

**City of Napa
Water Shortage Contingency Plan**

DRAFT

JOINTLY PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AF	Acre-Feet
AWSDA	Annual Water Supply and Demand Assessment
City	City of Napa
County	Napa County
CRMM	Community Relations & Media Manager
CWC	California Water Code
Delta	Sacramento-San Joaquin Delta
DWR	Department of Water Resources
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
GPCD	Gallons Per Capita Per Day
HMP	Hazard Mitigation Plan
MGD	Million Gallons Per Day
NMC	Napa Municipal Code
PIO	Public Information Officer
RRA	Risk and Resilience Assessment
SB	Senate Bill
SEMS	Standardized Emergency Management System
Supervisor	Water Treatment Facility Supervisor
SWP	State Water Project
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
WTP	Water Treatment Plant

City of Napa

Water Shortage Contingency Plan

Water shortages occur whenever the available water supply cannot meet the normally expected customer water use. This can be due to several reasons, such as climate change, drought, and catastrophic events. Drought, regulatory action constraints, and natural and manmade disasters may occur at any time. In 2018, the California State Legislature (Legislature) enacted two policy bills (Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman)) (2018 Water Conservation Legislation) to establish a new foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning.

This Water Shortage Contingency Plan (WSCP) describes the City of Napa's (City) strategic plan for preparing for and responding to water shortages, including defining water shortage stages and associated shortage response actions. This WSCP provides a guide for the City to proactively prevent catastrophic service disruptions and has been updated to be consistent with the 2018 Water Conservation Legislation requirements. As part of this WSCP, the City's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting are described. Chapters 13.10 and 13.12 of the Napa Municipal Code (NMC) support the City's WSCP. It should be noted that the City is in the process of updating the NMC to be consistent with this WSCP.

The City intends for this WSCP to be dynamic so that it may assess response action effectiveness and adapt to emergencies and catastrophic events. Refinement procedures to this WSCP are provided to allow the City to modify this WSCP outside of the Urban Water Management Plan (UWMP) process.

1.0 WATER SUPPLY RELIABILITY ANALYSIS

Chapters 6 and 7 of the City's 2020 UWMP present the City's water supply sources and reliability, respectively. Findings show the City can reliably meet its projected demands through 2045 in normal hydrologic conditions. In single dry year and multiple dry year scenarios, supply shortfalls can be eliminated by reducing demand with the appropriate stage of this WSCP.

Statewide water supply conditions and actions by other agencies may impact the City's available water supply. A water shortage condition occurs when the available supply of potable water cannot meet ordinary water demands for human consumption, sanitation, fire protection, and other beneficial uses. In some cases, the City may foresee a water shortage, but an unforeseen sudden or emergency event may also cause a water shortage. In general, the City's water supply conditions may be affected by the following:

- Local surface water availability (Lake Hennessey and Milliken Reservoir yields and available storage for drawdown in dry years)
- State Water Project (SWP) annual supply allocations
- Sacramento-San Joaquin Delta (Delta) and North Bay Aqueduct vulnerability to seismic events, changing environmental and regulatory requirements, and climate change
- Climatic variability and drought conditions

In the future, the City will conduct an annual water supply and demand assessment as described in Section 2.0. The analysis associated with this WSCP was developed in the context of the City's water supply sources and reliability.

2.0 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Beginning July 1, 2022, California Water Code (CWC) Section 10632.1 requires water suppliers to submit an Annual Water Supply and Demand Assessment (AWSDA) and an Annual Water Shortage Assessment Report to the Department of Water Resources (DWR). This section provides the procedures for the City to conduct its AWSDA, which will inform the City's Annual Water Shortage Assessment Report and assist the City with planning for potential water supply shortages. The objective of the AWSDA is to forecast near-term supply conditions so that the City can prepare logistically and financially for any anticipated water supply constraints, as well as enact appropriate shortage response actions in a timely manner.

This section provides the decision-making process, key data inputs, and methodology necessary for the City to produce its AWSDA. This includes steps the City may take to declare a water shortage emergency and associated water shortage stage (see Section 3.0) and implement water shortage response actions (see Section 4.0).

2.1 Decision-Making Process

The City will use the decision-making process described below to consistently produce its AWSDA. The City may adjust and improve this process as needed.

The Deputy Utilities Director (or designee) is responsible for preparing the City's AWSDA and Annual Water Shortage Assessment Report and submitting them to DWR by July 1st of each year (starting in 2022). This team will gather key data inputs described in Section 2.2 and conduct the assessment in accordance with Section 2.3. In May of each year, the Deputy Utilities Director will finalize the AWSDA based on that year's final SWP allocation. The AWSDA and Annual Water Shortage Assessment Report will be presented to the Utilities Director for review and approval. If the AWSDA finds that available water supply will be sufficient to meet expected demands for the current year and one subsequent dry year, the AWSDA and Annual Water Shortage Assessment Report will be completed for submittal to DWR.

