</b>	
Start Month:	MONTH
End Month:	MONTH
<b>Data Reporting Interval Used:</b>	
<b>Volume Unit for Reported Supply and Demand:</b> <i>(Must use the same unit throughout)</i>	
<b>Water Supplier's Contact Information</b>	
Water Supplier Name:	WATER_SUPPLIER_NAME
Contact Name:	
Contact Title:	
Street Address:	
ZIP Code:	
Phone Number:	
Email Address:	
<b>Preparer's Contact Information</b> <i>(if different from above)</i>	
Preparer's Organization Name:	
Preparer's Contact Name:	
Phone Number:	
Email Address:	
<b>Supplier's Water Shortage Contingency Plan</b>	
WSCP Title:	
WSCP Adoption Date:	MM/DD/YYYY
<b>Other Annual Assessment Related Activities (Optional)</b>	
<b>Activity</b>	<b>Timeline/ Outcomes / Links / Notes</b>
Annual Assessment/ Shortage Report Title:	Optional
Annual Assessment /Shortage Report Approval Date:	Optional
Other Annual Assessment Related Activities:	Optional
(Add rows as needed)	

### **Table Instructions**

Table 1 has two parts to provide required and optional information as described below.

#### **Annual Assessment Information (Required)**

The top part of the table is entitled “Annual Assessment Information (Required)” and contains information required to be provided by the Supplier. Required information pertaining to the Annual Assessment and Annual Shortage Report includes the Annual Assessment reporting year start and end date, planning cycle begin and end month, data reporting interval used (monthly (preferred), bi-monthly, quarterly, or annual), contact information, volumetric unit used, as well as the preparer’s contact information (if different), and WSCP title and its adoption date.

**Tip:** Suppliers indicate the start and end month for their Annual Assessment planning cycle. Although the planning cycles of some Suppliers may vary from the period covered by the Annual Shortage Report, for reporting consistency the shortage reporting tables need to include projected data covering the twelve-month period beginning on the due date of the Annual Shortage Report.

**Tip:** Suppliers indicate the data reporting interval used. DWR recommends and prefers monthly reporting, however, Suppliers may use alternative intervals: monthly (preferred), bi-monthly, quarterly, or annual for their Annual Assessment. Whatever data reporting interval used, Suppliers need to include projected data covering the twelve-month period beginning on the due date of the Annual Shortage Report.

**Tip:** Volume Unit for Reported Supply and Demand will be to auto-fill in the subsequent Tables 2, 3, and 4. Volumetric units used in the Supplier’s UWMP can be found in UWMP Table 2-3. Volumetric units could be acre-feet (AF), hundred cubic feet (CCF or HCF), million gallons (MG). Table 1 Units Drop-down list consists of: AF, MG, and CCF/HCF.

**Tip:** Water Supplier's Contact Information – First the Water Supplier Name will be entered when logging into WUEdata Portal using the drop-down list for the Water Supplier Name. This Supplier name will be auto-filled into Table 1 from this login process. Water Supplier's Contact Information should be provided for the Supplier’s staff person (not a third party) familiar with the Annual Assessment and the listed person should be available for notification purposes and to answer questions as needed.

**Tip:** Preparer's Contact Information should be provided if a third-party entity outside the Supplier's agency prepared the Annual Assessment.

**Tip:** The WSCP can be found in WUEdata Portal and may have been uploaded as part of the UWMP as a chapter (Chapter 8), an appendix (Appendix Q), or as a stand-alone document. Make sure that the most recent version of WSCP is uploaded to WUEdata Portal.

**Tip:** Providing the WSCP Adoption Date is especially important when there are plan amendments. The date will allow the Annual Assessment preparers and reviewers to make sure that they are accessing the correct version. The WSCP can be found in WUEdata Portal.

### **Other Annual Assessment Related Activities (Optional)**

The bottom part of the table entitled "Other Annual Assessment Related Activities (Optional)" contains a location for Supplier to document optional information for future preparers' use. Additional rows can be added as needed. Optional information may include Supplier's decision-making process for the current Annual Assessment and significant changes such as additional procedures or deviations from WSCP procedures.

The Table 1 optional information could include the Annual Shortage Report title and approval date, as well as a summary of procedures, description of the steps followed, data sources considered, methodologies used, and the decision-making process, as well as additional activities based on the current year's conditions (policy changes, climate change impacts: fires, flooding, earthquakes, etc.).

**Activity:** In the next rows, use the first column "Activity" to state the name of the Supplier's related activity.

**Tip:** Make it easy to retrieve information by appropriately separating different activities and using descriptive names for the different activities.

**Tip:** Suppliers may use the rows to summarize their decision-making process and add any changes to the procedures which occurred in the current assessment. Although a Supplier can include the WSCP procedural steps and changes for the Annual Assessment in Table 1, the WSCP procedures as adopted and uploaded into WUEdata Portal will prevail. Therefore, if the changes are substantive, the Supplier may need to amend and readopt their WSCP.

Timeline/ Outcomes / Links / Notes Information: Suppliers may use the second column “Timeline/Outcomes/ Links / Notes” to present additional information on the Supplier’s related activity needed for the Supplier’s use during preparation and review, for state agency review, and for public understanding. The column could include such information as a link to the Annual Assessment/ Annual Shortage Report, the report approval date, a link to the governing body presentation on Annual Assessment/Annual Shortage Report, and notes on needed follow up actions such as reevaluation of shortage stages, response actions, and or updates to the plan.

**Tip:** Conducting the Annual Assessment is based on the Supplier’s procedures identified in their WSCP. If conditions have changed that require changes to the assessment procedures, please consider reviewing your WSCP and update it as needed. Note that in the event substantive changes were made to the WSCP, the plan will need to be amended, readopted by the governing body and resubmitted to DWR through the WUEdata Portal. For more details on the adoption process, see Chapter 10 of the UWMP Guidebook 2020.

**Tip:** Note that Annual Assessment and Annual Shortage Report approval is optional and is at the discretion of the Supplier as the CWC is silent on whether or not they must be approved by the governing body. Check to see if governing body approval is required in the Supplier’s WSCP. The Approval Date will most likely have occurred during a formal presentation to the governing body. Make sure there is a step to schedule the presentation with an action item to approve.

**Tip:** Supplier may want to inform the governing body of the water supply status and any needed or potential shortage response actions. This step could enable the staff to act on those shortage response actions in a timely manner.

## C. Key Data Inputs to Evaluate Water Supply Reliability

### *California Water Code*

#### **CWC §10632(a)(2)**

*The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:*

(A) . . .

(B) *The key data inputs and assessment methodology used to evaluate the urban water supplier’s water supply reliability for the current year and one dry year, including all of the following:*

- (i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.*
- (ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.*
- (iii) Existing infrastructure capabilities and plausible constraints.*
- (iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.*
- (v) A description and quantification of each source of water supply.*

The California Water Code requires each urban water supplier to provide a description of the data used to evaluate water supply reliability. The following sections will describe one by one the key data inputs needed to comply with CWC §10632(a)(2)(B): (i) through (v)

### ***i. Current Year Unconstrained Demand***

#### **California Water Code**

##### **CWC §10632(a)(2)(B)**

*The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:*

- (i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.*

....

The California Water Code requires each urban water supplier to provide a description of the data used to characterize and quantify the water use types and water demands in their UWMP. Unconstrained demand is water demand absent any water supply and demand restrictions (see Chapter 8, UWMP Guidebook 2020). For the purpose of this Guidance, the Current Year is defined as the twelve-month period which ends on June 30th, preceding the July 1st due date of the Annual Shortage Report.

As required by the CWC, the Supplier is to estimate the current year's unconstrained demand as part of the Annual Assessment for the purpose of determining currently needed water shortage response actions. In addition, the current year unconstrained demand will provide a basis for the estimated demand in the next twelve months of the Dry Year, with

adjustments for weather, growth, or other influencing factors.

### **Reporting Tables**

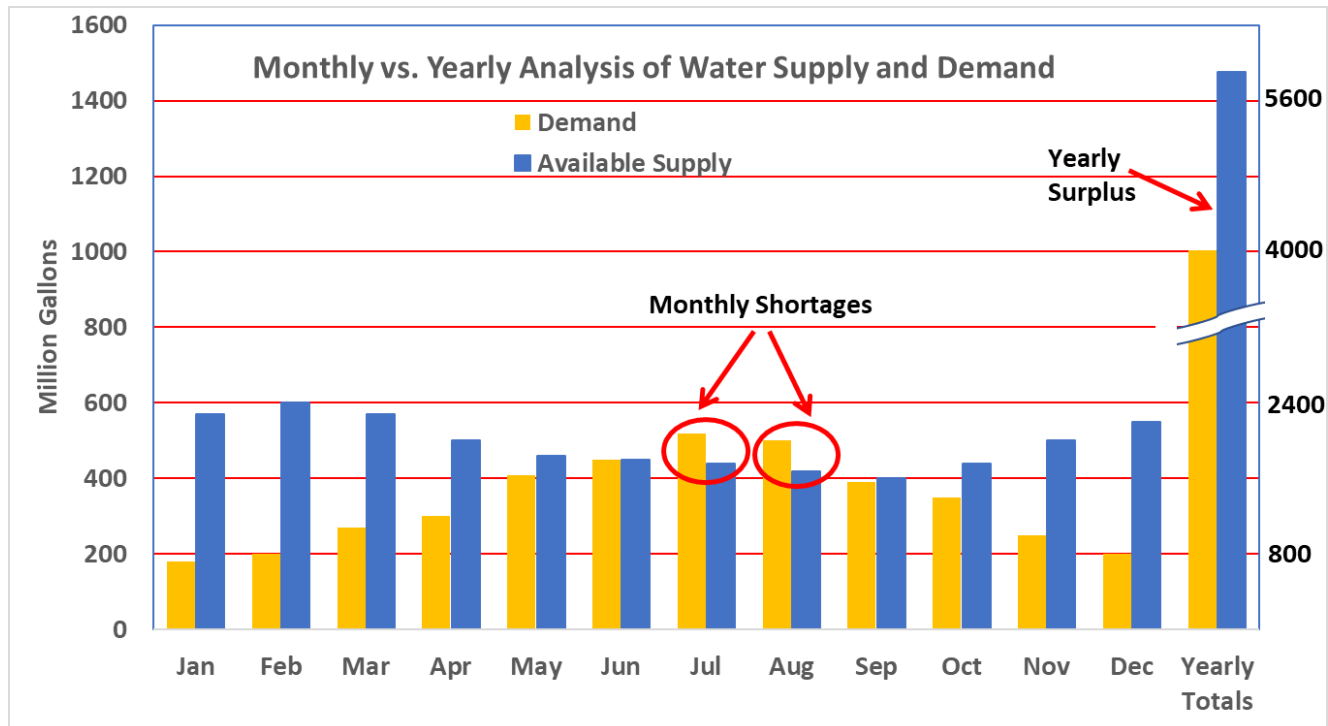
The following Table 2 provides a place for Suppliers to comply with the requirements as presented in the CWC §10632(a)(2)(B)(i) and is used to describe water demand by water use types and quantify their monthly and annual projected volumes. Additionally, Table 2 can be used for both potable and or non-potable supplies. The top part of Table 2 is intended for potable demands. The bottom part of the Table is to be used for dedicated non-potable demands. Examples of dedicated non-potable demands can be use sites that use non-potable supplies on regular basis such as golf courses, parks, medians, crops only using recycled water. Note that except for the placement of the data, Table 2 instructions remain the same for either potable or non-potable demands. Table 2 will be part of the Annual Shortage Report submittal in the WUEdata Portal.

The annual unconstrained demand is tracked in the table from July through June. Table 2 allows for the reporting of the demand data on a monthly basis (monthly time-step) because it is recommended and preferred to reveal potential shortages that may not be apparent on a longer time-step. A monthly time-step is used/recommended because, in general, water supplies and water demands are on opposite schedules. Water demands are greatest in the summer, and the water supplies are more plentiful in the winter. Even if the cumulative or total yearly water supply equals or exceeds the total yearly demand, the opposite schedules may hide potential seasonal water shortages. These hidden shortages become evident on a shorter time interval (Figure 3). In this hypothetical situation presented in Figure 3, Monthly versus Yearly Analysis and Water Supply and Demand, the assessment of July and August data indicates shortages: demands exceed the supplies. However, the yearly totals in Figure 3, hide the July and August shortages and instead indicate a supply surplus.

Knowledge of the potential shortage conditions in certain months informs Suppliers and indicates a need to prepare to take action. For that reason, in Table 2 and Table 3, it is highly recommended that Suppliers project their water demands and water supplies on a monthly time-step. Additionally, the monthly time-step can help the Suppliers to utilize their supplies in an efficient manner based on timing and availability, as well as to help the State prioritize assistance by aiding the areas affected by shortages based on severity of shortage conditions, timing, and supply availability. Even though CWC is silent on the time-step Suppliers must use to determine anticipated shortages over the year, DWR highly encourages Suppliers use the monthly time-step.

Also, the monthly time-step is recommended as the Suppliers already have actual historical

monthly supply data provided to the State Water Resources Control Board in their electronic annual reporting (eAR). This reported eAR data can be used as a starting point to project supplies into the assumed Dry Year and improve the reasonability of any anticipated shortages.



**Figure 3. Monthly vs. Yearly Water Supply and Demand Analysis**

As Table 2 is for quantifying unconstrained demands, Suppliers will need to estimate the hypothetical unconstrained demand without any water use restrictions (or demand reduction actions) currently in place. The main purpose of Table 2 is to calculate next year's estimated demand for the purpose of predicting next year's shortages for the Annual Shortage Report.

Table 2 as formatted can also be used by the Supplier to determine the Current Year's estimated demand from the July through June period preceding the July 1 submittal date of the Annual Shortage Report. The Current Year's demands will be based on known demands for months prior to the assessment and predicted up to and including June before the July 1 submittal date. The Current Year's data will provide the realistic foundation for projecting water supplies and demands into the Next Year starting in July where July 1<sup>st</sup> is the due date of the Annual Shortage Report. However, Suppliers will only be required to upload Next Year's projected data (July through June) into WUEdata Portal.

**Tip:** The methodology for determining the unconstrained demands should be clear and repeatable such that anyone following the directions would get the same result. This is important as the person responsible for each subsequent Annual Assessment may change. A good starting place for determining the unconstrained demands is described in the Supplier's WSCP. The UWMP Guidebook 2020, Chapter 4, Section 4.0 Water Use Characterization also contains useful information. In Chapter 4 there is assistance via the useful optional Planning Tool Worksheet tables (Section 4.2.6.4 Optional Planning Tool – Projected Use). Suppliers who submitted these optional Planning Tool Worksheet tables with their UWMP, will be able to reference these tables for the Annual Assessment. Another starting point are the tables submitted with the previous year's Annual Assessment, Annual Shortage Report, and the Optional Annual Assessment Tool worksheets (see Section F in this Guidance).

The unconstrained demands numbers from the previous mentioned tables can be further adjusted based on current conditions such as population changes, weather, etc.



**Table 2: Key Data Inputs – Demands**

= From prior tables  
= Auto calculated

Table 2: Water Demands <sup>1</sup>																
Use Type	Start Year: <span style="background-color: yellow;">2022</span>										Volumetric Unit Used <sup>2</sup> : <span style="background-color: yellow;"></span>					
<b>Drop-down list</b> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool (Add additional rows as needed)	Additional Description (as needed)	Level of Treatment for Non-Potable Supplies Drop-down list	Projected Water Demands - Volume <sup>3</sup>													
			Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total by Water Demand Type	
Demands Served by Potable Supplies																
																0
																0
																0
																0
																0
																0
																0
																0
																0
																0
Total by Month (Potable)			0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demands Served by Non-Potable Supplies																
																0
																0
																0
																0
																0
																0
Total by Month (Non-Potable)			0	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes: List considered factors impacting demands																
<sup>1</sup> Projections are based on best available data at time of submitting the report and actual demand volumes could be different due to many factors. <sup>2</sup> Units of measure (AF, CCF, MG) must remain consistent. <sup>3</sup> When opting to provide other than monthly volumes (bi-monthly, quarterly, or annual), please see directions on entering data for Projected Water Demand in the Table Instructions.																

