CITY OF VACAVILLE
URBAN WATER SHORTAGE CONTINGENCY PLAN

FINAL

AN AMENDMENT TO THE URBAN WATER MANAGEMENT PLAN

ADOPTED JANUARY 1991
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SECTION 1. Plan Overview and Purpose

The following plan has been updated in accordance with the Urban Water Management Planning Act and California Water Code Sections 10610 and 10632 (Appendix A), which require all urban water suppliers in California to prepare, adopt, and submit an amendment to its Urban Water Management Plan (UWMP). This amendment, titled the Urban Water Shortage Contingency Plan (UWSCP), outlines progressive steps to be taken to insure adequate water supply during drought years or other water shortage emergencies.

The City of Vacaville (City) prepared and submitted its first UWSCP in January 1991 as part of the City's 1991 UWMP update. The UWSCP was updated in August 2014 in response to the Emergency Drought Regulations issued on July 15, 2014 by the State Water Resources Control Board (SWRCB).

1.1 Compliance with City of Vacaville Municipal Code

The UWSCP complies with Section 13.20 of the City of Vacaville Municipal Code (Municipal Code) titled "Water Conservation in Normal, Drought and Emergency Conditions" (Appendix B). The Municipal Code is referenced or quoted in the UWSCP where appropriate.

1.2 Establishment of Water Conservation Conditions

The Municipal Code defines three water conservation conditions. The UWSCP addresses water conservation during normal, drought, and emergency conditions as defined below.

Normal Conditions (MC 13.20.040)

The normal conservation condition is in effect any time when drought or emergency conditions are not in effect. Normal conditions will prevail when there is not a water shortage. Conservation practices, including compliance with the *City of Vacaville Water Efficient Landscape Requirements* (WELR) will be required during normal conditions in accordance with the Municipal Code.

Drought Conditions (MC 13.20.050)

Drought conditions will be in effect when there is a water shortage necessitating a reduction in water use, either city-wide or in a sub-area or use land-category within the City.

Emergency Conditions (MC 13.20.060)

Emergency conditions will be in effect whenever there is a water shortage necessitating a reduction in water use of 50 percent or greater from the normal condition, either city-wide or in a sub-area or land-use category within the City.

SECTION 2. Water Supply Availability

The City of Vacaville has three water supply sources. Two are surface water sources, the Solano Project and the State Water Project, that require treatment prior to distribution. The third source is from groundwater wells, which only require disinfection at the wellhead prior to distribution.

2.1 Solano Project Water

Vacaville's water supply sources include water from the Solano Project, which consists of Monticello Dam, Lake Berryessa, Lake Solano, and the Putah South Canal. The primary storage reservoir of the Solano Project is the Lake Berryessa reservoir, which has a large storage capacity (1.6 million acre-feet), but a relatively small watershed (576 square miles). This type of reservoir provides good drought protection if the reservoir is near full when the drought starts. Solano Project water is treated at the North Bay Regional Water Treatment Plant, a Joint Powers of Authority project between the cities of Vacaville and Fairfield, or at the City's Diatomaceous Earth Water Treatment Plant located at the City's Corporation Yard.

2.2 State Project Water

A second water supply source is the State Water Project, which delivers water from the Sacramento Delta through the North Bay Aqueduct. Water from the North Bay Aqueduct is treated at the North Bay Regional Water Treatment Plant. In calendar year 2014 there was a 95% percent reduction imposed on State Water Project contractors throughout California due to the extended drought of 2012 through 2014. This reduction in State Water Project supply was the most severe in the history of the State Water Project.

2.3 Groundwater

The third water supply source is groundwater from eleven (11) City wells. Vacaville draws groundwater from a deep aquifer located under the northeastern part of Solano County in the Vacaville/Dixon area. Vacaville's groundwater extraction in recent years has been maintained at about 5,000 - 6,000 acre feet per year (AF/YR), with the maximum safe yield determined to be over 8,000 AF/YR.

2.4 Supply Sources and Driest Three-Year Projection

Table 2-1 displays Vacaville's supply sources and the driest three-year period water supply projection through 2016. Total entitlements for 2014 through 2016 reflect water supply as follows:

- Groundwater - 100% of entitled amount from 2015 through 2016. Groundwater is closely monitored and managed by the member agencies of the Solano County Water Agency that utilize the groundwater resource in order to not overdraft the aquifer. Therefore groundwater should always be available at the maximum safe yield amount.
- Solano Project – Statistically, the Solano Project can deliver 89% of entitlements for multiple dry years as indicated by the 2010 UWMP. However, due to the extended drought of 2012 through 2014, and Lake Berryessa being at approximately 60% of capacity in 2014, another drought year in 2015 could result in a reduction in reliable Solano Project supply of up to 50%
- State Water NBA – The City's current contract allows for an increase in entitlements annually. In 2013 the City's entitlement was 35% of the entitled amount. This amount dropped to 5% in 2014. In multiple dry years the City's allocation is statistically projected at 30% of the normal entitlements. However, under the driest three-year scenario, which would be a continuation of the 2012-2014 drought, the State Water Project source could be unavailable in 2015 and 2016.