To conduct the AWSDA, the Deputy Utilities Director (or designee) will follow the schedule of activities shown in Table 1. Due to variations in climate and hydrologic conditions, the timeframes shown in the tables are approximate and may be adjusted as needed. The City intends to implement shortage response actions to effectively address anticipated water shortage conditions in a timely manner while complying with the State's reporting requirements.



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Schedule	Activity	Responsible Party
March	Gather applicable information and considerations for the preparation of AWSDA.	Deputy Utilities Director or designee
Late March	Determine water demands for the current year and one subsequent dry year. Describe demand types and quantities, considering factors affecting demand as described in Section 2.2.	Deputy Utilities Director or designee
Late March/ Early April	Determine water supply sources for the current year and one subsequent dry year. Describe sources and quantities considering factors affecting supply as described in Section 2.2.	Deputy Utilities Director or designee
Early April	Calculate the City's water supply reliability for the current year and one subsequent dry year using the methodology described in Section 2.3.	Deputy Utilities Director or designee
April	Based on determinations of the AWSDA, prepare the Annual Water Shortage Assessment Report with recommendations on water shortage condition determination and response actions. Submit to Utilities Director for review.	Deputy Utilities Director or designee
April	Review AWSDA and Annual Water Shortage Assessment Report and provide comments as needed.	Utilities Director
May	Finalize and approve AWSDA and Annual Water Shortage Assessment Report.	Deputy Utilities Director or designee
By July 1	Submit finalized AWSDA and Annual Water Shortage Assessment Report to DWR.	Deputy Utilities Director or designee

Should the AWSDA find that available supply will not meet expected demands, the City will coordinate internally, with the region's other water service providers, and with Napa County (County) for the possible proclamation of a local emergency. The Utilities Director will present the finalized assessment to the City Council, along with recommendations on water shortage condition determination and actions. Recommended actions may include declaration of a water shortage emergency, declaration of a water shortage stage, and water shortage actions.

Based on the findings of the AWSDA, the City Council will determine if a water shortage condition exists and, if needed, adopt a resolution declaring a water shortage emergency and an associated water shortage stage and authorizing water shortage actions. The Deputy Utilities Director (or designee) will then prepare the City's Annual Water Shortage Assessment Report, incorporating City Council determinations and approved actions. The schedule of decision-making activities is provided in Table 2. The timeframes and the activities shown in this table are approximate and may be adjusted as needed.



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Table 2. Schedule of Decision-Making Activities if Water Shortage Condition Exists

Timeframe	Activity	Responsible Party
Early/Mid-April	If a water shortage emergency condition exists, prepare recommendations on water shortage condition determination and action based on AWSDA findings. Prepare resolutions approving determinations and actions.	Deputy Utilities Director
Mid-April	Coordinate with the region's water service providers and with Napa County for the possible proclamation of a local emergency.	Utilities Director
Late April/Early May	Prepare finalized determinations and recommendations for the City Council, along with resolutions for determinations and actions.	Utilities Director
May	Receive presentation of finalized determinations and recommendations. Make determination of degree of emergency and act on resolutions that declare a water shortage emergency condition. Authorize water shortage response actions for implementation.	City Council
After City Council Meeting	If a water shortage emergency condition is declared, implement the WSCP (follow Section 5.0) and the water shortage response actions as approved by the City Council.	Utilities Director
June	Finalize AWSDA and Annual Water Shortage Assessment Report.	Deputy Utilities Director
By July 1	Submit final AWSDA and Annual Water Shortage Assessment Report to DWR.	Deputy Utilities Director

2.2 Key Data Inputs

The State requires that the AWSDA evaluate supplies and demands for, at a minimum, the current year and one subsequent dry year. The planned water supply and demand for the current year and a subsequent dry year will be used to evaluate the City's water supply reliability.

In planning for water supplies, the following factors are considered, as applicable and appropriate:

1. SWP annual supply allocation
2. Lake Hennessey and Milliken Reservoir storage levels
3. Options for supplemental water purchases
4. Hydrological conditions
5. Regulatory conditions
6. Contractual constraints
7. Surface water quality
8. Infrastructure capacity constraints or changes
9. Capital improvement project implementation

Planned water supply sources and quantities will be described and be reasonably consistent with the supply projections in Chapter 6 (Water Supply Characterization) of the City's most recent UWMP. Should



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supply sources and projections differ significantly between the AWSDA and the UWMP, the City will explain the difference.