**Table Instructions**

The table sections are described below:

**Start Year:** This field will be auto-filled from Table 1. Note this is the start year the report covers, e.g., "2022" for the first report due July 1, 2022 that covers July 2022 through June 2023.

**Volumetric Unit Used:** This field will be auto-filled from Table 1. Note this is the demand data unit. Supplier must use a consistent volumetric unit in all Tables.

**Tip:** Volumetric units could be acre-feet (AF), hundred cubic feet (CCF or HCF), million gallons (MG).

**Use Type:** A drop-down list for Use Type can be used to select demand types. Additional rows are provided for additional use types as needed. Use types include Single Family, Multi-Family, Commercial, Industrial, and Institutional/Governmental, Landscape, Groundwater recharge, Saline water intrusion barrier, Agricultural irrigation, Wetlands or wildlife habitat, Sales/Transfers/Exchanges to other Suppliers, Losses, etc. If a Supplier chooses to input the aggregated demand total, and not the detailed demand by Use Type, the Supplier may choose the category “All Demands” from the drop-down list to estimate the demands across the months. When a Supplier is quantifying non-potable demands separately from potable demands, the potable demands are entered in the top potable part of Table 2. The dedicated non-potable demands are entered in the bottom non-potable part of Table 2. Table 2 Demands Use Type Drop-down list consists of: All Demands, Single Family, Multi-Family, Commercial, Industrial, Institutional/Governmental, Landscape, Groundwater recharge, Saline water intrusion barrier, Agricultural irrigation, Wetlands or wildlife habitat, Sales to other agencies, Transfers to other agencies, Exchanges to other agencies, Losses, Other Potable, and Other Non-potable.

Note that if combining potable and non-potable demands on either a monthly or periodic basis, Suppliers should take care to match use types to water supplies with the allowed minimum level of treatment.

**Additional Description:** Suppliers may provide additional information on water uses as needed. Use this cell to provide additional description of the data used such that the person responsible for the Annual Assessment will be able to identify and quantify the demand amount in a consistent manner every year.

**Level of Treatment:** (Optional) Use the drop-down list to provide information on the minimum Level of Treatment for Non-Potable Supplies allowed for the use type specified in the first column. Suppliers will provide this information for the non-potable water use types in the bottom part of Table 2 in the section named “Demands Served by Non-Potable Supplies”. This water quality information may be needed to ensure water use applications have the appropriate quality of water delivered. For instance, a potable demand, like drinking water, needs a potable supply. It is imperative that the water use or demand type matches the authorized minimum water quality level. Table 2 Non-Potable Level of Treatment Drop-down list consists of: Primary, Secondary, Tertiary, and Advanced.

**Tip:** When there are recycled water supplies provided in the service area, those supplies must be delivered to an approved and permitted non-potable application. This water quality information will enable Suppliers to properly allocate their supplies.

**Projected Water Demands:** In Table 2 provide the projected unconstrained demand over the recommended twelve months from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year. CWC is silent on the appropriate time-step to use for the Annual Assessment, therefore Suppliers may use the recommended monthly time-step or use an alternative data reporting interval: bi-monthly, quarterly, or annual and enter their projections in the appropriate columns. For instance:

- MONTHLY (Preferred) – Suppliers reporting monthly provide the projected demand in each of the twelve months from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.
- BI-MONTHLY – Suppliers reporting bi-monthly projections provide their estimated bi-monthly demands into every other column as appropriate.
- QUARTERLY – Suppliers reporting quarterly projections provide their estimated quarterly demands into every third column as appropriate.
- ANNUAL – Suppliers reporting an annual aggregate number will need to provide their estimated total annual demands based on their planning cycle (see Table 1) as follows:
  - July – June Planning Cycle: Suppliers with a current planning cycle starting on the July due date and ending on the following June, report their single annual aggregate number for their estimated annual total demand in the last cell (the cell for the month of June).
  - Start before July – End before June Planning Cycle (Not July – June): Suppliers with a current planning cycle starting prior to the July due date and ending in the middle of the reporting period can report annual aggregate numbers for two cycles to cover the entire twelve-month reporting period. Enter the first number (for the first cycle) in the column corresponding to their planning cycle end month as reported in Table 1 and the second number (for the next cycle) in the June column. For example, Suppliers with a planning cycle starting in March and ending in February may enter the first cycle’s projections in the February column and the following cycle’s projections in

the June column. First annual number will cover March 2022 – February 2023. Second annual number will cover March 2023 – February 2024.

**Tip:** Suppliers using an alternate time-step (i.e., not monthly) for supply and demand projections need to ensure that the same time-step is used in Table 2 and Table 3 and that data is placed in the same corresponding months.

**Tip:** Supplier must use a consistent volumetric unit in all Tables.

**Tip:** Based on historical water use, models, and/or studies, Suppliers may assume that the unconstrained demand increases due to less rainfall in dry years. Suppliers may use a certain percentage increase for a single dry year, and other percentage increases over multiple dry years to estimate the Dry Year water demands. Suppliers may reference their UWMP Table 7-1 and their WSCP for their planned methodology. For example, Table 7-1 shows that some Suppliers have reported increasing the projected Dry Year demands by 5% to 15% over the normal-year water demands.

**Total by Water Demand Type (Annual):** Auto summation is shaded green. This number is the twelve-month sum for the specific Demand Type.

**Notes:** At the bottom of the table there is a Notes section where Suppliers may write out the considered factors impacting the demands such as weather, growth, and other influencing factors, such as policies, etc. Again, the information should be clear enough that the factors can be considered by a different person in subsequent Annual Assessments.

**Tip:** List factors considered such as weather, current and next year conditions, and anticipated growth in population, businesses, and water demands for the year, etc.

**Tip:** For each of the factors considered, state how the Supplier quantified the effects of each factor: calculations and assumptions made, studies used, etc., such that the methodology can be evaluated, improved, and used consistently for each subsequent annual water supply and demand assessment.

## **ii. Current Year Available Supply**

### **California Water Code**

#### **CWC §10632(a)(2)(B)**

*The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the*

*following:*

...

*(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.*

*(iii) Existing infrastructure capabilities and plausible constraints.*

...

*(v) A description and quantification of each source of water supply.*

CWC requires each urban water supplier to provide a description of the data used to characterize and quantify the water supplies. For the current year, the Supplier is to evaluate the water supplies as determined from the current year's conditions. The water quantity needs to factor in such information as stored supplies, contracted supplies, projected supplies based on current and recent historical influencing factors. For the Dry Year, the water supplies should be adjusted for assumed dry-year conditions, which may affect availability of local surface and ground waters as well as imported supplies.

CWC has three separate sections (sections ii, iii, and v) addressing requirements for water supplies. All three sections' requirements can be addressed in Table 3 and the Table 3 directions are provided here. However, for ease of navigating the requirements, each one of those sections is also briefly discussed separately below.

### **Reporting Table**

Table 3 can be used by Suppliers to describe and quantify water supply sources as required by all three sections of the CWC §10632(a)(2)(B): (ii), (iii), and (v). This Table can be used to calculate current year's estimated supplies (for the Annual Assessment). It can also be used to project next year's (assumed dry) estimated available supplies (for the Annual Shortage Report). As previously described for demands, Table 3 also has a recommended monthly time-step for quantifying water supplies to reveal potential shortages that may be hidden in a longer time-step. Table 3 will be part of the Annual Shortage Report submittal in the WUEdata Portal.

Additionally, Table 3 can be used for both potable and or non-potable supplies. The top part of Table 3 is for potable supplies and the bottom part for non-potable supplies. Table 3

instructions are the same for either potable or non-potable supplies except for the placement of the data. Recycled water is an example of a non-potable supply. Recycled water has various levels of treatment and these levels limit the application of these non-potable supplies. There are use sites that use non-potable supplies on a regular basis such as golf courses, parks, medians, and crops only using recycled water.

***Tip:*** The methodology for quantifying the water supplies should be clear and repeatable for the person responsible for each subsequent Annual Assessment. The procedures can be found in each Supplier's WSCP. The UWMP Guidebook 2020, Chapter 6, Section 6.0 Water Supply Characterization also is a good starting place for determining the current year's water supplies. In Chapter 6 there is assistance via the useful optional Planning Tool Worksheet tables (UWMP Section 6.1.3 Optional Planning Tool). Suppliers who submitted these optional Planning Tool Worksheet tables with their UWMP will be able to reference these tables to help in their Annual Assessment. After July 2022, Suppliers can also reference their previous year's Annual Assessment for additional information.

**Table 3: Key Data Inputs – Supplies**

															= From prior tables		= Auto calculated
<b>Table 3: Water Supplies<sup>1</sup></b>																	
<b>Water Supply</b>	<b>Start Year:</b> 2022			<b>Volumetric Unit Used<sup>2</sup>:</b>													
<b>Drop-down List</b> May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool (Add additional rows as needed)	Additional Detail on Water Supply	Projected Water Supplies - Volume <sup>3</sup>												Water Quality  Drop-down List	Total Right or Safe Yield* (optional)		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun			Total by Water Supply Type	
<b>Potable Supplies</b>																	
<b>Total by Month (Potable)</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
<b>Non-Potable Supplies</b>																	
<b>Total by Month (Non-Potable)</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0		0

Notes: List hydrological and regulatory conditions, infrastructure capabilities, and plausible constraints which may impact the water supplies

<sup>1</sup>Projections are based on best available data at time of submitting the report and actual supply volumes could be different due to many factors.  
<sup>2</sup>Units of measure (AF, CCF, MG) must remain consistent.  
<sup>3</sup>When opting to provide other than monthly volumes (bi-monthly, quarterly, or annual), please see directions on entering data for Projected Water Supplies in the Table Instructions.

**Table Instructions**

The table sections are described below:

**Start Year:** This field will be auto-filled from Table 1. Note this is the start year the report covers, e.g., "2022" for the first report due July 1, 2022 that covers July 2022 through June 2023.

**Volumetric Unit Used:** This field will be auto-filled from Table 1. Note this is the water supply data unit. Supplier must use a consistent volumetric unit in all Tables.

**Water Supply Type:** In the first column, use the drop-down list for Water Supply type (or water source type) and add additional rows as needed. Table 3 Water Supply Type Drop-

down list consists of: Purchased/Imported Water, Supply from Storage, Groundwater (not desal.), Surface water (not desal.), Recycled Water, Desalinated Groundwater, Desalinated Surface water, Stormwater Use, Transfers, Exchanges, and Other.

**Tip:** As this table is intended to assist the Supplier, categories can be added or removed as needed for each water supply category as applicable for each Annual Assessment.

**Tip:** In conducting the Annual Assessment, the Supplier needs to consider all available water supply sources in its water supply portfolio. Water supply types may include, but are not limited to surface waters (State Water Project, Central Valley Project, local surface water); groundwater; imported water from water transfer, purchase, desalinated water, and recycled water, etc.

**Additional Details on Water Supply (optional):** Provide additional descriptions of the water supply listed in the first column. Also include the water supply projection details that will assist in maintaining annual consistency.

**Tip:** Reference WSCP sections as appropriate. See section iii and section v for more information.

**Projected Water Supplies:** In Table 3 provide the projected water supplies over the recommended twelve months from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year. CWC is silent on the appropriate time-step to use for the Annual Assessment, therefore Suppliers may use the recommended monthly time-step or use an alternative data reporting interval: bi-monthly, quarterly, or annual projections and enter their projections in the appropriate columns. For instance:

- MONTHLY (Preferred) – Suppliers reporting monthly provide the projected water supply in each of the twelve months from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.
- BI-MONTHLY – Suppliers reporting bi-monthly projections provide their estimated bi-monthly water supply into every other column as appropriate.
- QUARTERLY – Suppliers reporting quarterly projections provide their estimated quarterly water supply into every third column as appropriate.
- ANNUAL – Suppliers reporting an annual aggregate number will need to provide their



estimated total annual water supply based on their planning cycle (see Table 1) as follows:

- July – June Planning Cycle: Suppliers with a current planning cycle starting on the July due date and ending on the following June, report their single annual aggregate number for their estimated annual total water supply in the last cell (the cell for the month of June).
- Start before July – End before June Planning Cycle (Not July – June): Suppliers with a current planning cycle starting prior to the July due date and ending in the middle of the reporting period can report annual aggregate numbers for two cycles to cover the entire twelve-month reporting period. Enter the first number (for the first cycle) in the column corresponding to their planning cycle end month as reported in Table 1 and the second number (for the next cycle) in the June column. For example, Suppliers with a planning cycle starting in March and ending in February may enter the first cycle’s water supply projections in the February column and the following cycle’s water supply projections in the June column. First annual number will cover March 2022 – February 2023. Second annual number will cover March 2023 – February 2024.

**Tip:** Suppliers using an alternate time-step (e.g., not monthly) for supply and demand projections need to ensure that the same time-step is used in Table 2 and Table 3 and that data is placed in the same corresponding months.

**Tip:** In Table 3 for each month, Suppliers will enter the combination of distributed carryover supply plus additional applicable supplies for the coming year. These additional supplies can include, but are not limited to, groundwater, dry year monthly surface supply, and dry year monthly imported water allocation.

**Tip:** If a water supplier wants to do a monthly analysis, but only has a yearly water supply allocation, the supplier will need to distribute the allocated annual water supply total over the months. To do this, the Supplier may take into consideration the seasonal variability of the demands or water use patterns. A recent water use analysis performed by DWR staff (using data from 20 water suppliers) shows that the water use in summer months is about 140% of the monthly average (annual total/12). One method to account for the seasonal variability is to separate, via a decomposition analysis, the annual water use total into two parts – an annual constant (or trend) component and a sinusoidal (or

seasonal) component. The annual constant component represents the water use in the winter months (this is the minimum monthly water use demand which could be as low as 60% of the monthly average). The sinusoidal component represents the water use (above the minimum) which is mainly due to outdoor landscape irrigation. The supplier should therefore check if its supply sources and its infrastructure capacity can meet a summer demand of about 1.4 times the average. (Note that in a multi-year decomposition analysis, the two components are called the trend and the seasonal components. The trend component is usually calculated with the 12-month running average procedure.)

Quantify the water supplies as follows:

- First, the current year's supplies are determined from the current supply conditions prior to the July 1<sup>st</sup> submittal date. This initial base supply is the water supply reasonably known to be available prior to the submittal date July 1<sup>st</sup>.
- Second, take the initial base carryover supply that is determined to be available at the end of the current year and appropriately distribute it over the next 12 months beginning July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.
- Third, this initial base supply will then be augmented using the defined Dry Year supplies. Dry Year supplies are described in the UWMP Guidebook 2020 Chapter 8.2.2 as follows: Characteristic of a "dry year is at the discretion of the Supplier, but it should be adequately defined and ideally align with one of the WSCP water shortage levels". Distribute and add the Supplier's defined Dry Year supplies to the initial base supply beginning July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.

**Tip:** For Supplier's defined Dry Year see the Supplier's WSCP or their UWMP, Table 7-1. Use the appropriate year for water supply quantities: single dry year or one of the years listed if projecting a multi-year drought.

- Fourth, consider any changes that may impact the water supplies' quantity and availability for the year from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year. The initial base supply and Dry Year supply total can be further adjusted as needed based on the projected impacts.

**Tip:** For more information on potential conditions impacting supplies, such as physical infrastructure changes, and planned operations and maintenance, see section iii.

Total Water by Supply Type (Annual): Auto summation is shaded green.

Water Quality (Non-Potable): Supplier may use the drop-down list to provide information on the source water quality for the non-potable water supplies only in the bottom part of Table 3. See Section iii and Section v for more information. Table 3 Water Quality (Non-Potable) Drop-down list consists of: Primary, Secondary, Tertiary, and Advanced.

Total Right or Safe Yield: Supplier can state the sustainable production volume. This is optional to aid in visualizing constraints to the supplies. See section iii and section v for more information.

Notes: At the bottom of the table, Supplier may write out the hydrological and regulatory conditions, infrastructure capabilities, and plausible constraints which may impact the water supplies beginning in July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.