TABLE 2-1 Supply Sources and Driest Three-Year Period Supply Projection (Acre - feet)

Source	2013 Entitled Supply	2013 Actual Use	2014 Projected Supply	2015 Projected Supply	2016 Projected Supply
Groundwater	8,100	5,236	8,100	8,100	8,100
State Water Project					
Entitlement	3,142	1,591	449	0	0
Carryover	5,836	5,836	1,654	0	0
Settlement Water	-	0	0	0	0
Solano Project					
Entitlement	5,750	0	5,750	5,118	2,815
Carry Over	21,802	6,405	24,022	13,681	7,524
SID Master Agreement	2,875	0	3,000	2,781	1,440
Totals	47,505	19,068	34,875	29,680	19,879

In 2014, Vacaville will balance the reduction in supply from the State Water Project by using Solano Project carryover water from previous years and slightly increasing the amount of groundwater used. The City anticipates the availability of carryover water to continue through 2016. Table 2-1 shows that even under the most extreme circumstance, the continuation of the 2012-2014 drought for two additional years, and complete unavailability of the State Water Project supply source, the City will still have adequate water supply to meet the actual water use experienced in 2013.

Should Vacaville be required to meet a more stringent reduction goal, the City has the ability to do so through the Municipal Code.

SECTION 3. Stages of Action and Catastrophic Interruption

3.1 Stages of Water Conservation Actions

Vacaville has developed four (4) stages of water conservation actions, which progress from voluntary to mandatory stages. The water conservation stages and target water use reductions are shown in Table 3-1.

TABLE 3-1 Water Conservation Stages and Reduction Targets

Condition	Stage	Target Demand Reduction Goal	Level of Compliance
Drought	1 – Mild Drought	20%	Voluntary
Drought	2 – Moderate Drought	20%	Mandatory
Drought	3 – Severe Drought	35%	Mandatory
Emergency	4 – Emergency	50%	Mandatory

Each stage of water conservation action represents a water conservation response to a specified reduction in water supply. Each stage, when declared by the City Council, requires either a voluntary or mandatory reduction in water use by all customers, along with possible mandatory limitations on outdoor irrigation, and prohibitions on certain types of water use.

Stage 1 - Mild Drought. This stage will be declared when a reduction in total available water supply sources of 35% resulting from one or more single dry years occurs. At this stage water customers shall be asked to conserve water through a voluntary reduction in water use of 20%. Customers are also requested to limit the use of outdoor irrigation to no more than three days per week while in this stage. Additionally, the prohibitions on water use described in Section 4 shall apply.

Stage 2 - Moderate Drought. This stage will be declared when a reduction in total available water supply sources of 50% resulting from one or more single dry years occurs. At this stage water customers shall be required to conserve water through a mandatory reduction in water use of 20%. Customers are also required to limit the use of outdoor irrigation to no more than four days per week while in this stage. Additionally, the prohibitions on water use described in Section 4 shall apply.

Stage 3 - Severe Drought. This stage will be declared when a reduction in total available water supply sources of 65% resulting from one or more single dry years occurs. At this stage water customers shall be required to conserve water through a mandatory reduction in water use of 35%. Customers are also required to limit the use of outdoor irrigation to no more than three days per week while in this stage. Additionally, the prohibitions on water use described in Section 4 shall apply.

Stage 4 - Emergency. This stage will be declared when a reduction in total available water supply sources of 75% or more resulting from an emergency drought condition, catastrophic interruption such as a natural disaster, power outage or bio-terrorism attack on the City's water treatment and distribution system. At this stage water customers shall be required to conserve water through a mandatory reduction in water use of 50%. Customers are also required to limit the use of outdoor irrigation to no more than two days per week while in this stage. Additionally, the prohibitions on water use described in Section 4 shall apply.

To verify if the target demand reduction goal has been met, water use will be reviewed on a citywide basis and compared to the goal. For example, in a Stage 2 declaration, the target water demand reduction goal is 20%. If on a citywide basis the goal is met, no further analysis is conducted and all customers are considered to have reached their goal for the specific review period.

Should the citywide goal not be met, the actual water use of each individual water customer shall then be evaluated in comparison to their base 2013 water use to confirm if they met the target water demand reduction goal. In addition to meeting the required reduction in demand, users will be required to comply with all other water use prohibitions and water waste restrictions implemented at the declared stage in accordance with Section 4.