The AWSDA will examine unconstrained water demands, which are customer demands where no water conservation measures are in effect. In planning for water demands, the following factors are considered, as applicable and appropriate:

1. Weather conditions
2. Water year type
3. Population changes (e.g., due to development projects)
4. Demand trends and anticipated new demands (e.g., changes to land use)
5. Pending policy changes that may impact demands
6. Infrastructure operations

Planned water demand types and quantities will be described and should be reasonably consistent with the demand projections in Chapter 4 (Water Use Characterization) of the City's most recent UWMP. Should demand projections deviate significantly between the AWSDA and the UWMP, the City will explain the difference.

2.3 Assessment Methodology

In preparing the AWSDA, the City will use the following assessment methodology and criteria to evaluate the agency's water supply reliability for the current year and following one dry year.

The City uses a spreadsheet to plan for current year and future year supplies and demands. Planned supply and demand inputs described in Section 2.2 will be entered in the spreadsheet in annual increments. As needed, the increments may be revised to monthly or seasonal periods to more closely evaluate specific conditions and needs.

Supply and demand will be compared to determine the City's water supply reliability in the current year and the following one dry year. The City's water supply will be deemed reliable if it can meet planned water demands in both the current year and the following dry year. If water supply cannot meet planned water demands in the current year or the following dry year, the extent of the water shortage condition will be determined, and the City will prepare response actions in accordance with this WSCP.

Findings from the AWSDA will be presented to the City Council for consideration, along with recommendations for action.

3.0 SIX STANDARD WATER SHORTAGE LEVELS

To provide a consistent regional and statewide approach for conveying the relative severity of water supply shortage conditions, the 2018 Water Conservation Legislation mandates that water suppliers plan for six standard water shortage levels that correspond to progressive reductions of up to 10, 20, 30, 40, 50 percent, and greater than 50 percent from the normal reliability condition. Each shortage condition should correspond to additional actions water suppliers would implement to meet the severity of the impending shortages.



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For each of the State’s standard shortage levels (also called “stages”), Table 3 summarizes the water shortage range (i.e., percent shortage from normal supplies) and a brief narrative description of the corresponding water shortage condition. These water shortage stages apply to both foreseeable and unforeseeable water supply shortage conditions. The City’s 2015 UWMP included five stages that addressed up to 50 percent water supply reduction in the first four stages and more than 50 percent in Stage 5. Table 3 presents the City’s reorganized stages, which align with the State’s standard stages.

As described in Section 2.0, the City will conduct an AWSDA to determine its water supply condition for the current year and the following one dry year. Preparing the AWSDA helps the City ascertain the need to declare a water shortage emergency and water shortage stage. In other cases, the City may need to declare a water shortage emergency due to unforeseen water supply interruptions. When the City anticipates or identifies that water supplies may not be adequate to meet the normal water supply needs of its customers, the City Council may determine that a water shortage exists and consider a resolution to declare a water shortage emergency and associated stage. The shortage stage provides direction on shortage response actions.

Table 3. Water Shortage Contingency Plan Levels (DWR Table 8-1)

Shortage Level	Percent Shortage Range	Water Shortage Condition Definition	Shortage Response Actions
1	Up to 10%	Insufficient carryover storage and supplemental water to provide for 90% of normal supplies.	Voluntary conservation; implement actions per Table 4
2	Up to 20%	Insufficient carryover storage and supplemental water to provide for 80% of normal supplies.	Voluntary or mandatory conservation; implement actions per Table 4
3	Up to 30%	Insufficient carryover storage and supplemental water to provide for 70% of normal supplies.	Mandatory conservation; implement actions per Table 4
4	Up to 40%	Insufficient carryover storage and supplemental water to provide for 60% of normal supplies.	Mandatory conservation; implement actions per Table 4
5	Up to 50%	Insufficient carryover storage and supplemental water to provide for 50% of normal supplies.	Mandatory conservation; implement actions per Table 4 and Table 5
6	>50%	Insufficient carryover storage and supplemental water to provide for less than 50% of normal supplies.	Mandatory conservation; implement actions per Table 4 and Table 5



4.0 SHORTAGE RESPONSE ACTIONS AND EFFECTIVENESS

CWC Section 10632 (a)(4) requires shortage response actions that align with the defined shortage levels. The City's shortage response actions consist of a combination of demand reduction, supply augmentation, and operational changes. The specific suite of response actions implemented depends on the event that precipitates a water shortage stage, the time of the year the event occurs, the water supply sources available, and the condition of the City's water system infrastructure. In general, the City plans to use a balanced and dynamic approach, adapting its response actions to meet the water use goals associated with the declared water shortage stage.

The City will track progress toward water use reduction goals by analyzing weekly or monthly water production. The analysis will compare the drought production with the previous non-drought production to obtain a percent reduction. The City will increase or decrease its public outreach efforts based on observed usage reduction.