### ***iii. Existing Infrastructure Capabilities and Plausible Constraints***

#### ***California Water Code***

##### ***CWC §10632(a)(2)(B)***

*The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:*

...

*(iii) Existing infrastructure capabilities and plausible constraints.*

...

CWC requires each urban water supplier to provide a description of the infrastructure capabilities and any plausible constraints used to evaluate water supply reliability. For instance, the Supplier can provide the capacity ranges of their equipment including storage and carrying capacities. The Supplier may also include any constraints that will limit the supply, such as equipment maintenance, that may change the data for the following Dry Year from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.

#### ***Reporting Tables***

The requirements of CWC §10632(a)(2)(B)(iii) are already addressed in Table 3 (see section ii. Current Year Available Supply). The required description of the existing infrastructure

capabilities and plausible constraints for each water supply type can be met by filling out the following columns in Table 3: Additional Details on Water Supply, Water Quality, and Total Right or Safe Yield Type. The Notes section at the bottom of the table, can also be used by the Supplier to submit the required hydrological and regulatory conditions, infrastructure capabilities, and plausible constraints which may impact the water supplies from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.

**Tip:** Suppliers should account for any new or upcoming infrastructure changes and conditions impacting capabilities and constraints. These details should also be added into Supplier’s WSCP and, if substantive changes to the key elements of the WSCP, that plan will need to be amended and readopted. The WSCP and Annual Assessment should be coordinated. Examples of infrastructure capabilities and plausible constraints may include new wells, wells with decreased capacity, scheduled operation and maintenance or failure impacts, or reservoir capacity.

***iv. Assessment Methodology: Locally Applicable Evaluation Criteria***

***California Water Code***

***CWC §10632(a)(2)(B)***

*The key data inputs and assessment methodology used to evaluate the urban water supplier’s water supply reliability for the current year and one dry year, including all of the following:*

....

*(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.*

....

CWC requires that each urban water supplier describe the assessment methodology used to evaluate water supply reliability. This assessment methodology should be described in the Supplier’s WSCP. In the WSCP, the Supplier can provide the assessment methodology for the various data sources used to evaluate the water supply availability for both the current year and one Dry Year from July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year. All of the following provisions in CWC §10632(a)(2)(B): (i) through (v) must be included in the evaluation.

This information is required to be included in the WSCP; however, Suppliers may want to list the methods and actions in their Annual Shortage Report as a means of recording any clarifications for use in subsequent assessments. This information can be included in optional attachments to the Annual Shortage Report.

**Tip:** This assessment methodology along with locally applicable evaluation criteria are described in the Supplier’s WSCP. Examples of evaluation criteria may include reservoir or groundwater levels, minimum quantities required for human consumption, fire and sanitation, etc. Section F: Optional Annual Assessment Tool of this Guidance provides an optional workbook to present and assess the data; and it facilitates the submittal report into WUEdata. If the Supplier’s WSCP does not provide enough information to do the Annual Assessment, the plan may need to be amended, approved, and resubmitted to DWR.

#### ***v. Description and Quantification of Each Water Supply Source***

##### **California Water Code**

##### **CWC §10632(a)(2)(B)**

*The key data inputs and assessment methodology used to evaluate the urban water supplier’s water supply reliability for the current year and one dry year, including all of the following:*

...

*(v) A description and quantification of each source of water supply.*

CWC requires that each urban water supplier describe and quantify each water supply source. This description and quantification of the supply data is collected to be used in combination with other data (demand data and infrastructure constraints) to perform the annual water supply and demand assessment and to evaluate water supply reliability.

##### **Reporting Tables**

The requirements of CWC §10632(a)(2)(B)(v) are already addressed in Table 3 (see section ii. Current Year Available Supply). The required description of each water supply type can be submitted by filling out the following columns in Table 3: Water Supply Type, Additional Details on Water Supply, Water Quality, and Total Right or Safe Yield. Additionally, the required quantification of each water supply type can be submitted by filling out the monthly columns under the heading Projected Water Supplies – Volume in Table 3. The

Notes section at the bottom of the table may be used for further description or information.

**Tip:** Supplier can use the Total Right or Safe Yield column to state if there are monthly or seasonal restrictions to the water supply sources. This ensures the limitations are taken into account during the assessment. Examples of limitations may include restrictions on surface water diversion, ground water basin safe yield or adjudication pumping quotas, water rights, minimum instream flow, and riparian flows.

**Tip:** Match the source water quality with the appropriate demand type. This is particularly important with respect to recycled water sources. Note Suppliers may use the non-potable section of Table 3 to assist proper use application.

**Tip:** Note dry-year conditions may cause the degradation of the water quality of certain sources making them unusable, e.g., eutrophication in lakes or concentration of total dissolved solids of recycled water.

## D. Supply and Demand Analysis

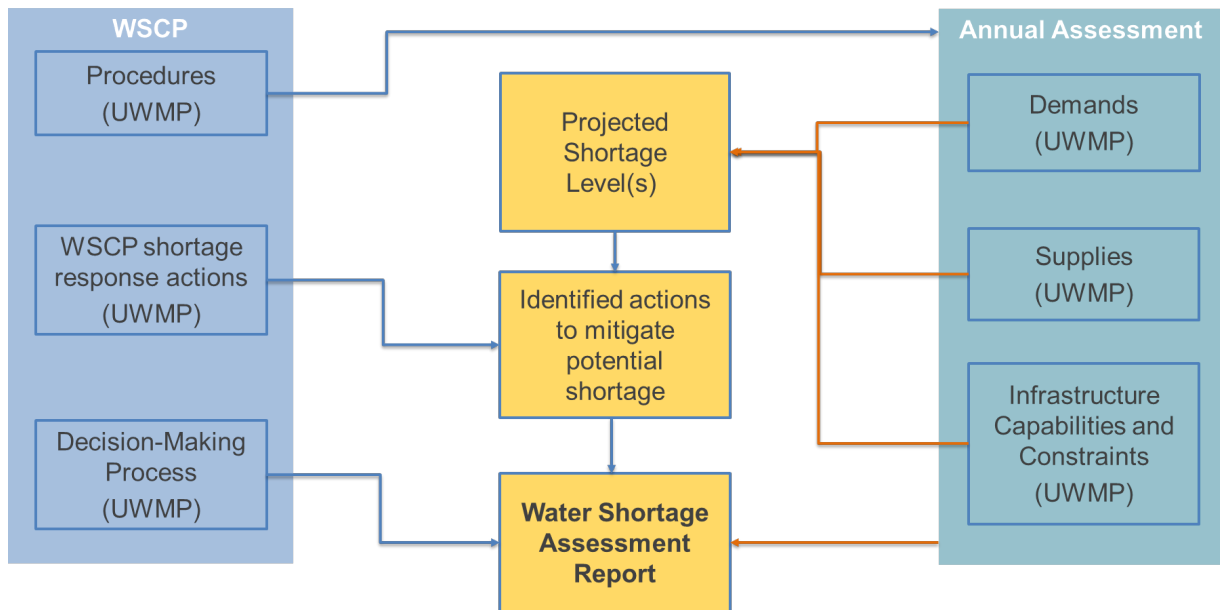
### California Water Code

#### **CWC §10632.1**

*An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.*

CWC requires that each urban water supplier assess their water supplies on an annual basis. This allows Suppliers to anticipate potential shortages and take timely actions to meet the water needs of their customers. Figure 4 is a simplified diagram showing how the Annual Assessment and WSCP work together to obtain results of projected shortage levels and water shortage response actions needed to develop the water shortage assessment report (Annual Shortage Report). The assessment of water supplies and demands includes calculating potential shortages and determining potential water shortage response actions to meet their customers' needs. Tables 4(P), 4(NP) and 5 provide a place for Suppliers to

comply with the requirements in CWC §10632.1. Table 4(P) is for potable water supplies and demands. Table 4(NP) is for non-potable supplies and dedicated non-potable demands/customers. The following use of “Table 4” will refer to both Tables 4(P) and Table 4(NP).



**Figure 4. Water Supply and Demand Assessment Components**

### Reporting Tables

The following Table 4 provides a place for Suppliers to list their total unconstrained demands, total supplies, the anticipated shortages all on a monthly basis. The table also has a place to list the volumetric benefits from shortage response actions. Table 4 will be part of the Annual Shortage Report submittal in the WUedata Portal. What follows is a simplified description of the calculations to fill out Table 4.

Suppliers will use top part of Table 4 to compare the projected supplies to unconstrained demands, the comparison of which will identify any potential shortages.

Suppliers will use the bottom part of the Table 4 to balance demands and supplies through the application of planned water shortage response actions.

- First, Suppliers identify potential shortages through a simple calculation: subtracting demand from supply ( $= (\text{Supply} - \text{Demand})$ ). The calculation is assuming there are no

current water shortage response actions in place (without WSCP Actions). A negative result indicates a water shortage and triggers the need for response actions (Figure 4).

- Second, Suppliers calculate the percentage shortage without WSCP actions: divide shortage quantity by total unconstrained demand and multiply by 100 to get percentage ( $= ((\text{Shortage volume} / \text{Unconstrained demand}) \times 100)$ ). Note: A negative result indicates a water shortage and triggers the need for response actions. This percentage number indicates the Supplier's Shortage Level. See Table 8-1 in Supplier's UWMP.
- Third, Suppliers refer to their WSCP to identify and factor in the benefits of potential or current actions. Suppliers can refer to WSCP and also Table 8-2 and 8-3 for their locally defined shortage response actions and the corresponding benefits. For each particular action reference the column with the heading "How much is this [action] going to reduce the shortage gap." Suppliers can add in the benefits of the response actions both proposed and currently in place but subtracted from the unconstrained demand in Table 2.

The following Table 4 instructions remain the same for potable (Table 4(P)) and non-potable (Table 4(NP)) purposes except in two ways. First, the appropriate data retrieval location in Table 2 and 3 differs. Second, the monthly Shortage Level is only presented in the potable table: Table 4(P). The reason is that the potable supplies can be applied at all use sites and better reflect the Shortage Level. In contrast, non-potable supplies have constraints that require prepared and permitted use sites. If a Supplier combines the potable and non-potable supplies in their assessment without thought, the resulting Shortage Level may hide shortages. For instance, a surplus in non-potable supplies could be erroneously applied to meet a potable demand. Therefore, it is recommended that the non-potable surplus and shortage be handled separately.

Similar to Table 2 and Table 3, Table 4 calculates the data using a monthly time-step in order to reveal potential shortages that may be hidden in a longer time-step.



**Table 4(P): Potable Water Shortage Assessment**

Table 4(P): Potable Water Shortage Assessment <sup>1</sup>														Start Year: 2022		Volumetric Unit Used <sup>2</sup> :					
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun <sup>3</sup>	Total								
Anticipated Unconstrained Demand																					
Anticipated Total Water Supply																					
Surplus/Shortage w/o WSCP Action																					
% Surplus/Shortage w/o WSCP Action																					
<b>State Standard Shortage Level</b>																					
Planned WSCP Actions																					
Benefit from WSCP: Supply Augmentation																					
Benefit from WSCP: Demand Reduction																					
Revised Surplus/Shortage with WSCP																					
% Revised Surplus/Shortage with WSCP																					

<sup>1</sup>Assessments are based on best available data at time of submitting the report and actual volumes could be different due to many factors.  
<sup>2</sup>Units of measure (AF, CCF, MG) must remain consistent.  
<sup>3</sup>When optional monthly volumes aren't provided, verify Tables 2 and 3 use the same columns for data entry and are reflected properly in Table 4 and make sure to use those same columns to enter the benefits from Planned WSCP Actions. Please see directions on the shortage balancing exercise in the Table Instructions. If a shortage is projected, the supplier is highly recommended to perform a monthly analysis to more accurately identify the time of shortage.

**Table 4(NP): Non-Potable Water Shortage Assessment (Optional)**

Table 4(NP): Non-Potable Water Shortage Assessment <sup>1</sup>														Start Year:		Volumetric Unit Used <sup>2</sup> :					
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun <sup>3</sup>	Total								
Anticipated Unconstrained Demand: Non-Potable																					
Anticipated Total Water Supply: Non-Potable																					
Surplus/Shortage w/o WSCP Action: Non-Potable																					
% Surplus/Shortage w/o WSCP Action: Non-Potable																					
Planned WSCP Actions																					
Benefit from WSCP: Supply Augmentation																					
Benefit from WSCP: Demand Reduction																					
Revised Surplus/Shortage with WSCP																					
% Revised Surplus/Shortage with WSCP																					

<sup>1</sup>Assessments are based on best available data at time of submitting the report and actual volumes could be different due to many factors.  
<sup>2</sup>Units of measure (AF, CCF, MG) must remain consistent.  
<sup>3</sup>When optional monthly volumes aren't provided, verify Tables 2 and 3 use the same columns for data entry and are reflected properly in Table 4 and make sure to use those same columns to enter the benefits from Planned WSCP Actions. Please see directions on the shortage balancing exercise in the Table Instructions. If a shortage is projected, the supplier is highly recommended to perform a monthly analysis to more accurately identify the time of shortage.

**Table Instructions**

The table sections are described below:

Start Year: This field will be auto-filled from Table 1. Note this is the start year the report

covers, e.g., "2022" for the first report due July 1, 2022 that covers July 2022 through June 2023.

Volumetric Unit Used: This field will be auto-filled from Table 1. Note this is the demand data unit. Supplier must use a consistent volumetric unit in all Tables.

Anticipated Unconstrained Demand: This field will be auto-filled from Table 2 using the monthly demand totals (see row named Total by Month). Check that all data reporting columns used in Tables 2 and 3 align and are reflected properly in Table 4.

**Tip:** Make sure that the correct data is copied from Table 2. Also, if separating potable and non-potable demands check both data sets.

**Tip:** If using the Optional Annual Assessment Tool, this row will be auto-filled from the appropriate demand data.

Anticipated Total Water Supply: This field will be auto-filled from Table 3 using the monthly Water Supply totals (see row named Total by Month). Check that all data reporting columns used in Tables 2 and 3 align and are reflected properly in Table 4.

**Tip:** Supplier must use a consistent volumetric unit in all Tables.

**Tip:** Make sure that the correct data is copied from Table 3. Also, if separating potable and non-potable supplies check both data sets.

**Tip:** If using the Optional Annual Assessment Tool, this row will be auto-filled from the appropriate supply data.

Surplus/Shortage w/o WSCP Action: Auto calculation is shaded green. (= Supply – Demand). This quantity is the volume of water short (or in surplus if positive) assuming no shortage response actions are occurring.

**Tip:** This row will be automatically calculated using the appropriate supply and demand data.

% Surplus/Shortage w/o WSCP Action: Auto calculation is shaded green.

(= (((Supply – Demand)/Unconstrained Demand) \* 100)). This monthly number indicates the percent water supplies are short (or in surplus if positive) assuming no water shortage actions are occurring.

**Tip:** This percentage number is automatically converted in the next row to the corresponding state standard shortage level.

**Tip:** This row will be automatically calculated using appropriate supply and demand data.

**State Standard Shortage Level:** Auto calculation is shaded green (for Table 4(P) only).

This Shortage Level is presented only in Table 4(P). The Shortage Level number is based only on the potable water supplies because there are constraints placed on the use of non-potable supplies. The Shortage Level number is to be included in Table 5 as it represents the Shortage Level estimated without Shortage Response Actions. A surplus or shortage in the non-potable supplies will be discussed in the following “Planned WSCP Actions” section. Use the projected Shortage Level along with Supplier’s WSCP Table 8-1 for determining the corresponding response actions. These anticipated actions will be used as a starting place for the following shortage balancing exercise in the bottom part of the Table 4(P).

**Tip:** This row will be automatically calculated using the appropriate “% Surplus/Shortage w/o WSCP Action” data.

**Planned WSCP Actions:** This row separates the top part of Table 4 from the bottom part and no data is entered on this row.