Appeals shall be processed as set forth in Appendix C, Water Conservation Program Exception and Appeal Process.

3.2 Water Conservation Triggering Conditions or Events

Water conservation stages may be triggered by one or more water supply conditions or events. A significant shortage in one water supply source or moderate shortages in a combination of water supply sources may trigger a water conservation stage change at any time, as directed by City Council. The specific criteria for triggering the City's water conservation stages based on water supply shortage is shown in Table 3-2.

TABLE 3-2 Supply Shortage Triggering Levels (Baseline Supply 47,505 AF/YR)

Stage	Percent Shortage	Available Supply Due to Water Shortage
Mild Drought	35% Supply reduction	Combined supply reduced to 30,878 AF/YR
Moderate Drought	50% Supply Reduction	Combined supply reduced to 23,752 AF/YR
Severe Drought	60% Supply Reduction	Combined supply reduced to 19,002 AF/YR
Emergency	75% Supply Reduction	Combined supply reduced to 11,876 AF/YR or less

Water conservation action stages may also be triggered by local, state or federal action impacting the management of the City's water supply sources. The City Manager or his/her Designee, which will typically be the Director of Utilities or the Director of Public Works, shall use multiple sources of information to make a recommendation to the City Council on the implementation of one or more specific water conservation stages.

3.3 Catastrophic Interruption and Disaster Planning

The City of Vacaville developed a Utilities Department Emergency Response Plan in August 1991and has maintained and updated the plan on a regular basis, with the most recent update occurring in April 2014. The City continues to maintain a comprehensive plan which outlines the water system response plan in the event of a natural disaster, a City-wide power outage, or a bio-terrorism attack on the City's water treatment and distribution system.

The Utilities Department emergency operations center, when activated, coordinates damage surveys, gathers information, and conducts responses to the damaged processes and system. The Plan includes the following elements:

- List of water system components (wells, distribution system, storage tanks)
- Measures to be taken prior to and following an emergency event
- List of City emergency operation personnel
- Information regarding coordination with police and fire department personnel
- List of water testing laboratories, water system contractors, and pipe repair and installation contractors
- Utility service numbers for traffic signal repairs, gas and electrical repairs, and water works suppliers

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

SECTION 4. Prohibitions on Water Use and Consumption Reduction Methods

4.1 Water Waste Restrictions established by Municipal Code

Section 13.20 of the Municipal Code includes specific water use restrictions. Accordingly, no user of the City's water system may knowingly make, cause, use, or permit the use of water from the system in a manner that violates the Municipal Code as cited below:

1. Excessive water runoff due to landscape irrigation activities.
2. Washing of sidewalks, driveways, walkways, parking lots, and all other hard-surfaced areas by direct hosing except for removal of hazardous materials for protection of public health and safety.
3. Washing of vehicles, equipment, structures, and other items without the use of a shutoff nozzle.

4. The escape of water through breaks or leaks within the water users' plumbing or system that is not repaired within 24 hours of discovery.
5. Fire hydrants used for purposes other than firefighting, water quality, maintenance, sanitation, and construction.

4.2 Additional Restrictions in Drought Stages

During Drought stages, the City Council can require additional water use restrictions as appropriate to achieve the desired level of conservation. Potential and additional restrictions include:

1. Watering and irrigation of plants, trees and landscaping will be allowed only during specified hours of the day, pursuant to regulations promulgated by the Director of Utilities.
2. Fountains and water using ornamental structures shall be prohibited from using water unless equipped with a recirculating pump.
3. Drought notices shall be posted in hotels, motels and all public establishments offering lodging.
4. Restaurants will serve water to customers only upon request of their patrons.
5. No landscaping, other than turf, may be installed unless irrigated with a drip irrigation system or a similar system with the equivalent savings in water usage.
6. Defer construction of new City parks unless specific factors determined by the City Council authorize such construction.
7. Prohibit new set-back landscaping at commercial and industrial sites. Deferred installation agreements may be required to ensure construction of the set-back landscaping when the water drought or emergency is over.

4.2 Additional Restrictions in Emergency Stages

In addition to normal and drought restrictions, the following additional restrictions may be enacted under emergency conditions. The City Council may also establish other water use restrictions to be in effect during an emergency condition.