The shortage response actions discussed below may be considered tools that allow the City to respond to water shortage conditions. Because the City may continuously monitor and adjust its response actions to reasonably equate demands with available supply, the extent to which implementation of each action reduces the gap between water supplies and water demand is difficult to quantify and thus only estimated. Certain response actions, such as public outreach and enforcement, boost the effectiveness of other response actions and do not have a quantifiable effect on their own.

4.1 Demand Reduction

The City may request that its customers reduce their water demands during moderate or severe water shortages through NMC Chapters 13.10 and 13.12, respectively. NMC Chapter 13.10 will define a moderate water shortage as requiring a reduction in consumption of up to 30 percent. Therefore, this WSCP presents the water use restrictions to be defined in NMC Chapter 13.10 as being implemented in water shortage Stages 1, 2, and 3, while the prohibitions and limitations defined in NMC Chapter 13.12 are associated with water shortage Stages 4 through 6.

During water shortage conditions, the City plans to reduce demand by implementing the actions shown in Table 4. Demand reduction actions are organized by the triggering water shortage stage, and each action includes an estimate of how much its implementation will reduce the shortage gap. For each demand reduction action, Table 4 also indicates if the City uses compliance actions such as penalties, charges, or other enforcement. Demand reduction actions are only listed in Table 4 in the stage when they are first implemented. The City will continue to use these actions in higher stages unless otherwise noted.



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Table 4. Water Shortage Contingency Plan Demand Reduction Actions (DWR Table 8-2)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
1	Expand Public Information Campaign	See Note 1		No
1	Offer Water Use Surveys	0-5%		No
1	Provide Rebates for Turf Replacement	0-5%		No
2	Landscape - Limit landscape irrigation to specific days	0-20%	No person shall use water to irrigate landscaping on consecutive days. See Note 2.	Yes
2	Landscape - Limit landscape irrigation to specific times	0-5%	No person shall use water to irrigate landscaping between the hours of 10:00 a.m. and 5:00 p.m. See Note 2.	Yes
2	Landscape - Other landscape restriction or prohibition	0-1%	No person shall use water to irrigate ornamental turf on public street medians.	Yes
2	Landscape - Other landscape restriction or prohibition	0-1%	No person shall use water to irrigate landscaping during a measurable rainfall event or within 48 hours thereafter	Yes
2	Landscape - Restrict or prohibit runoff from landscape irrigation	0-5%		Yes
2	Other - Require automatic shut off hoses	0-1%	When washing a motor vehicle with a hose, the hose must be fitted with a shutoff nozzle or similar device.	Yes
2	Other water feature or swimming pool restriction	0-1%	No person shall drain and refill any swimming pool unless that person establishes that it is needed for the purpose of pool repair or to correct a severe chemical imbalance. No person shall drain and refill any decorative pond or lake unless that person establishes that it is needed for the purpose of lining the bottom to prevent absorption.	Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	0-1%	Water shall not be used in a decorative fountain or other decorative water feature, except where water is part of a recirculating system.	Yes
2	CII - Restaurants may only serve water upon request	0-1%		Yes
2	CII - Lodging establishment must offer opt out of linen service	0-1%		Yes
2	Other - Prohibit use of potable water for washing hard surfaces	0-1%	Except where necessary to address an immediate health and safety need.	Yes
3	Landscape - Limit landscape irrigation to specific days	10-25%	No person shall irrigate landscaping more than two days per week.	Yes
3	Increase Water Waste Patrols	5-10%		No
3	Other	0-3%	Interruptible-surplus agricultural water agreements may be reduced or suspended.	Yes
3	Other	0-2%	Water for hauling shall be limited to indoor domestic uses within Napa County and shall be supplied from the City Corporation Yard only. Verification of delivery to approved address is required.	Yes
3	Pools and Spas - Require covers for pools and spas	0-1%	Pools and spas should remain covered when not in use.	Yes
4	Implement or Modify Drought Rate Structure or Surcharge	5-30%		Yes
4	Other	0-3%	Interruptible-surplus agricultural water agreements are suspended.	Yes
4	Landscape - Limit landscape irrigation to specific days	15-30%	No person shall irrigate landscaping more than one day per week.	Yes
4	Other - Prohibit use of potable water for construction and dust control	0-1%	Water shall not be used for grading, dust control, street, pipeline or similar heavy construction. Hydrant meters shall not be issued for construction purposes.	Yes
4	Water Features - Restrict water use for decorative water features, such as fountains	0-1%	Water shall not be used for decorative fountains or the filling of decorative lakes or ponds.	Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	0-1%		Yes
5	Landscape - Other landscape restriction or prohibition	0-1%	The installation of new or replacement lawn, sod, or turf is prohibited.	Yes
5	Landscape - Prohibit certain types of landscape irrigation	5-30%	Residential outdoor watering shall be limited to hand-watering using a hose with a shutoff nozzle, drip, or subsurface irrigation only.	Yes
5	Other	Depends on extent of existing activities	Water shall not be used for cleaning streets during or following construction activities; flushing sewers, hydrants, storm drains; flow testing for fire sprinkler design and training of fire fighting personnel.	No
6	Landscape - Prohibit all landscape irrigation	10-40%	Irrigation of turf or lawn is prohibited.	Yes
6	Other water feature or swimming pool restriction	0-1%	No person shall drain and refill swimming pools or spas, nor shall new pools be filled.	Yes
6	Landscape - Prohibit certain types of landscape irrigation	0-5%	Water shall not be used for the irrigation of any commercial crops, including vineyards.	Yes