**Benefit from WSCP: Supply Augmentation:** Supplier will manually enter data in this Table 4 row to add the Supplier anticipated supplemental water that is needed in the appropriate months (to match their Data Reporting Interval columns) beginning July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year. The Supplier will use the indicated Shortage Level(s) along with their WSCP Table 8-3 for the corresponding locally appropriate supply augmentation actions anticipated to be triggered. These anticipated actions will be used as a starting place for the following shortage balancing exercise in the bottom part of the Table 4.

**Tip:** The Benefit from WSCP: Supply Augmentation row allows the Supplier to include an additional water quantity resulting from a supply augmentation action. The Supplier may trigger the benefit when a certain shortage level is met as specified in their WSCP Table 8-3. Table 8-3 also provides an estimated water volume or percentage to reduce the shortage gap.

**Tip:** Supplier will need to manually enter volumetric data determined from their

planned supply augmentation actions (see WSCP Table 8-3).

**Tip:** Supplier must also account for compliance and enforcement actions, communication actions, as well as operational changes and other actions that are anticipated to augment water supplies.

**Tip:** Supplier will need keep track of the specific supply augmentation actions and their estimated benefits to enter into Table 5.

An additional non-potable supply augmentation option can be utilized if Table 4(NP) indicates a surplus (positive number) in the row labeled “Surplus/Shortage w/o WSCP Action.” If this is the case, then the Supplier may consider ways to utilize the non-potable surplus by ensuring appropriate infrastructure (e.g., purple pipe) and permitting are in place. If these are not currently available, Suppliers might want to consider this need in planning for future water demands.

This additional non-potable water benefit may even help to reduce the shortage gap at appropriate use sites if used in lieu of potable supplies.

If Table 4(NP), indicates a shortage (negative number) in the row labeled “Surplus/Shortage w/o WSCP Action” then the Supplier may want to consider additional sources to augment the supplies and reduce the shortage gap. These non-potable use sites can also be served by potable sources if available.

**Benefit from WSCP: Demand Reduction:** Supplier will manually enter data in this Table 4 row with the Supplier estimated volumetric benefits from demand reduction actions planned in the appropriate months (to match their Data Reporting Interval columns) beginning July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.

Next Suppliers use the indicated Shortage Level(s) along with their WSCP Table 8-2 for the corresponding appropriate demand reduction actions anticipated to be triggered. These anticipated actions will be used as a starting place for the following shortage balancing exercise in the bottom part of the Table 4.

**Tip:** The Benefit from WSCP: Demand Reduction row allows the Supplier to include an estimated water quantity decrease resulting from a demand reduction action. The Supplier may trigger the benefit when a certain shortage level is met as specified in their WSCP Table 8-2. Table 8-2 also provides an estimated water volume or

percentage to reduce the shortage gap

**Tip:** Supplier will need to manually enter volumetric data estimated from their planned demand reduction actions (see WSCP Table 8-2).

**Tip:** Supplier must also account for compliance and enforcement actions, communication actions, as well as operational changes, mandatory prohibitions, and other actions that are anticipated to reduce water demands.

**Tip:** Supplier will need keep track of the specific demand reduction actions to enter into Table 5.

If Table 4(NP), indicates a shortage (negative number) in the row labeled “Surplus/Shortage w/o WSCP Action” then the Supplier may want to consider additional demand reduction actions to bridge the non-potable shortage gap.

Revised Surplus/Shortage with WSCP: Auto calculation is shaded green.

(= Total Revised Supply – Total Revised Demand). The number presented in this row displays the revised shortage in the volumetric units.

**Tip:** The elimination of water shortage conditions may require various combinations of actions. The estimated benefit from triggering various response actions can be found in Tables 8-2 and 8-3 of the Supplier’s WSCP.

% Revised Surplus/ Shortage with WSCP: Auto calculation is shaded green.

(= ((Revised Surplus/Shortage w/ WSCP)/Total Unconstrained demand) \* 100). The number presented in this row displays the revised percentage shortage.

**Tip:** The goal here is that the cumulative benefit of all ongoing and anticipated shortage response actions should reduce the shortage gap, and ideally eliminate the shortage calculated. If the goal is achieved this cell will be zero or positively greater, and the customer demands will be met.

**Tip:** If the cumulative benefit of all ongoing and anticipated shortage response actions does NOT eliminate the shortage calculated, Suppliers should include additional actions to their table until the goal is achieved. If a Supplier anticipates a major water shortage and is concerned of not being able to meet demand to satisfy minimum health and safety needs of its customers, DWR recommends that the Supplier notify

and coordinate with local and state emergency services as soon as possible.

## E. Planned Shortage Response Actions

### *California Water Code*

#### **CWC §10632.1**

*An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.*

CWC requires that each urban water supplier inform DWR of the actions they plan to take as a result of their water supply and demand analysis. The potential actions include triggered shortage response actions, compliance and enforcement actions, and communication actions (see section 8.4, Chapter 8, UWMP Guidebook 2020). By selecting the appropriate actions and stating them in Table 5, Suppliers are primed to implement actions to address the shortages and the water needs of their customers.

When water supplies do not equal or exceed the customers' demands, the water supplies are insufficient or short. There are two methods to deal with the shortages. Suppliers can increase, augment, their water supplies by developing additional supplies or sources such as through recycled water, desalination, water purchases, new wells, additional pumping, increase water treatment efficiency, increasing water storage, etc. Suppliers can also decrease, reduce, their water demands through requesting voluntary reductions, actively reducing water losses, limiting certain applications or uses of water, etc.

### *Reporting Table*

The following Table 5 provides a place for Suppliers to comply with CWC requirements to report the anticipated shortage levels along with shortage response actions that are anticipated or currently being implemented. These are the specific actions and their estimated benefits that were used to reduce the anticipated shortage gaps identified in Table 4. In addition to the supply augmentation and demand reduction actions, the shortage

response actions also include compliance and enforcement actions, and communication actions and should be consistent with the Supplier's WSCP. Additionally, Suppliers use Table 5 to provide trigger dates and estimated benefits from the shortage response actions planned. Table 5 is part of the Annual Shortage Report submittal in the WUEdata Portal.

This table is similar to UWMP Guidebook 2020 Table 8-2 and Table 8-3 combined. However, unlike the UWMP tables, this table is to be filled with information and appropriate actions determined from the Annual Assessment in process. That means the Table 5 is to provide information that is current and anticipated to occur over the 12 months beginning July (where July 1st is the due date of the Annual Shortage Report) through June of the next calendar year.

Even though Suppliers are required to provide details on anticipated shortage levels and the corresponding response actions, Suppliers can use Table 5 to record actions that are implemented on a voluntary basis even when there is no shortage currently occurring and no shortage is anticipated in the future.

**Table 5: Planned Water Shortage Response Actions**

Table 5: Planned Water Shortage Response Actions				July 1, 2022	to June 30, 2023	
Anticipated Shortage Level	ACTIONS: Demand Reduction, Supply Augmentation, and Other Actions. (Drop-down List)	Is action already being implemented? (Y/N)	How much is action going to reduce the shortage gap?		When is shortage response action anticipated to be implemented?	
Drop-down List of State Standard Levels (1 - 6) and Level 0 (No Shortage)	These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.		Enter Amount	(Drop-down List) Select % or Volume Unit	Start Month	End Month
<i>Add additional rows as needed</i>						
NOTES:						

**Table Instructions**

The table sections are described below:

**Start Year:** This field will be auto-filled from Table 1.

**End Year:** This field will be auto-filled from Table 1.

**Anticipated Shortage Level:** In the first column provide one of the State’s Six Standard Water Shortage Levels (CWC §10632(a)(4)) corresponding to the predicted state shortage level identified in Table 4(P) row “State Standard Shortage Level”. Note that Table 4(P) may indicate shortage levels that vary from month-to-month. List each of these anticipated Shortage Levels in Table 5. For each Shortage level there may be multiple actions. Each



Shortage Response Action should be entered separately on a separate row along with its corresponding estimated details: current implementation status, volume benefit/shortage gap reduction, and anticipated future implementation period.

In addition to the State's Six Standard Water Shortage Levels, Suppliers may use an additional level "0 (No Shortage)" to indicate actions that are implemented on a voluntary basis even when there is no shortage currently occurring and no shortage is anticipated in the future. Table 5 Anticipated Shortage Level Drop-down list: 0 (No Shortage), 1, 2, 3, 4, 5, and 6.

**Tip:** Suppliers use their Table 4(P) along with their WSCP Table 8-1 to determine their shortage level based on the CWC defined Six Standard Water Shortage Levels. (Those Suppliers using their locally defined shortage levels must use their cross-reference to determine the appropriate shortage response actions.)

**Actions:** In the second column all Shortage Response Actions are included in the drop-down list. Suppliers select the Shortage Response Actions from the drop-down list that are the same as those relied upon to reduce the shortage gap in Table 4(P). Add additional rows as needed to list each Shortage Level along with the corresponding planned action.

Suppliers with no current or anticipated shortage (Level 0 (No Shortage)) and not triggering any voluntary actions may select the "No Actions" option.

For a surplus in non-potable supplies (indicated by a positive value in Table 4(NP) row labeled "Surplus/Shortage w/o WSCP Action") and in the case a Supplier is considering ways to utilize this surplus to reduce the shortage gap, the appropriate response action should be selected in Table 5.

For a shortage in non-potable supplies (in Table 4(NP)) and in the case a Supplier is considering ways to reduce the shortage gap in non-potable supplies, the appropriate response action should be selected in Table 5. Table 5 Actions Drop-down list: No Actions, CII - Commercial kitchens required to use pre-rinse spray valves, CII - Lodging establishment must offer opt out of linen service, CII - Other CII restriction or prohibition, CII - Restaurants may only serve water upon request, Decrease Line Flushing, Exchanges, Expand Public Information Campaign, Expand Public Information Campaign, Implement or Modify Drought Rate Structure or Surcharge, Implement or Modify Drought Rate Structure or Surcharge, Improve Customer Billing, Improve Customer Billing, Increase Frequency of Meter Reading, Increase Water Waste Patrols, Landscape - Limit landscape irrigation to specific days,

Landscape - Limit landscape irrigation to specific times, Landscape - Other landscape restriction or prohibition, Landscape - Prohibit all landscape irrigation, and Landscape - Prohibit certain types of landscape irrigation.

**Tip:** Non-potable use sites can also be served by potable sources if available.

**Tip:** The drop-down list includes numerous actions, such as specific supply augmentation actions, specific demand reduction actions, and other actions, etc.

**Tip:** Because shortage calculated in Table 4 row “% Surplus/Shortage w/o WSCP Action” is based on the unconstrained demand (demand without WSCP Actions), Suppliers may need to include some of the shortage response actions already in place in Table 5.

Is Action Already Being Implemented (Y/N)? – In the third column, indicate whether the action is currently being implemented, prior to the July 1<sup>st</sup> Annual Shortage Report due date, and as a result of current year’s conditions and past assessments. Information on Suppliers’ implemented or planned shortage response actions will be summarized in DWR’s report to the State Water Board due September 30 of each year. In the event that a currently implemented response action will continue into the future, Suppliers will also need to fill out the applicable columns for the period beginning on the July 1<sup>st</sup> due date. Table 5 Action Already Being Implemented Drop-down list: Yes, and No.

How much is this going to reduce the shortage gap?: In the fourth and fifth columns, provide the estimated volumetric or percentage benefits from the action listed in column 2. The fourth column contains the Supplier’s estimated benefits for the action. The fifth column is for the unit of measure either percent or volumetric unit. Suppliers estimated the benefits in their WSCP Tables 8-2 and 8-3. When filling out the information, include units used (volume type or percentage). Table 5 Unit of Measure % vs. Volume Drop-down list consists of: %, AF, MG, and CCF (HCF).

**Tip:** If using volumetric units for the benefit, make sure to use a consistent volumetric unit in all Tables (listed in Table 1).

When is shortage response action anticipated to be implemented: In the sixth column provide the start month indicating when the action is anticipated to be implemented. In the seventh column provide the end month indicating when the action is anticipated to be completed. Table 5 Months Drop-down list consists of: January, February, March, April, May, June, July, August, September, October, November, and December.

**Tip:** If anticipating to implement the action in column 2 the entire year, enter July as the start month and June as the end month.

**Tip:** This Table 5 is for reporting actions for the Next Year starting on the July 1st due date of the current Annual Shortage Report. For those actions that are currently being implemented, and occurring before the July 1<sup>st</sup> due date, make sure to enter “Yes” in column 3.

**Notes:** Additional explanatory information can be listed here or in the Notes section at the bottom of the table.

## F. Optional Annual Assessment Tool

Suppliers may use the DWR-developed Optional Annual Assessment Tool to perform the water supply and demand assessment calculations, to estimate shortage conditions, to plan for shortage response actions, as well as to assist in the completion of the Annual Shortage Report submittal tables.

The Tool consists of an Excel workbook with linked worksheets containing all the reporting Tables with formulas and links to assist in performing the Annual Assessment. The Excel workbook will be available for the Suppliers’ use and the workbook tables follow the submittal format for the WUEdata Portal. As the title indicates, the use of this Tool is optional, however Suppliers that use this Tool are encouraged to upload the workbook as an attachment with their Annual Shortage Report.

The Excel workbook includes the following worksheets:

- Worksheet 1, which corresponds to Table 1: Annual Assessment information. Suppliers use this table to provide required information including contact information, volumetric unit used in the Annual Assessment, and Annual Assessment reporting year. Suppliers may also use this table to document additional optional information on Supplier’s decision-making process for the current Annual Assessment.
- Worksheet 2, which corresponds to Table 2: Water Demands. Suppliers using the Tool will need to populate the Worksheet 2 with the Next Year’s demand projections. Worksheet 2 automatically sums up the projected total water demands (potable and non-potable demands). These totals are prepopulated into Worksheet 4.
- Worksheet 3, which corresponds to Table 3: Water Supplies. Suppliers using the Tool

will need to add the values into Worksheet 3. Worksheet 3 automatically sums up the anticipated total water supplies (potable and non-potable supplies). These totals are prepopulated into Worksheet 4.

- Worksheet 4, which corresponds to Tables 4(P) – Potable Water Shortage Assessment and Table 4(NP) – Non-Potable Water Shortage Assessment. Worksheet 4 is prepopulated with totals from Worksheets 2 and 3 and automatically calculates the water supply shortage or surplus without water shortage response actions. Based on the Shortage Level calculated, Suppliers survey their selection of water shortage response actions and their estimated benefits. Suppliers enter the estimated benefit values in the rows named “Benefit from WSCP: Supply Augmentation” and “Benefit from WSCP: Demand Reduction”.
- Worksheet 5, which corresponds to Table 5 – Planned Water Shortage Response Actions. Data is entered manually into Worksheet 5 with information from Table 4 including anticipated Shortage Levels, the actions anticipated for each Shortage Level, as well as current implementation status, estimated shortage gap reduction, and anticipated future implementation period of each anticipated action. In addition to information gleaned from Table 4, Suppliers may want to refer to their WSCP Tables 8-2 and 8-3, as well as the notes taken while balancing their supplies and demands in Table 4.

**Tip:** The optional ‘Past Use’ rows, added below Table 2 in Worksheet 2, allow for quality control check on the calculated demand by comparing it to the demands of previous years.

**Tip:** The optional eAR (comparison) row, added below Table 3 in Worksheet 3, allows for quality control check on the calculated water supplies by comparing it to the Supplies of the previous year. Although a single row for one year of eAR data is provided, if needed Suppliers can compare projections to reports from additional years. Suppliers that rely mainly on groundwater sources are not generally impacted by a single dry year because of a lag in basin response. Those groundwater-based Suppliers may want to extend the assessment to the subsequent years to be better prepared for an extended drought. For the defined Dry Year see the Supplier’s WSCP or their UWMP, Table 7-1.

### 3. Compiling and Submitting an Annual Water Shortage Assessment Report

#### *California Water Code*

##### **CWC §10632.1**

*An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.*

CWC §10632.1 requires that urban water suppliers shall prepare an Annual Assessment and submit an Annual Shortage Report to DWR by July 1 of every year. The Annual Assessment procedures have already been presented in this document and the specific details can be found in each Supplier's WSCP.