1. Depending upon the severity of the water shortage, limit landscape watering to specified days only, or limit water utilization only for trees and plants watered by drip irrigation or hand-held buckets/hoses, or prohibit all irrigation completely.
2. Depending upon the severity of the water shortage, limit other outdoor water use such as, but not limited to, the washing of equipment or vehicles to specified times during the day, on specified days only, at commercial washes only where recycling of water is maintained, or prohibit all outdoor uses of water altogether.
3. Depending upon the severity of the water shortage, require all swimming pools and spas to have a cover, limit refilling of pools and spas to certain days, or prohibit the issuance of any new building permits for a pool or spa.
4. Prohibit the operation of fountains or ornamental water-using structures.
5. Prohibit the installation of turf grass.
6. Depending upon the severity of the water shortage, prohibit the construction of new golf courses and reduce or prohibit new residential construction.

During Normal water conditions, and during all water conservation stages, the City's Water Efficient Landscape Regulations shall be in effect.

Violations of any of the provisions in Section 4 may be subject to enforcement in accordance with Section 13.20.030 of the Municipal Code.

SECTION 5. Penalties for Excessive Water Use

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

In Drought and Emergency conditions in which a water conservation stage is declared and conservation goals set, penalties, in the form of surcharges on the water bill, may be assessed for water use in excess of the conservation goal. For each five percent (5)%, or fraction thereof, in which the customer's water use exceeds the conservation goal, that customer will be assessed a surcharge of 5% of the variable water charges for that billing period as a penalty for excessive water use.

An example of application of a penalty surcharge would be if under a mandatory 20% reduction of water use while in Stage 2 – Moderate Drought, a customer only reduces water use by 17% from their water use during the same billing period of 2013. If the variable portion of customer's water bill was $80, the penalty surcharge would be 5%, or $4, due to their reduction in water use failing to meet the goal by 3%.

SECTION 6. Revenue and Expenditure Impacts

The City of Vacaville manages the Water Utility with the intent of maintaining revenue neutrality. The City's goal is to bill its customers only for the costs to operate and maintain an efficient water system that meets the public health requirements of its customers and promotes a high quality of life and vibrant economy.

Reductions in water use due to water conservation measures will typically result in a corresponding decrease in revenues to the Water Utility. Potential revenue reduction projections under several drought stage scenarios are shown in Table 6-1.

TABLE 6-1 Projected Water Conservation Budget Impacts

	Normal 2013 Base Year	Drought (20%)	Severe Drought (35%)	Emergency (50%)
Water Volume Revenues	$9,912,000	$7,930,000	$6,443,000	$4,956,000
Reduced Revenues		$1,982,000	$3,469,000	$4,956,000
Additional Water Conservation Program Expenses		$44,000	$48,000	$52,000
Total Budget Impact		$2,126,000	$3,517,000	$5,008,000

Once the City's water conservation reduction goal is established, the corresponding budget impact will be calculated. If revenue reductions become significant, the City Council may have to consider adjusting water rates in order to offset reductions. Any water rate adjustments considered by the City Council would be administered in accordance with the requirements of Proposition 218.

In the event additional water purchases were to become necessary, the cost for these purchases will be included as an expense and recovered through the net increase.

SECTION 7. Water Use Monitoring Procedures

7.1 Normal Conditions Monitoring

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

7.2 Drought Conditions Monitoring

During Drought stage water supply conditions, daily production figures are provided to the Water Operations Section of the Utility Department. The Water Operations Section provides the weekly production figures to the Water Conservation Coordinator. The Water Conservation Coordinator compares the weekly production to the 2013 base year data to verify reduction goals are being met. Weekly and monthly reports are generated and provided to the Director of Utilities. The Director of Utilities will notify the City Manager and City Council if water reduction goals are not met, so corrective action can be taken.

7.3 Emergency Conditions Monitoring

During an Emergency conditions shortage or interruption of service, Drought stage procedures will be followed, with the addition of a daily production report to the Director of Utilities. During a disaster shortage the Emergency stage applies.

SECTION 8. Drought Ordinance Implementation

On September 23, 2014, the City of Vacaville adopted Drought Ordinance No. XXXX (Appendix D) establishing water conservation requirements and a water rate structure to address Normal, Drought, and Emergency conditions. Upon determination of a water shortage, or local, state, or federal declaration, the City Manager or his/her Designee shall notify the City Council of the condition along with recommendations for enactment of the appropriate conservation level.

When the above Ordinance was adopted on September 23, 2014, an accompanying Resolution (No. 2014-XX – see Appendix E) was adopted declaring Drought Stage 2 conditions. Should Vacaville be required to move to Drought Stage 3 measures, a modification to Resolution 2014-XX would be prepared and submitted for Council action.

SECTION 9. Plan Adoption Standards

The City of Vacaville updated this Urban Water Shortage Contingency Plan during July and August 2014. The Plan was adopted on August 12, 2014 (see Appendix VI). The Plan includes all information necessary to meet the requirements of California Water Code Section 10632.

The availability of draft Plan copies for review was properly noticed in the City's newspaper, and copies were available at City Offices and the Public Library.