NOTES: (1) This action boosts the effectiveness of other actions, so a shortage gap reduction estimate cannot be quantified. (2) Except for the initial watering of newly planted landscaping and germination requirements of newly seeded lawns. (3) Actions introduced in a lower stage will also be used in higher stages, unless otherwise noted.



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The City will monitor water production, water demands, and changing conditions to determine the intensity of its public outreach, the extent of its enforcement actions, and the need to adjust its water shortage stage declaration as discussed in Section 9.0.

4.2 Additional Mandatory Restrictions

Beginning with water shortage stage 5, the City may assign maximum water use allocations to customers, as summarized in Table 5. Water use beyond the allocation will subject customers to administrative citation and fines and potential surcharges directly on their water bill. Allocations are designed to avoid penalizing any customer who has undertaken conservation measures in the past for having saved water on an ongoing basis. Water use allocation variances will be granted on a case-by case basis at the discretion of the Utilities Director.

Customer Type	Water Shortage Stage ^(a)	
	Stage 5	Stage 6
Single-Family Residential	48 GPCD + minimal landscape allotment (1,000 gallons per month) ^(b)	40 GPCD + no landscape allotment
Multi-Family Residential	48 GPCD + minimal landscape allotment (1,000 gallons per month) ^(b, c)	40 GPCD + no landscape allotment
Commercial, Industrial, and Institutional	80 percent of baseline ^(d)	70 percent of baseline ^(d)
Dedicated Irrigation Account	50 percent of baseline ^(d)	Allotment only for mature trees and shrubs

(a) Maximum water use allocations begin in water shortage Stage 5. There are no maximum water use allocations for water shortage Stages 1, 2, 3, and 4.

(b) Average monthly landscape allotments per bimonthly billing period from May through October. A minimal landscape allotment is 2,000 gallons per bimonthly billing period.

(c) Landscape allotment provided if irrigation usage is not on a separate dedicated service.

(d) Baseline is defined as either the previous year's usage or the most recent 12-month period with no water shortage restrictions in place.

GPCD = gallons per capita per day

4.3 Supply Augmentation and Other Actions

Chapter 6 of the City's 2020 UWMP describes the City's normal water supply portfolio, which includes local surface water and imported water through the SWP. In emergencies, the City can receive water via intertie connections with the cities of American Canyon, St. Helena, and Calistoga, and the Town of Yountville. In dry years, the City may participate in the DWR Dry Year Transfer Program or the Yuba Accord Dry Year Water Purchase Program to bolster supplies. Table 6 summarizes the City's supply augmentation and other actions.



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Table 6. Supply Augmentation and Other Actions (DWR Table 8-3)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
1			No action at this shortage level
2			No action at this shortage level
3			No action at this shortage level
4	Transfers	Market-dependent	State Water Project Dry Year Transfer Program
4	Other Purchases	Market-dependent	Yuba Accord Dry Year Purchase Program
5			No new action at this shortage level
6	Other Actions (describe)	Market-dependent	Intertie connections with American Canyon, St. Helena, Calistoga, and Yountville

4.4 Operational Changes

The City can make several operational changes to address a water shortage, including increasing water waste patrols and decreasing line flushing and flow testing (e.g., for fire sprinkler design or training of firefighting personnel). While the City always seeks to reduce water losses, these actions will further those efforts during a shortage. These operational changes are included in Table 4, as they either directly or indirectly reduce demands. Capital improvement projects can also be delayed or accelerated as needed.

4.5 Emergency Response Plan

As stated in Section 3.0, the City's water shortage stages outlined in Table 3 apply to both foreseeable and unforeseeable water supply shortage conditions. The latter includes catastrophic water shortage conditions, which are addressed in the City's Emergency Response Plan (ERP). The ERP outlines preparation, response, and recovery procedures associated with unforeseeable incidents such as water supply contamination, earthquake, infrastructure failure, and other events. Concurrent with the preparation of this UWMP, the City is updating its ERP for compliance with the America's Water Infrastructure Act. Due to the confidential nature of the ERP, the document is not included with this plan, but some key provisions are discussed below.