The Annual Shortage Report required to be submitted to DWR must include information on anticipated shortages in the Next Year (assumed dry) and identify triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan.

Additional information can be submitted as optional attachments to include details on the implementation of the procedures that took place this year in performing the Annual Assessment and the development of the Annual Shortage Report. Information may include descriptions of the steps followed, data sources considered, methodologies used, and the decision-making process. Suppliers using the Optional Annual Assessment Tool may also submit the Excel Workbook with the calculation Worksheets as an optional attachment. The intent of the Guidance is that the required components of the Annual Shortage Report can be satisfied by filling out the standard tables and submitting them through the WUEdata Portal as described below.

- What to submit?
  - Table 1: Annual Assessment Information or comparable document –

- Completed top part “Annual Assessment Information (Required)” has required information about the Annual Assessment.
  - Optional bottom part “Other Assessment Related Activities (Optional)” can document the current assessment including methodology, procedures, decision-making process, key data inputs, shortages and response actions, changes in conditions and procedures, etc.
- Completed Table 2: Water Demands, containing estimated unconstrained demand from July to June of next year
  - Completed Table 3: Water Supplies, containing estimated available supplies from July to June of next year
  - Completed Table 4: Tables 4(P) – Potable Water Shortage Assessment and Table 4(NP) – Non-Potable Water Shortage Assessment, showing a summary of supply/demand balances as well as anticipated shortages and results of planned actions.
  - Completed Table 5: Planned Water Shortage Response Actions, containing information on planned water shortage response actions (if any)
  - Optional Annual Assessment Tool Excel Workbook with all worksheets.
  - Optional written report on the Annual Assessment and Annual Shortage Report.
- Submittal deadline: Annual Shortage Report is due July 1st of each year. An urban supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its Annual Shortage Report within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.
  - Where to submit: WUEdata Portal: <https://wuedata.water.ca.gov/>

#### **4. Follow-Up Actions and Ongoing Reassessments**

This section discusses a dynamic implementation approach for the water shortage assessment and the preparation of the following year’s assessment. Submitting the Annual

Shortage Report by July 1 should not be an urban water supplier's end goal. Instead, it should serve as a roadmap for ensuring water supply reliability for the year ahead. The Supplier should use the Annual Shortage Report results as a starting point and embark on an ongoing reassessment throughout the year to determine—based on actual conditions—the appropriate water supply and demand management actions to implement.

## **A. Projected Assessments vs. Actual Conditions**

Following the submittal of an annual water shortage assessment report to DWR by July 1 of each year, the urban water supplier is encouraged to embark on an active and iterative reassessment of its actual water supply and demand conditions throughout the year. Such an approach will enable the Supplier to:

- Determine appropriate water shortage response actions to undertake, when needed, so as to ensure the availability of adequate water supplies to satisfy current year's demand while aiming at saving enough water supplies for the upcoming year (assuming it will be a dry year).
- Acquire a clearer picture of its current year's water supply and demand conditions and refine the estimates of how much water supplies are going to be available going forward into the summer months. It is important to develop accurate estimates of current year's water supply conditions, as those estimates will serve as the basis for the next annual water supply and demand assessment and the upcoming water shortage assessment report.

The Supplier's submitted Annual Shortage Report is developed based on the assumption that the upcoming year is going to be dry (as required by the legislation). However, implementation of any water shortage response actions will need to take into consideration actual water supply and demand conditions throughout the current year.

## **B. Phased Ongoing Reassessments**

After submittal of the Annual Shortage Report, the initial few months following the July 1 submittal due date will likely be dry with little or no precipitation as assumed in the report. Therefore, the Supplier's identified actions in the report will likely be relevant and actually implemented. However, as the year progresses and the rainy season starts, the Supplier's water supply situation may differ from the assumed Dry Year conditions.

The actual water supply conditions will depend not only on the replenishment of water supplies through inflows from precipitation, but also depend on the effectiveness of any current or recent-past water shortage response actions taken within the Supplier's service area.

As part of the ongoing reassessment of its water supply and demand conditions throughout the year, the Supplier is encouraged to regularly monitor the status of their water sources and conditions, such as reservoir and groundwater levels, weather forecasts, runoff, water use patterns, and allocation status.

A major reassessment should be completed towards the end of rainy season. This reassessment should provide a better water supply outlook for the year ahead, therefore allowing the Supplier to re-adjust its plan of implementation of various water shortage response actions. For an outlook of wetter than initially anticipated conditions, the Supplier may ease or cancel some of the planned water shortage response actions. While, drier than initially anticipated conditions will call for the implementation of additional and more aggressive response actions in accordance with the Supplier's WSCP. At the same time, the annual cycle of water supply and demand assessments, including an assumed Dry Year in the forthcoming fiscal year, should begin. It may be appropriate to implement additional water shortage response actions ahead of the due date for the Annual Shortage Report to conserve supplies to be available to navigate a potential forthcoming Dry Year (Figure 5).

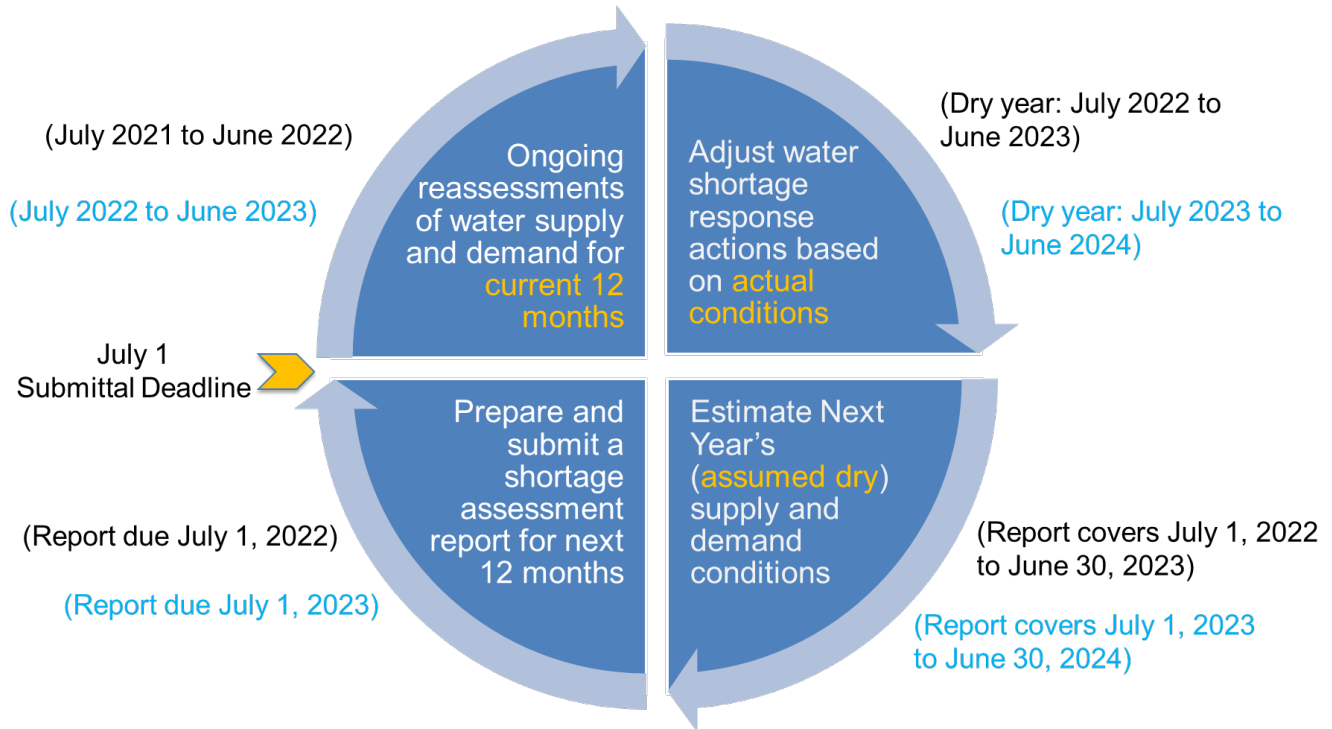
This phased reassessment approach may include additional phases, especially if water supply and demand conditions change drastically. Towards the end of spring, and with the ending of the rainy season, a final reassessment of the current year's supply and demand conditions needs to be carried out. This last assessment will provide the final estimates of the current year's supplies and demands: a prerequisite on which the Supplier will need to develop the upcoming year's Annual Assessment.

This ongoing reassessment will give the Supplier a baseline of current water supply conditions, which when combined with projected next year's demand and assumed Dry Year supplies, will facilitate next year's Annual Assessment. Preparing next year's Annual Assessment is a proactive step Suppliers should take to be ready to take action and ensure adequate supplies through an upcoming dry year.

In the event the Supplier's Annual Assessment identifies any potential shortages during any period in the upcoming year, the Supplier will be responsible to identify which WSCP water shortage response actions to undertake. This proactive step ensures there will be enough



water to meet next year’s demand. The goal is to identify and plan to implement water shortage response actions according to the Supplier’s WSCP (whether demand reduction actions, supply augmentation actions, or other operational changes) so as to respond and reduce the gap between the projected supplies and demand.



**Figure 5. Dynamic Approach to Water Supply and Demand Assessment**

## 5. Suggested Data Sources and Methods

Following are some suggested data sources, methods, and assumptions that suppliers may find useful while preparing their annual water supply and demand assessments.

**Table 6: Suggested Data Sources and Methodologies**

Input	Description
<b>Demand</b>	
Demand data collection method	Historical water use data can be found in previous UWMPs, eAR, and Public Water System Statistics Survey (PWSS)
Timeline for demand data collection	Consider water use data over the past 10 or 15 years to get better estimates of water use for a normal year and for a dry year.

Input	Description
<b>Demand Assumptions</b>	
Factors influencing water demand: weather, growth, policies and how these were determined/ calculated	Consider the water use changes with water year type, population increase/decrease, regulatory and mandatory water conservation requirements. Consider water customer type (residential, CII, ...), number of service connections, new developments, agricultural customers, transient population, wildfires, drought recovery, ...
<b>Supply</b>	
Current year available supply data collection method	Water allocations from DWR and Bureau of Reclamation, local surface water storage, groundwater available, imported water, water purchase or exchange, transfers, recycled water, water desalination.
Timeline for supply data collection	Consider historical water supply data over the past ten years which cover the normal and dry water year types.
<b>Supply Assumptions</b>	
Current year hydrological conditions	Consider the water year type, reservoir levels, stream and river conditions, Delta flow requirements
Current year regulatory conditions	Consider stages of water conservation requirements, drought emergency proclamations, new water bills, ...
Factors influencing water supply: weather, growth, policies and how these were determined/ calculated	Precipitation, reservoir levels, groundwater level trends/decrease, yield, storage, current and previous water year types, population increase/ decrease, special state proclamations for water uses, imposed restrictions, mandatory cutbacks, terms of water contracts/ agreements, water quality, ...
<b>Dry Year</b>	
Dry year demand data selection method	Consider water use in historical dry water years, new indoor water use standards, outdoor landscape irrigation performance measures, as well as the variances for CII to estimate the water uses, state mandates and regulatory requirements, ...
Dry year supply data selection method	Consider historical water supply data for surface water, groundwater, and other water supply sources, water savings through implementation of special water conservation measures in dry years, climate effects, wholesaler allocation plan, ...
<b>Infrastructure</b>	

Input	Description
Existing infrastructure capabilities	Pumping stations, groundwater well capacity and yields, storage capacity, drinking water and wastewater pipeline systems, electricity reliability, ...
Existing infrastructure plausible constraints and how these modify supply	Scheduled maintenance, potential failures and emergencies, aging water distribution system, aging pumps with low efficiency, aging electricity grid, ...
<b>Evaluation Criteria</b>	
Assessment time interval	Assess monthly water demands and supplies in the current year and in a dry year. An assessment with longer time periods may fail to identify short-range shortages.
Methodology for data analysis	Separately analyze the potable water and non-potable water supplies and demands and make two separate assessments
Assumptions (Models and Calculations)	Helpful information can be found in DWR's report: "Handbook for Water Budget Development: With or Without Models"

## **Appendix A:**

### **Examples of Suppliers' Annual Water Supply and Demand Assessment Methodologies**

Following are two examples of Suppliers' Annual Water Supply and Demand Assessment procedures:

A1 – City of Davis Annual Supply and Demand Assessment Methodology

A2 – City of Roseville Annual Supply and Demand Assessment Methodology

# A1 – City of Davis Annual Supply and Demand Assessment Methodology



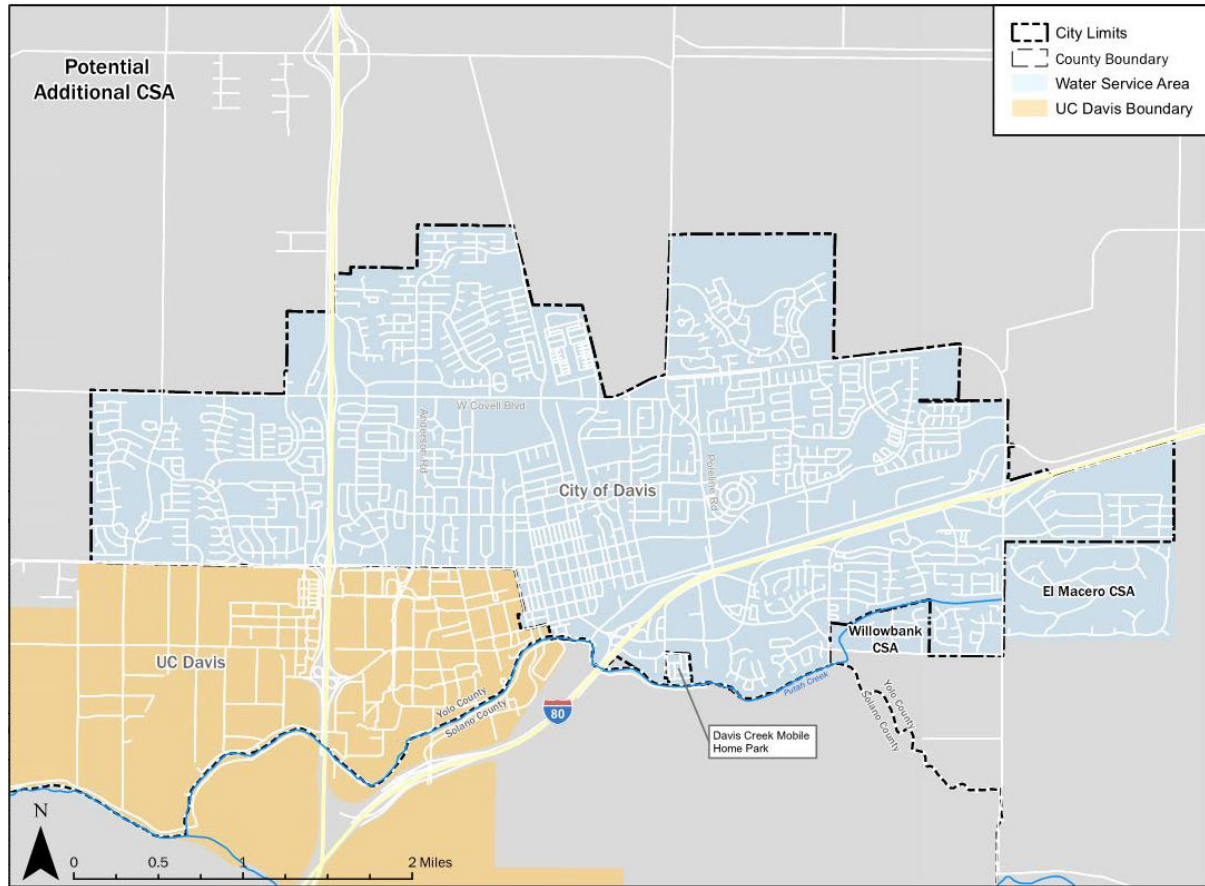
## City of Davis Annual Water Supply and Demand Assessment Methodology Presentation Write-Up

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<b>Prepared:</b>	January 2022, for inclusion in the Department of Water Resources Annual Water Supply and Demand Assessment Guidance
<b>Original Presentation:</b>	November 16, 2021
<b>Contributors:</b>	City of Davis – Stan Gryczko City of Davis – Adrienne Heinig City of Davis – Dawn Calciano Brown & Caldwell – Melanie Holton, PE

### City Background

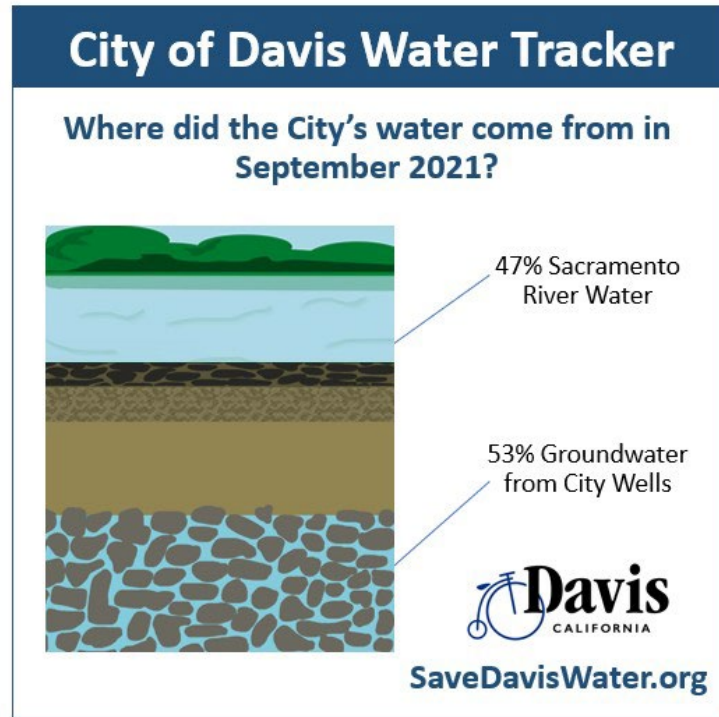
The City of Davis (City) is located in the Central Valley in the southeastern corner of Yolo County, to the east of the coastal mountain range and San Francisco Bay Area and 12 miles west of the state capital of Sacramento, as shown in Figure A1-1. It occupies an area of about 9.9 square miles (6,336 acres). Incorporation of the City occurred in 1917, and water service is provided to all residential (single and multi-family), commercial, industrial, and irrigation customers, and for open space and fire protection uses. The City has high summer water demands due to a combination of hot and dry weather. In 2020 the City's population was 70,963 and there were 17,263 water system service connections.



**Figure A1-1. The City of Davis water service area encompasses the City limits and is adjacent to UC Davis**

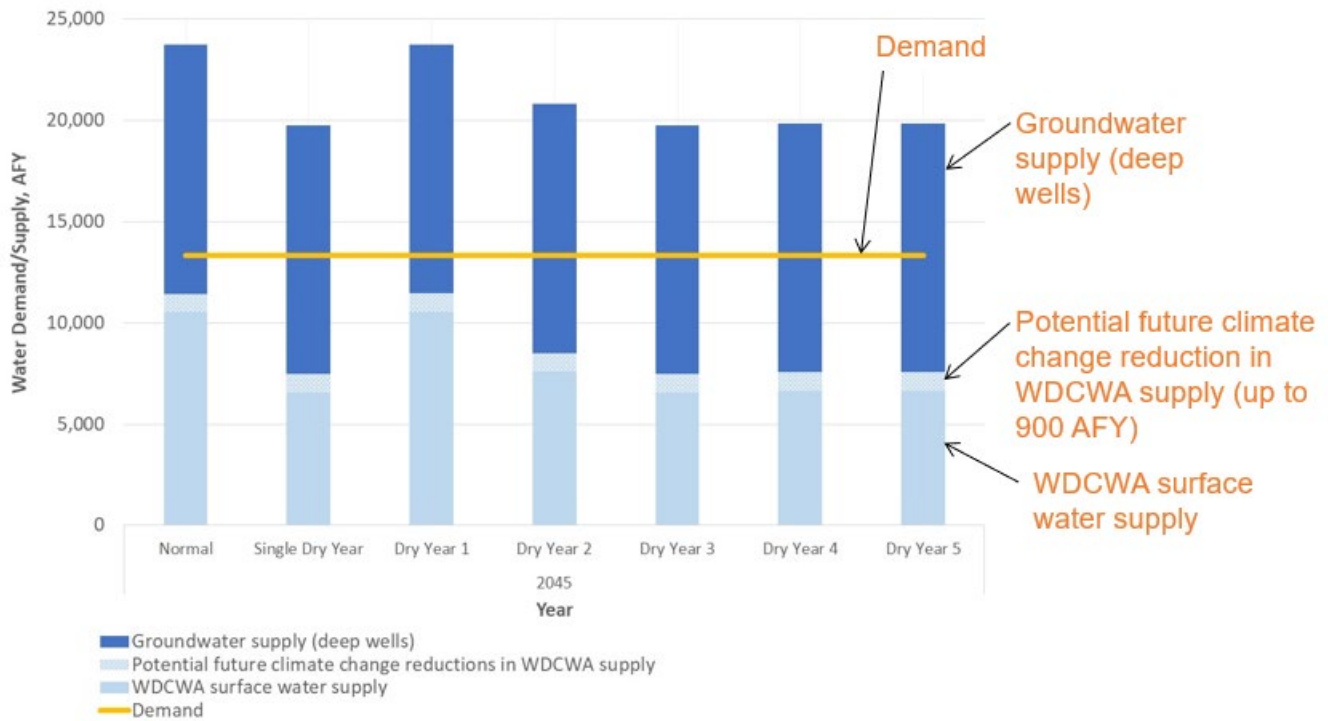
**Water Supply Reliability**

The City has a conjunctive use water system consisting of groundwater and surface water supplies as shown in Figure 2. The groundwater supply consists of five deep aquifer wells, 15 million gallons per day (mgd) and four intermediate aquifer wells, 9 mgd. The surface water supply is up to 10.2 mgd from the Woodland-Davis Clean Water Agency (WDCWA). The WDCWA water rights are subject to Term 91 and Shasta critical year designations. Term 91 is determined by flows in the Delta meeting flow requirements. When in effect WDCWA is not allowed to divert under its primary water right. WDCWA’s secondary water right is subject to a Shasta critical year designation. If certain inflows to Shasta Lake are not achieved in a given year, then available supplies for WDCWA are reduced by 25%.



**Figure A1-2. City of Davis water supplies consist of groundwater from City wells and surface water from the Sacramento River**

The water system reliability analysis to meet demands in normal, single dry, and multiple dry years over a 5-year drought period is described in the City's Drought Risk Assessment (DRA) of the City's 2020 Urban Water Management Plan (UWMP). The water supply reliability assessment compares the City's supply and demands through 2045 and indicates that water shortages are not projected because the City's supply portfolio can meet water demands in all year types. The DRA compares total water supply and demands from 2021 through 2025, assuming a five-consecutive-year drought. In all years of the DRA the City is projected to be able to meet demands without activating the City's Water Shortage Contingency Plan (WSCP). The City's five-consecutive-year drought reliability analysis is summarized in Figure A1-3. The City's priority of water supply use is surface water followed by use of the deep aquifer wells. The use of the intermediate aquifer wells is for emergency only. The City's supply reliability analysis does consider potential climate change impacts that may reduce WDCWA supply.



**Figure A1-3. The five-consecutive-year drought supply reliability analysis indicates the City can meet future demands in all year types**

**Potential Shortage Conditions**

As a result of implementing conjunctive use of surface water from the Sacramento River starting in 2016 and groundwater from the deep aquifer, the reliability of the City’s water supply is relatively high. There are scenarios that could result in the City declaring a water shortage stage condition. Below is a list of the key issues that could potentially result in a shortage condition for the City.

Regional drought circumstances

Availability of Sacramento River water supplies as determined by the WDCWA

- State restrictions on surface water diversions
- Term 91 conditions
- Shasta critical year reductions
- Water quality conditions/contamination
- Mechanical breakdown of surface water diversion structure, intake, or RWTF facilities, and transmission pipeline

Declining groundwater levels

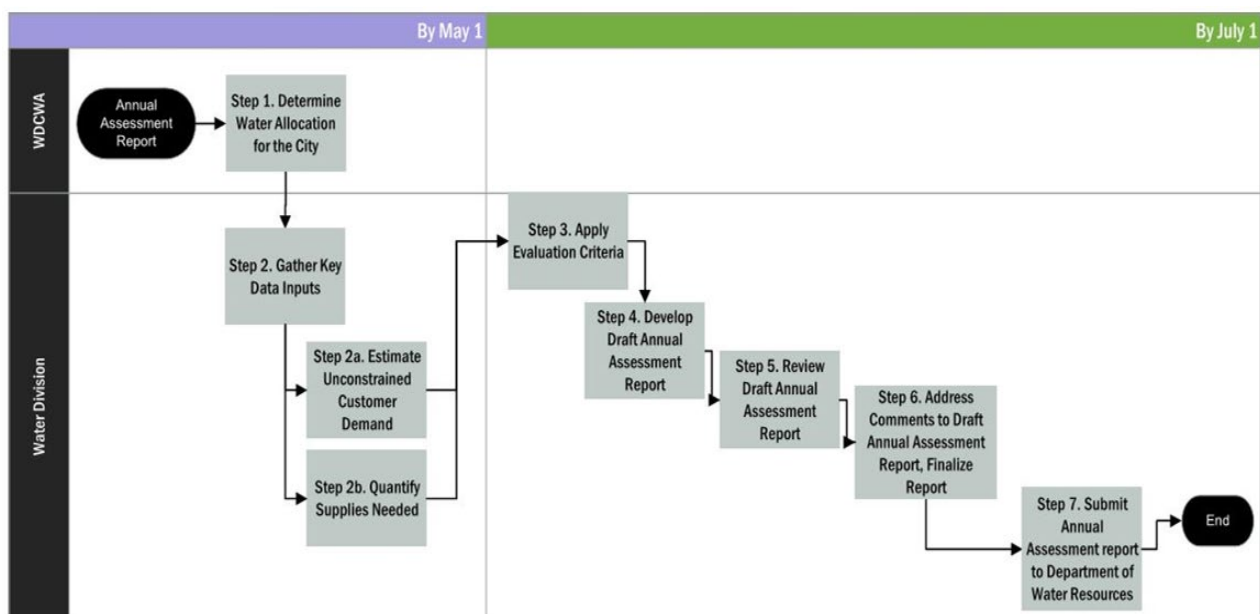
Sustainable Groundwater Management Act (SGMA) Groundwater Sustainability Plan (GSP) sustainable groundwater pumping limitations (this is a future potential condition - to be defined by SGMA GSP)



Contamination of one or more wells

### Annual Water Supply and Demand Assessment Procedures

The annual water supply and demand assessment (Annual Assessment) will be conducted annually on or before July 1 of each year beginning with the first annual water supply and demand assessment due by July 1, 2022. The Annual Assessment report is submitted to DWR with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with this WSCP. The City will conduct an Annual Assessment that follows the steps illustrated in Figure A1-4 and described below.



**Figure A1-4. The City’s annual assessment procedure and decision making process begins with obtaining surface water allocation information from the WDCWA**

**Step 1.** Determine Water Allocation for the City - The type of water year for the Sacramento River and Lake Shasta water levels are determined before May 1. WDCWA can then determine water allocations for each water retailer and will provide this information to the City.

**Step 2.** Gather Key Data Inputs - The Water Division collects key data inputs for the Annual Assessment including water supply and unconstrained customer demand as described below.

**Step 2a.** Estimate Unconstrained Customer Demand - Current year unconstrained demand considering weather, growth, and other influencing factors such as policies to manage current supplies to meet demand objectives in future years, as applicable is estimated. Unconstrained customer demand does not include demand reductions that may occur as a result of the City implementing any special shortage response actions that may be necessary. The City’s monthly unconstrained demand pattern is based on

a previous normal year pattern determined using the City’s SCADA production data. The monthly demand pattern is applied to the total projected demand for the current year and one subsequent year.

**Step 2b. Quantify Supplies Needed** - The available water supply by source is estimated for the current year and one subsequent dry year:

Quantify each source of water supply and provide descriptive text of each source

Quantify current year available supply by source, considering hydrological and regulatory conditions in the current year

Quantify available supply by source for one subsequent dry year.

Considerations for water supply availability estimates by source:

- The existing infrastructure capabilities and plausible constraints as they impact the City’s ability to deliver supplies to meet expected customer water use needs in the coming year should be considered
- Hydrological and regulatory conditions in the current year
- Specific locally applicable factors that can influence or disrupt each supply source

**Step 3. Apply Evaluation Criteria** – Evaluation criteria is determined by the supply source conditions and factors that impact the condition of each supply source. The Annual Assessment is based on evaluating the key data inputs to determine the water supply reliability. Although an actual shortage may occur at any time during the year, a shortage condition can usually be forecasted by the Water Division on or about May 1 each year. The City monitors water production and groundwater level data on a monthly basis. It is possible that during peak demands, groundwater levels could drop more severely (June-August) in a given year, making it difficult to forecast the activation of a water shortage response stage in advance of such a condition. The evaluation is based on applying the criteria defined by supply source condition in Table A1-1. Based on the application of the criteria and the resulting supply and demand comparison City staff will determine if the next stage in the WSCP should be activated.

**Table A1-1. Evaluation Criteria**

Supply Source Condition	Criteria
<b>Groundwater</b>	
<b>Pumping capacity</b>	Capacity of active wells on-line Groundwater levels
<b>Surface water</b>	
<b>WDCWA delivery</b>	Term 91 curtailments Critically low water level year for Lake Shasta

The City compares supplies to demands on a monthly basis for the current year of the Annual Assessment and for the following year, assuming the following year is a dry year. The City's water demand varies by month with demands lower during winter months and peaking during summer months. It is important to evaluate if the City's supplies can meet daily demands on a monthly basis considering changes in the availability of the City's water supplies on a monthly basis as well. Figure A1-5 illustrates the comparison of the City's unconstrained water demands. The components of the graph in Figure A1-5 are described below:

**Unconstrained customer demand** – Unconstrained demands are the City's water demands with no WSCP stages and related demand reduction actions, supply augmentation, or other actions activated. See Step 2a for further explanation.

**Intermediate wells capacity** – Monthly pumping capacity volume in terms of AF/month of the City's intermediate aquifer groundwater wells. The intermediate wells are considered an emergency supply.

**Deep well capacity** – Monthly pumping capacity volume in terms of AF/month of the City's deep aquifer groundwater wells. The deep aquifer groundwater wells are used to supplement the City's surface water supply from the WDCWA.