For significant disasters, the City uses the Standardized Emergency Management System (SEMS) to allow rapid and effective coordination in the field. For example, in a major earthquake event, all Water Division employees fall under the Utilities Department's direction, the Operations section as defined by SEMS. The ERP includes these chain-of-command details for incidents, along with mutual aid agreements, emergency resources, emergency water supply calculations, and public notification procedures.

The South Napa Earthquake of August 24, 2014 provided a real-life exercise for the ERP. None of the three water treatment plants (WTPs) were significantly damaged or forced offline during that event, but main breaks caused customer outages.

The Water Division has developed a redundant system in the event of a disaster. The main points of this redundant system are:

1. The City has two major WTPs, each capable of producing 20 million gallons per day (MGD).



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2. Each WTP has its own auxiliary power supply.
3. Each WTP has its own raw water source.
4. The two WTPs are more than 20 miles apart, which reduces the risk of a single event affecting both plants simultaneously.
5. Both WTPs were designed with redundant process components.

In the extremely unlikely event that the City loses all its water sources at once, the system's tank storage of 33 million gallons can help the City respond to the emergency. The City's best security in an extreme emergency may be the ability to deliver raw water to its customers from both Lake Hennessey and Milliken Reservoir. That allows the City to provide water for fire protection even if the pipelines have numerous leaks. The raw water would also be available for human consumption as long it was boiled or treated with iodine.

With some events, it could be necessary for the City to use an emergency supply source to maintain system pressure. The City has intertie connections with the cities of American Canyon, St. Helena, and Calistoga, and the Town of Yountville. The City of American Canyon can supply the City with approximately 4 MGD for a limited time.

Overall, the ERP points out the flexible design of the water system and the City's ability to minimize service disruptions in the worst of emergencies. For all conceivable emergencies, a specific plan is in place to rapidly restore water service, ensure water for firefighting, and minimize adverse impacts on public health and safety.

4.6 Seismic Risk Assessment and Mitigation Plan

CWC Section 10632.5(a) requires that UWMPs include a plan to assess and mitigate a water system's seismic vulnerabilities. The City's Hazard Mitigation Plan¹ (City HMP, adopted in 2015 and currently being updated) meets this requirement because it addresses seismic risk. It is incorporated into this plan by reference. The City HMP was submitted to the Federal Emergency Management Agency (FEMA), which found it in conformance with Title 44 Code of Federal Regulations Part 201.6 Local Mitigation Plans.

While California experiences hundreds of earthquakes each year, most are below 3.0 on the Richter Scale (i.e., magnitude 3.0) and cause minimal damage. The United States Geological Survey (USGS) roughly defines strong earthquakes (which can cause moderate damage to structures) as measuring greater than 5.0 on the Richter Scale, while major earthquakes measure more than 7.0 on the Richter Scale. Generally, in California, strong earthquakes occur every two to three years, and major earthquakes occur once a decade.

The City is in a seismically active region. In August 2014, a 6.0 magnitude earthquake centered in South Napa caused significant damage throughout the region, including numerous water main breaks. The West Napa Fault runs along the western edge of the City, while the Rodgers Creek Fault and Green Valley/Concord Fault run through the County. A 2016 report² by the USGS estimated the probabilities for magnitude-6.7 (or larger) earthquakes on major fault lines in the San Francisco Bay Area by the year 2043. The Rodgers Creek Fault

¹ City of Napa, 2015. *Hazard Mitigation Plan*.

[https://www.cityofnapa.org/DocumentCenter/View/5963/Hazard Mitigation Plan 2015?bidId=](https://www.cityofnapa.org/DocumentCenter/View/5963/Hazard_Mitigation_Plan_2015?bidId=)

² U.S. Geological Survey (USGS), 2016. *Earthquake Outlook for the San Francisco Bay Region 2014-2043*.

<https://pubs.usgs.gov/fs/2016/3020/fs20163020.pdf>

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has a 33 percent chance of one or more earthquakes of magnitude-6.7 or larger by 2043, while the Green Valley/Concord Fault has a 16 percent chance of one or more such earthquakes in that timeframe.

The City HMP identifies risks posed by disasters (including earthquakes) and ways to minimize damage from those disasters. To promote an earthquake-safe community, the City HMP proposes two objectives: (1) continue requiring all new buildings and infrastructure to be designed and constructed to resist earthquake stresses; and (2) identify options, incentives, and funding sources for retrofitting seismically vulnerable structures. Each objective is associated with implementation actions, many of which the City is already implementing. The implementation actions relevant to the City's water system include:

- Discourage locating facilities necessary for emergency services and major utility lines and facilities within areas subject to strong or violent ground shaking.
- Require that facilities necessary for emergency services be capable of withstanding a maximum credible earthquake from any of the seven known active faults in the region and remaining operational to provide emergency response.
- Design and install seismic-resistant transmission and distribution pipeline joints across known faults and on newly constructed bridges.
- Invest in automation and control features on asbestos cement transmission pipeline to protect against catastrophic failures.