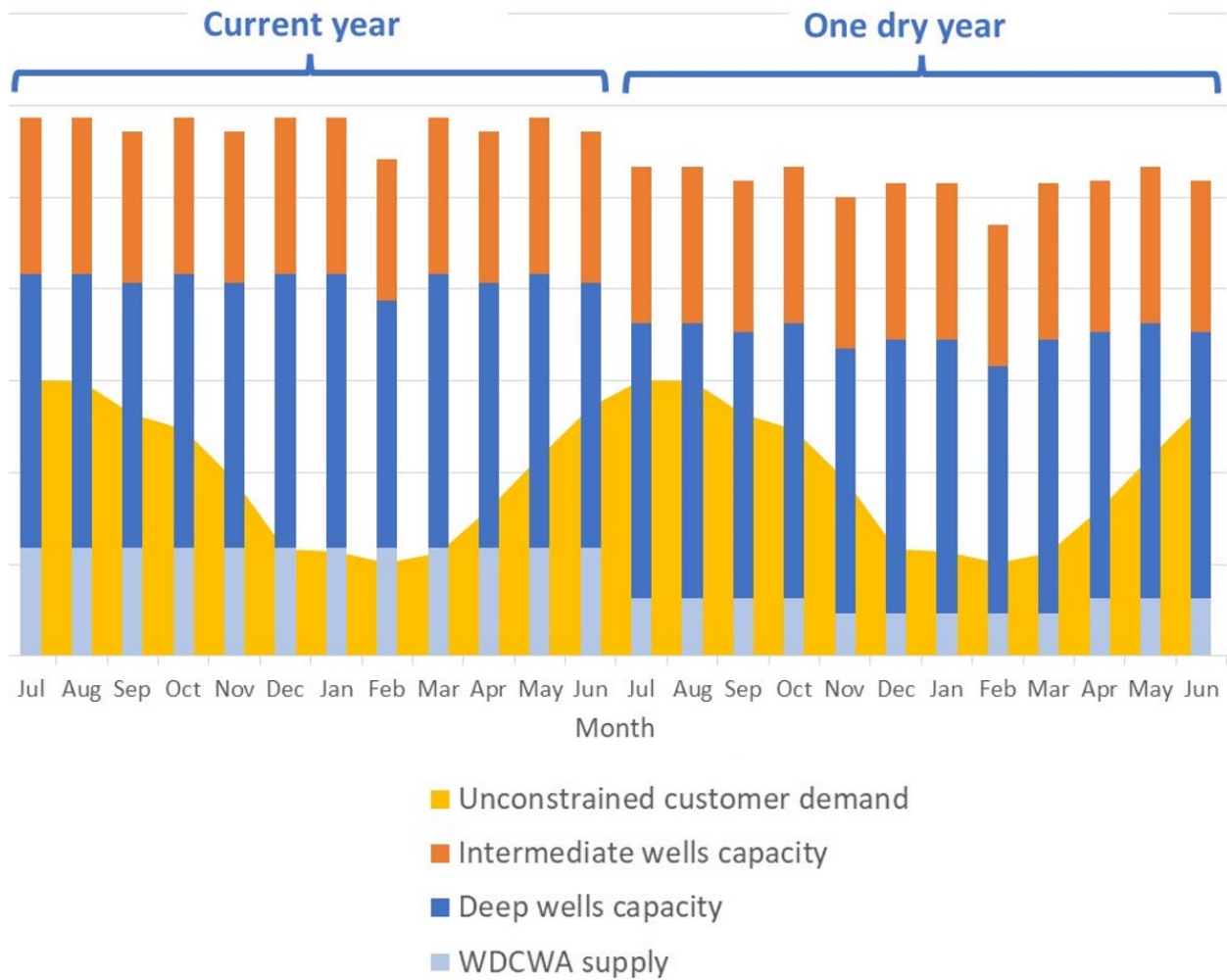
**WDCWA supply** – Monthly allocation volume in terms of AF/month of the City's WDCWA supply. The WDCWA supply allocation reduction varies by month when Term 91 curtailments are in place or when supply is limited due to Lake Shasta levels. The City uses this supply first and then supplements with deep aquifer groundwater wells as needed.

**Step 4.** Develop Draft Annual Assessment Report – The Water Division compiles the draft Annual Assessment report based on the format to be determined by DWR using the key data inputs and evaluation criteria.

**Step 5.** Review Draft Annual Assessment Report – The Water Division will review and provide comment on the draft Annual Assessment report.

**Step 6.** Address Comments to the Draft Annual Assessment Report, Finalize Report – The Water Division will address internal comments to the draft Annual Assessment report and will finalize the report.

**Step 7.** Submit Annual Assessment Report to DWR – The Water Division will submit the Annual Assessment report to DWR.



**Figure A1-5. The City compares monthly unconstrained demands to monthly available supplies to determine sufficiency of monthly water supplies for the current year and during one subsequent dry year**

## A2 – City of Roseville Annual Supply and Demand Assessment Methodology



### City of Roseville Annual Water Supply and Demand Assessment Methodology Presentation Write-Up

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- Prepared:** January 2022, for inclusion in the Department of Water Resources Annual Water Supply and Demand Assessment Guidance
- Original Presentation:** November 16, 2021
- Contributors:** City of Roseville – Jason Marks, PE  
Water Works Engineers – Colleen Boak, PE  
Water Works Engineers – Esmeralda Diego

#### Summary

The purpose of this memorandum is to discuss the Annual Water Supply and Demand Assessment, how it relates to the City of Roseville and the City's process for completing this study. This was originally presented on November 16, 2021 as part of the DWR-hosted training session on this topic.

Subjects covered are as follows:

1. System Overview
2. Integration and importance of the Water Shortage Contingency Plan (WSCP) and the Annual Water Supply and Demand Assessment (AWSDA)
3. Roseville's approach to completing the WSCP
4. Internal and external factors considered year-round
5. Lessons Learned

## System Overview

The City of Roseville Water Utility (City) is a public utility owned and operated by the City of Roseville, located on the Interstate 80 corridor, approximately 15 miles northeast of downtown Sacramento California. The estimated population is 146,875 with an estimated buildout of just under 200,000 people. The City obtains its surface water from Folsom Lake through wholesale purchase primarily from the United States Bureau of Reclamation (USBR) and additional water contracts with Placer County Water Agency (PCWA) and San Juan Water District (SJWD). This surface water is treated at the City's 100 million gallon per day Water Treatment Plant. This water is distributed through 683 miles of pipe to approximately 50,000 service connections. The City also maintains and operates several Aquifer Storage and Recovery groundwater well sites that provide additional water supply reliability, and has plans to build additional well sites in the future. Furthermore, the City has interties with 5 neighboring agencies, which provide both regular and emergency water supplies.

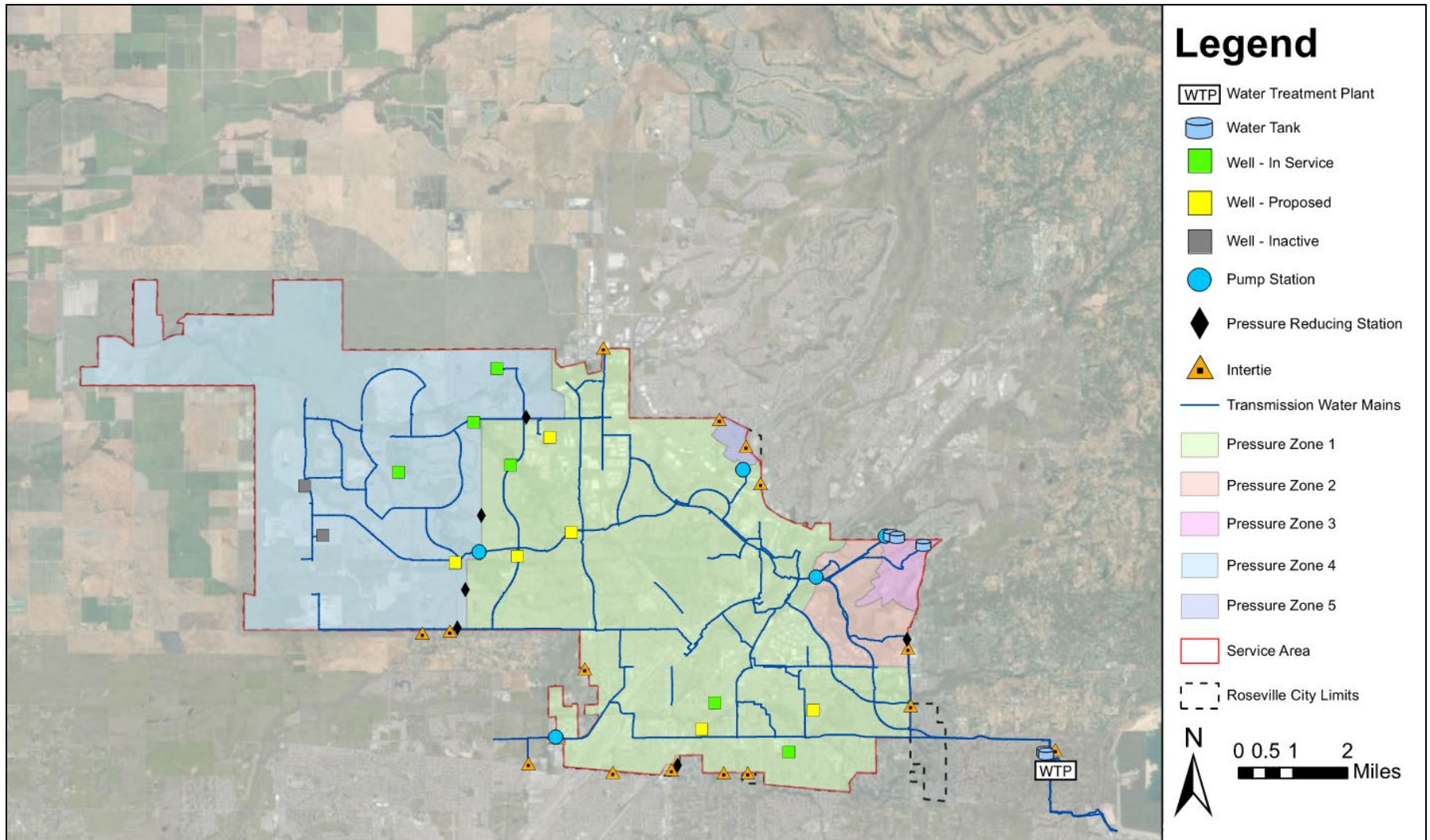
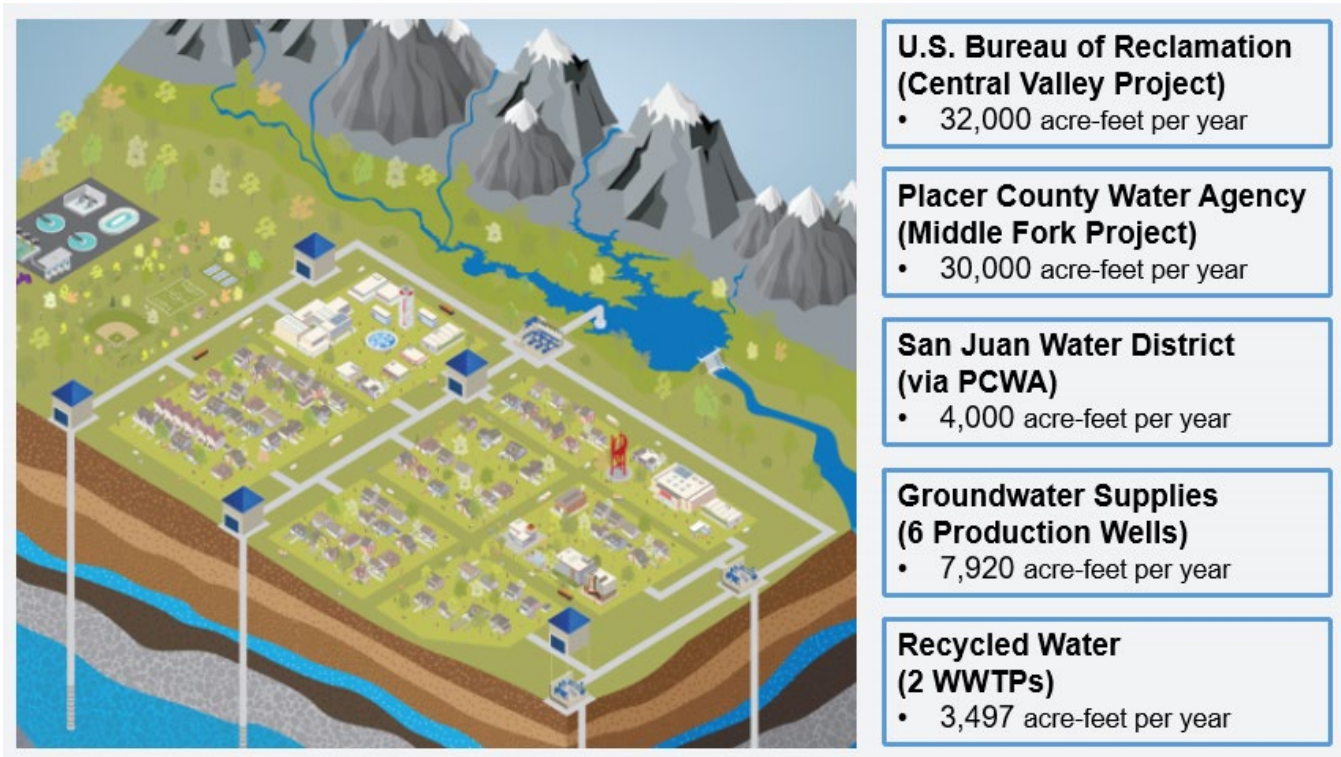


Figure A2-1: City of Roseville System Map

The City's primary water supply is surface water from Folsom Reservoir, received through the outworks at Folsom Dam.



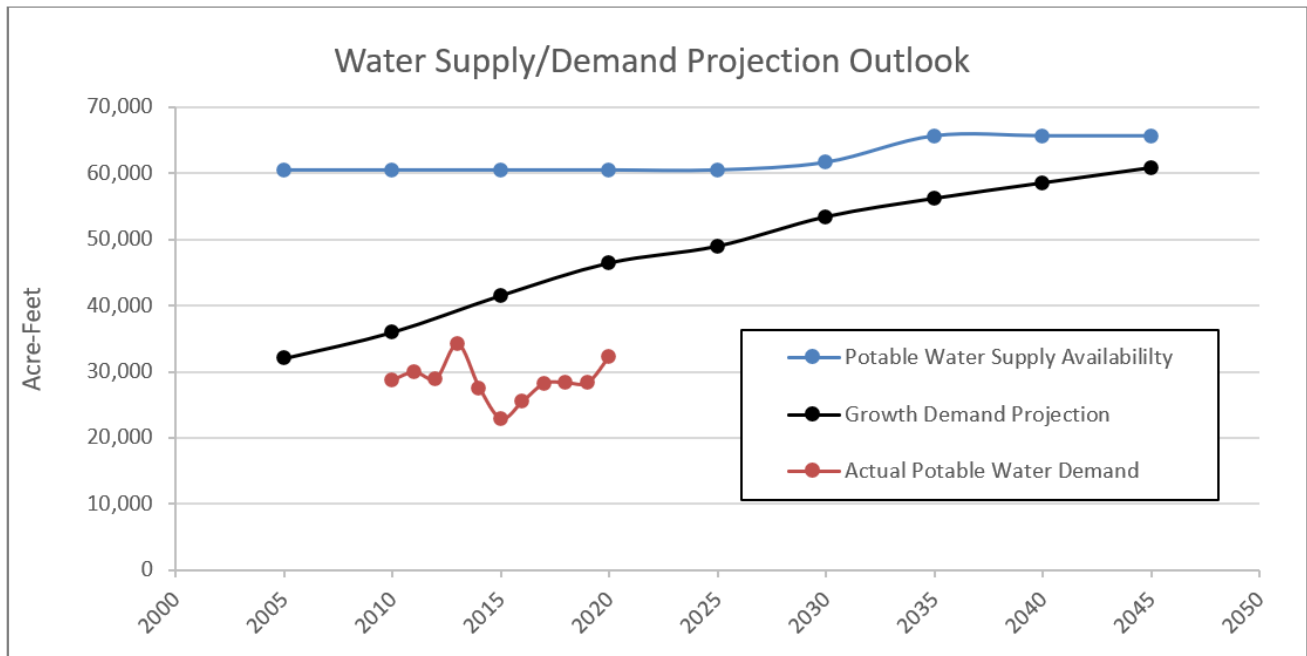
**Figure A2-2: City of Roseville Water Supply Profile**

In addition to contract supplies and interties, the City has approximately 8,000 acre-feet of available annual groundwater supplies as well as the ability to provide up to 4,000 acre-feet per year of recycled water to offset irrigation demands at golf courses, parks, and other landscaped areas.

Most of the City's groundwater wells are Aquifer Storage and Recovery (ASR) wells, which have the ability to store water supplies in the aquifer. ASR wells allow the City to inject excess water during wet years into the groundwater aquifer, banking the water for potential future use. This water can be extracted at a later time to augment surface water supplies, typically utilized in drier years.

Since the City of Roseville is still growing, the demand outlook is constantly changing. The City's potable water supply availability is currently sufficient to meet the projected growth in demand through the expected buildout population, as shown in Figure A2-3.