To address the seismic vulnerabilities of its water system facilities, the City completed a Risk and Resilience Assessment (RRA) of its water system in December 2020. Completed in accordance with America's Water Infrastructure Act, the RRA systematically evaluated the City's assets, threats, and risks, as well as countermeasures that might be implemented to minimize overall risk to the system. To ensure the security of the City's water system, the RRA is retained by the City as a confidential document.

5.0 COMMUNICATION PROTOCOLS

In the event of a water shortage, the City must inform its customers, the general public and interested parties, and local, regional, and state entities. Communication protocols for foreseeable and unforeseeable events are provided in this section. In any event, timely and effective communication must occur for appropriate response to the event. Key City staff communicate via radio or cell phones, and all City staff are provided email accounts to communicate internally and externally.

5.1 Communication for Foreseeable Events

A water shortage may be foreseeable when the City prepares its AWSDA, as described in Section 2.0. When the City determines the potential of a water shortage event, the City Council may declare a water shortage emergency.

If a water shortage emergency is anticipated, City staff will coordinate interdepartmentally, with the region's water service providers, and with the County for the possible proclamation of a local emergency. If needed, City staff will communicate with the appropriate State agencies regarding the water shortage emergency.

In a duly noticed meeting, the City Council will receive a presentation of the current or predicted shortage as determined by the AWSDA. The City Council will determine if a water shortage emergency condition



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exists and the degree of the emergency, while considering the shortage response actions triggered or anticipated to be triggered by the shortage level. As necessary, the City Council will act on the water shortage emergency declaration, associated water shortage stage, and shortage response actions.

If the City Council declares a water shortage emergency, the Community Relations & Media Manager (CRMM) and City staff will coordinate to communicate with its customers and the public to inform them about the declared water shortage emergency, water shortage level, and authorized water use restrictions. The City may use any combination of the following outreach formats: newspaper publications, mailers, bill stuffers, newsletters, social media, its website, local radio, public event appearances, mobile lighted message signs, and press releases.

5.2 Communication for Unforeseeable Events

A water shortage may occur during unforeseeable events such as earthquakes, fires, infrastructure failures, civil unrest, and other catastrophic events. The City's ERP provides specific communication protocols and procedures to convey water shortage contingency planning actions during these events. The City may trigger any of these communication protocols at any water shortage stage, depending on the event.

In general, communications and notifications should proceed along the chain of command. Notification decisions will be made under the direction of the Director of Emergency Services, with external communications managed by the CRMM. The ERP provides a list of relevant contacts to notify at the local, regional, and state level.

The CRMM is the official spokesperson for the City and is responsible for establishing an information center and providing information for news media. In addition, the CRMM maintains a list of contacts to disseminate information to the public, typically via electronic media, radio, television, or newspapers.

6.0 COMPLIANCE AND ENFORCEMENT

After the City Council adopts a water shortage stage, customers will be notified as described in Section 5.0. NMC Chapters 13.10 and 13.12 include demand reduction actions and compliance and enforcement measures the City may implement when a water shortage is declared.

The Utilities Director is authorized to issue administrative citations for violations of demand reduction actions as noted in Table 4. After an initial educational warning, escalating fines of \$100, \$200, and \$500 may be imposed for repeated violations. Exceptions to demand reduction actions may be requested in writing, with customer providing sufficient information, documentation, and verification, which establishes that the requested exception is necessary in order to: (1) protect the public health or safety, or (2) avoid undue hardship (including adverse economic impacts such as loss of production or jobs). The request shall also document that all feasible conservation measures are being used, and that there are no alternative available sources of water. The request shall be subject to the review and approval of the Utilities Director, whose decision will be final.

In very severe water shortages (i.e., Stages 5 and 6), customers are required to maintain water use within the allocations described in Section 4.2. Upon completion of each billing cycle, customers in violation will be notified via letter and are subject to the administrative citation process described above. They may also be subject to surcharges for the usage above their allocation that would be applied directly to their



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water bill. Customers will receive prior notification of their standard allocation and will have the opportunity to request exceptions (e.g., change number of household occupants).

7.0 LEGAL AUTHORITIES

NMC Chapter 2.89 includes provisions to the preparation and implementation of plans in the event of local emergencies. NMC Chapters 13.10 and 13.12 support the City's water shortage contingency actions. These chapters include provisions for declaring a water shortage emergency, determining customer use reductions, water use regulations and restrictions, and compliance and enforcement.

When a water shortage is determined, the City will coordinate with the region's other water service providers and the County for the possible proclamation of a local emergency in accordance with California Government Code, California Emergency Services Act (Article 2, Section 8558).

In a duly noticed meeting, the City Council will determine whether a water shortage emergency condition exists and, if so, the degree of the emergency and what regulations and restrictions should be enforced in response to the shortage. The City shall declare a water shortage emergency in accordance with CWC Chapter 3 of Division 1.

California Water Code Division 1, Section 350

...The governing body of a distributor of a public water supply...shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

The water shortage emergency declaration triggers communication protocols described in Section 5.0 and compliance and enforcement actions described in Section 6.0.

8.0 FINANCIAL CONSEQUENCES OF WSCP

This section describes the financial impacts associated with implementing the WSCP and mitigation actions needed to address these impacts. During water shortages, revenue is expected to decrease due to reduced customer consumption. Some expenditures are also expected to decrease due to the decreased demand for water; however, implementing water conservation measures is anticipated to increase expenditures (e.g., for customer service activities and water waste patrols). To compensate for lost revenue and possible increase in expenditures, the City may need to use drought rates or financial reserves to maintain fiscal health. Both components are discussed in this section.

8.1 Drought Rate Structures and Surcharges

Current standard water rates are available on the City's website.³ Standard rates consist of a fixed service charge based on meter size and a water quantity charge. For single-family residential customers, the water quantity charge is tiered, with higher rates charged for greater amount of water consumed. The City

³ <https://www.cityofnapa.org/606/Rate-Schedules>



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reserves the right to change the water rate structure during a declared water shortage to more strongly encourage customers to reduce water use, to help cover water system costs, and to protect the financial stability of the water system as water demands are reduced.

In its next water rate study in 2022, the City will consider a drought rate structure. This drought rate structure would be adopted in adherence to Proposition 218 with required public hearings. As part of the water rate study, the City may consider a drought surcharge on each unit of water sold. Beginning with water shortage Stage 4, the drought surcharge would be applied to all customers with an escalating amount through Stages 5 and 6.

8.2 Use of Financial Reserves

As part of the Water Fund, the City maintains an Emergency Reserve, a Water Supply Reserve, and a Stabilization Reserve. In the event of a significant drop in revenue during a drought, these funds are available to maintain operations and potentially augment supplies to reduce the water shortage. To compensate for loss of revenue from reduced water sales and increased staffing for the water shortage response effort, the reserves may be employed in water shortage Stages 4 through 6.

9.0 MONITORING AND REPORTING

The City's water system is fully metered, from its water supply sources to individual customer meters. Meters may be used as monitoring tools for compliance and reporting purposes. Production meters at the three WTPs provide a systemwide overview of water supply and demand.

In normal water supply conditions, production figures are recorded daily. Production totals are reported daily to the Water Treatment Facility Supervisor (Supervisor) and weekly to the Deputy Utilities Director. During a Stage 1, 2, or 3 water shortage, the Supervisor compares the weekly production to the target to verify that the demand reduction goal is being met. If reduction goals are not met, the Deputy Utilities Director will notify the City Council so that corrective action can be taken. The City Council receives monthly production reports during Stage 1, 2, or 3 water shortages. In Stage 4 and higher, the same procedure is followed, with the addition of a daily production report to the Deputy Utilities Director.

Customer meters are used to determine adherence to water allocations described in Section 4.2. This information will allow the City to adjust public outreach, enforcement, and other water shortage response actions as needed to meet available supplies.

The State Water Resources Control Board has adopted regulations for monthly reporting of water production and other uses, along with associated enforcement metrics. The City regularly records its water meter readings, along with enforcement actions, ensuring that the City is able to comply with these reporting requirements.

10.0 WSCP REFINEMENT PROCEDURES

This WSCP is an adaptive management plan. It is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. Based on monitoring described in Section 9.0 and the need for compliance and enforcement actions



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described in Section 6.0, the City may adjust its response actions and modify its WSCP. The City will also seek input from staff and the public regarding the effectiveness of its WSCP and ideas for improvements

When a revised WSCP is proposed, the revised WSCP will undergo the process described in Section 12.0 for adoption by the City Council and distribution to the County and the general public.

11.0 SPECIAL WATER FEATURE DISTINCTION

The City distinguishes special water features, such as decorative fountains and ponds, from pools and spas. Special water features are regulated separately. Regulations under NMC Chapter 13.10 prohibit the use of potable water in non-recirculatory fountains or decorative water features, while NMC Chapter 13.12 prohibits using water for decorative fountains or to fill decorative lakes or ponds.

12.0 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

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

No later than 30 days after submittal to DWR, copies of this WSCP will be available at the Utilities Department, 1700 Second Street, the City Clerk's office, and at the Napa City-County Library. A copy will also be provided to the County. An electronic copy of this WSCP will also be available for public review and download on the City's website.

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