**Figure A2-3: Supply and Demand Projections**

**Importance and Integration of the WSCP and AWSDA**

The Annual Water Supply and Demand Assessment (AWSDA) is a critical component of a successful Water Shortage Contingency Plan (WSCP). The AWSDA procedure, contained within the WSCP, serves to ground an organization in current conditions and proactive planning each year. The AWSDA procedure, which is unique to each water supplier, provides a consistent way of analyzing the system in steps that are appropriate to the water supplier. This supports critical decision making such as implementation of drought stages, conservation measures, and enforcement. The AWSDA can also lead the decision making process toward strategic augmentation of supplies, whether it be internal through the use of groundwater wells, as is the case for Roseville, or regionally through the use of interties.



**Figure A2-4: Folsom Reservoir During Drought Conditions**

While WSCPs are individually prepared and maintained by each water supplier, the AWSDA creates uniformity in documentation provided to the state in both timeline and drought stage significance. Regular reporting and public availability of the WSCP and annual assessment also strengthen public trust, understanding, and confidence in the water supply.

The AWSDA may have numerous benefits for water suppliers. Some of the ways in which the City of Roseville will benefit from the AWSDA are as follows:

- **Mitigation Measures** – The assessment will inform which additional mitigation measures should be implemented. Some measures are ongoing such as the Water Efficient Landscape Ordinance (WELo) conservation rebates, water wise house calls, water waste patrol and enforcement. But in more specific applications, drought stage restrictions and enforcement add additional tools to accomplish critical savings during times of drought. Public outreach is always a critical component of these mitigation measures
- **Forecasting Future Supplies** - The City receives final allocations around March each year, but this assessment can provide early forecasting to allow the City to proactively approach potential water supply issues in later seasons.
- **Offset Primary Supplies** - Augmenting supplies with interties or wells generally takes time to arrange and execute. If the City does not look proactively to the near and far term future, opportunities to offset supplies for future years could be lost.

- **Groundwater Injection** - Injection is not feasible every year but taking advantage of opportunities to utilize this technology when available is important. Roseville was able to inject water in 2019 and increase the reliability of future water supplies.
- **Rehabilitation and Maintenance** - Regular maintenance is very important, but not always feasible. Unidirectional Flushing and well rehabilitation may need to be planned around different hydrological year types. For example, the City would not want to have a well out of service when the need to extract groundwater during dry months is greatest, but the City would also want to avoid foregoing wet season opportunities to inject excess supply into the aquifer. Current and upcoming predictions of water supply conditions factor heavily into this planning.
- **Drive CIPs and Grant Opportunities** - The AWSDA is a tool to forecast future supply conditions. This can be especially important when looking to the planning horizon for capital improvement projects and the need for these projects to increase reliability and sustainability in the water system. There may also be grant funding opportunities that become available or should be pursued for critical CIP infrastructure identified in these regular assessments.



**Figure A2-5: Aerial View of Folsom Reservoir During Drought**

### **Approach to Development of the Assessment Procedure**

The City's approach to development of the AWSDA Procedure was focused primarily on two components: timeline and team involvement. Roseville's annual cycle of supply management requires constant vigilance –including information gathering of current water supplies, analyses of volumetric water usage, and operational decision making. A cross section of Environmental Utility

(EU) department staff and other related professionals contribute to this annual cycle and as such, execution of the AWSDA Procedure relies on involvement from many individuals within the City’s organization.

As with any organization, there is a regular amount of attrition and promotion that keeps staff rotating through roles of responsibility relevant to the AWSDA. To keep this from affecting progress or completion of the AWSDA, the procedure is specific in the roles each contributor plays and references positions rather than people. The procedure, which is included as a table in the WSCP, is outlined in 18 steps and intended to be approachable from a layperson’s perspective, either from the public side or a person new in their role and responsibilities. A copy of the complete procedure is provided in Table A2-1.

**Table A2-1 – City of Roseville Annual Water Supply and Demand Assessment Procedure**

Step	Description	Timeframe	Participants
<b>Step 1</b>	Request water utility data from all departments.	Jan 1 - Jan 31	Water Conservation Administrator
<b>Step 2</b>	Coordinate with Planning Division for any significant planned developments and project those water demands.	Jan 15 - Jan 31	Water Conservation Administrator Planning Division
<b>Step 3</b>	Compile water utility data into Water Utility Reporting Master spreadsheet.	Feb 1 - Feb 14	Water Conservation Administrator
<b>Step 4</b>	Calculate total projected unconstrained water demands for current year.	Feb 15-Feb 28	Senior Engineer – Water Utility
<b>Step 5</b>	Identify any constraints on facilities or infrastructure that could impact the supply of water such as planned maintenance that would take facilities offline or known damage to facilities/ infrastructure.	Feb 15-Feb 28	Hydrogeologist Senior Engineer – Water Utility Water Distribution Superintendent Water Treatment Plant Chief Operator
<b>Step 6</b>	Commence preparation of Annual Water Shortage Assessment Report.	March-April	Water Conservation Administrator Senior Engineer – Water Utility
<b>Step 7</b>	Receive final allotments from USBR for current year.	April	EU Assistant Director-Water Utility
<b>Step 8</b>	Subtract current year projected water demand from final allotment volume to determine shortage percentage and volume.	2 Days after notification from USBR	Senior Engineer – Water Utility

Step	Description	Timeframe	Participants
<b>Step 9</b>	If a shortage is identified Environmental Utilities (EU) Department is to hold an internal meeting to inform participants that a water shortage for the current year is anticipated and the extent of that shortage. Review the WSCP and Chapter 14.09 of the Roseville Municipal Code. Identify any concerns from the group regarding the ability to carry out the actions described in the WSCP and Chapter 14.09 of the Municipal Code. Assign an individual or group, among the participants, the responsibility of resolving the concern.	Within 7 days of notification from USBR	EU Director EU Assistant Director – Water Utility Hydrogeologist Water Distribution Super Intendent Water Treatment Plant Chief Operator Senior Engineer – Water Utility Water Conservation Administrator Additional participants as needed
<b>Step 10</b>	Inform City Manager of water shortage emergency condition.	Within 14 days of notification from USBR	City Manager EU Director EU Assistant Director – Water Utility Additional participants as needed
<b>Step 11</b>	Finalize and submit Annual Water Shortage Assessment Report to DWR.	By July 1 or 14 days after receiving final allocations	EU Assistant Director – Water Utility Water Conservation Administrator Senior Engineer – Water Utility
<b>Step 11</b>	The City Manager shall inform City Council of the water shortage emergency condition and the "Drought stage," under which the emergency falls. City Council shall declare a water shortage emergency condition to prevail within the area served by the City of Roseville Water Utility.	Within 28 days of notification from USBR	City Manager City Council Public Information Officer
<b>Step 12</b>	The City of Roseville shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency.	Within 28 days of notification from USBR	City Manager City Council Public Information Officer

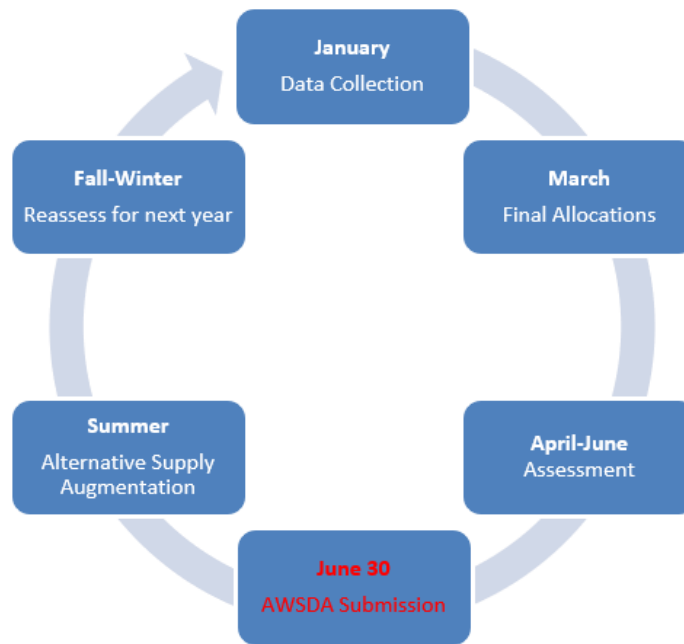
Step	Description	Timeframe	Participants
<b>Step 13</b>	The public, interested parties, and local, regional, and state governments shall be noticed of the water shortage emergency condition and of all water shortage response actions triggered by the emergency declaration. Pursuant to Municipal Code Section 14.09.020(E), the City Manager, or assigned designee, shall be responsible for determining the means by which water users shall be notified. Possible means for notification include mass media, newspaper, public notice, mailings, utility billings, or by any combination of such notice.	Beginning 2 business days after declaration of emergency condition and continuing for as long as the emergency condition persists.	Water Conservation Administrator Senior Engineer – Water Utility Public Information Officer
<b>Step 14</b>	The appropriate Water Shortage Response Actions for the drought stage, outlined in WSCP Table 6 and 7, will be carried out by the public and water utility. The City will enforce compliance in accordance with Roseville Municipal Code 14.09.	Duration of emergency condition	EU – Water Utility Water Users City Manager or designee
<b>Step 15</b>	Track customer water use at a minimum on a monthly basis. Ensure that total gross water use for that month, or more frequent tracking period, is reduced by the necessary percentage when compared to that same tracking period of the last normal supply year.	Duration of emergency condition	Water Conservation Administrator Senior Engineer – Water Utility
<b>Step 16</b>	If the needed water use reduction percentage is not met for any month determine which additional strategies or actions would result in the needed reduction.	Upon determination of insufficient water use reduction	EU Director EU Assistant Director – Water Utility Hydrogeologist Senior Engineer – Water Utility Water Conservation Administrator Additional participants as needed

Step	Description	Timeframe	Participants
<b>Step 17</b>	The EU Department management shall propose to the City Manager additional shortage response actions and whether or not those actions would require the WSCP and Chapter 14.09 of the Roseville Municipal Code to be changed.	Upon determination of insufficient water use reduction	City Manager EU Director EU Assistant Director – Water Utility Additional participants as needed
<b>Step 18</b>	If deemed necessary, the City Manager and City Council will revise the WSCP and Chapter 14.09 of the Roseville Municipal Code, observing all required procedures with such adoption.	Upon determination of insufficient water use reduction	City Manager City Council Additional participants as needed

NOTES: It is the intent of the WSCP that the Water Conservation Administrator and Water Utility Senior Engineer shall jointly be responsible for ensuring that the steps of this plan are carried out by noticing the necessary parties for data requests and facilitating meetings.

**Year-Round Considerations and Assessment**

Ongoing assessment and response actions are key to a successful year-round water supply management strategy. The City’s intention is to keep a regular rhythm of assessment from one annual cycle to the next. Each year the cycle begins with proactive data collection and intradepartmental outreach. An overview of the annual planning cycle and description are as follows and in Figure A2-6.



**Figure A2-6: City of Roseville Annual Water Planning Cycle**

- **January:** Data collection from the previous year from all relevant departments and contributors. This data is warehoused centrally and reviewed for quality control purposes when collected. This data warehouse serves as a reference year-round for water management planning and decision making.
- **March:** The City receives final allocations from its largest USBR Central Valley Project contract in March of each year. This gives a clear picture of what the City’s primary supply will look like the rest of the year. With this information, as well as other key data, the City can complete the annual assessment and submit the report by July 1.
- **Summer:** Alternative supply augmentation is most critically assessed in the summer during peak demands but can occur year-round.
- **Fall/Winter:** Drought conditions can and often do persist into the fall and early winter so the previous step may be ongoing in this season. Concurrently, data is reassessed from the current year and projections for the coming year are analyzed including weather, snowpack, supply and demand scenarios, and conservation.

In addition to the AWSDA, the City tracks assessments of internal consumption patterns as well as regional supply conditions. In order for the City to gain a comprehensive understanding of



consumer’s water demand patterns, consumption for both the short-term (seasonal) and long-term (annual) are analyzed. These analyses inform any necessary adjustments to mitigation measures and management strategies. An example of this type of analysis is provided in Figure A2-7, with a comparison of seasonal water use for 2020 and 2021 on the left and Folsom Reservoir storage supplies on the right.

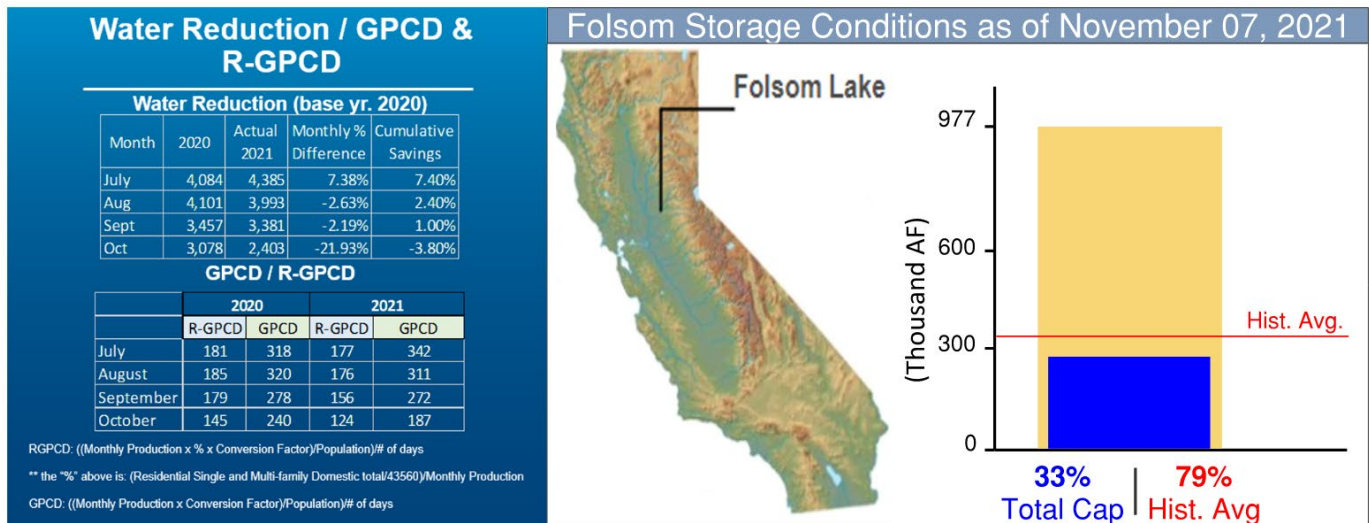


Figure A2-7: Ongoing Monitoring of Demand Patterns and Supply Conditions

**Lessons Learned**

In previous drought conditions the City has learned just how important augmented supplies are - specifically for Roseville, this means reliance on groundwater. The City has had wells since before the Barton Road Water Treatment Plant was built, but in more recent history has utilized this supply very minimally. The City is currently undergoing an expansion of its groundwater program to increase water supply reliability for its consumers.

Public outreach has always been very important to the City and has become more critical to water conservation strategies as drought conditions have become more common in recent years. In early 2021, Roseville called for a voluntary conservation from its consumers but did not see a significant reduction on water demand. When the call to conserve became a mandatory requirement, coupled with a significant effort in public outreach, management saw a much larger reduction in demand patterns. Public outreach, education, and enforcement go hand in hand for proactive and successful drought management strategies.

The City has also spent time to develop and implement an in-depth Water Demand Tracking Tool, which estimates water usage by parcel. During this process it became apparent that although City

departments all work well together, there were some disconnects in the planning process as it related to water supply. It is always important to look at these short-term and long-term demand projections as a team and consider the various priorities from different departments to ensure water supply reliability.

These lessons learned in previous drought scenarios have prompted Roseville to move forward with a variety of projects to increase water supply reliability. The City is increasing storage in the system to allow for more operational flexibility. Roseville is also planning to construct additional ASR wells to grow the diversity of the City's water supply portfolio. Finally, the City is engaged in proactive and frequent regional discussions. A cooperative look ahead at problems and potential solutions can help everyone solidify their water supply in tough conditions.