

## **APPENDIX F**

### **City of Redding Water Utility Emergency Response Plan Section 2:**

#### **Water Utility Disaster Response Plan**

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# CITY OF REDDING

## WATER UTILITY

### DISASTER RESPONSE PLAN

FOR

FOOTHILL WATER TREATMENT PLANT  
3100 FOOTHILL BLVD, REDDING, CA

BUCKEYE WATER TREATMENT PLANT  
11501 BENSON ROAD, SHASTA, CA

CASCADE & ENTERPRISE  
GROUNDWATER WELLS



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Updated: Nov. 2011

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# DISASTER RESPONSE PLAN

## GENERAL

The City of Redding Water Utility is committed to providing a safe, pure and wholesome potable water supply to all of its water customers.

The following regulations associated with the legal requirements of preparing a Disaster Response Plan (Emergency Response Plan) are:

1. California Government Code Section 8607.2 - Public Water System Plans
2. United States Public Law 107-188 Public Health Security and Bioterrorism Preparedness and Response Act of 2002.
3. California Health and Safety Code, Sections 116460, 116555 and 116750.

Disasters/emergencies that are likely to occur in the water system's service area that are addressed are: earthquake, major fire emergencies, water outages due to loss of power, localized flooding, water contamination, and acts of sabotage.

To continue minimum service levels and mitigate the public health risks from drinking water contamination that may occur during a disaster or other emergency events and in order to provide reliable water service and minimize public health risks from unsafe drinking water during those events, the City of Redding Water Utility water system proposes the following plan that defines how it will respond to emergencies and/or disasters that are likely to affect its operation.

## THE PLAN

If the Water Utility experiences contamination or disruption of any of its water sources, through one of the above unforeseen circumstance, which includes the Sacramento River raw water supply to the Foothill Water Treatment Plant, the Spring Creek Conduit raw water supply from Whiskeytown Lake which supplies water to the Buckeye Water Treatment Plant or the sixteen groundwater wells, this disaster response plan contains the following information concerning:

- ☞ Disaster Planning
- ☞ Background Information
- ☞ Notification Plan
- ☞ Sampling Plan
- ☞ Enforcement
- ☞ Water Sources
- ☞ Distribution System Operations Changes
- ☞ Chlorine Emergency Procedures
- ☞ Hazardous Materials Incident Plan
- ☞ Employee Emergency Call Out Lists
- ☞ Shasta County & Cal Trans Emergency Call Out Lists
- ☞ Miscellaneous Emergency Telephone Numbers
- ☞ Contractor Listings for Emergency Situations
- ☞ Suppliers for Emergency Situations

## DISASTER PLANNING

**It is important to note all actions under this plan must also be coordinated with the City of Redding Fire Department's Emergency Operation Center (EOC) located in building #4 at 20055 Viking Way, Redding, and all other City of Redding Municipal Utilities Divisions if applicable.**  
The City of Redding has an **Emergency Operations Center** and **Department of Public Works**

**Emergency Guidelines Plan** to help coordinate the City's efforts to handle a myriad of potential emergencies. The City's Water Utility Disaster Response Plan is part of the Redding Department of Public Works Emergency Guidelines Plan. All Department of Public Works Managers maintain an up-to-date copy of the City's Emergency Operations Plan and Department of Public Works Emergency Guidelines Plan which is the basis for the coordination of operations and the management of critical resources during natural or manmade emergencies.

## **BACKGROUND INFORMATION**

The City of Redding's water supply comes from three sources, the Sacramento River, Whiskeytown Lake (via the Spring Creek Conduit) and groundwater wells from the Redding Groundwater Basin.

The Sacramento River raw water is pumped from Pump Station No.1 at 2300 Riverside Drive to the Foothill Water Treatment Plant (FWTP) located at 3100 Foothill Blvd. The Whiskeytown Lake raw water is conveyed through the Spring Creek Conduit (between Whiskeytown Lake and Keswick Lake) to the Buckeye Water Treatment Plant (BWTP) located at 11501 Benson Road in Shasta, CA, as shown on the Redding Water System Map 2011, Exhibit "A".

Sixteen groundwater wells are located in the Cascade and Enterprise areas of the City. Four wells and one standby well located in the Cascade area, on the south side of the City limits and twelve wells are located in the Enterprise area, on the east side of the City limits. All the groundwater wells are also shown on the Redding Water System Map 2011, Exhibit "A."

The entire Redding Water System, with its seven pressure zones are all inter-tied with booster pump stations, pressure regulating stations, supervisory vaults and closed valves between the a joining pressure zones (depicted in Exhibit "A," with detailed drawings depicted in the Water System Atlas located in Redding Municipal Utilities Field Operations, 20055 Viking Way and carried in all Water Utility vehicles).

In the event of a Sacramento River contamination or disruption of pumping that eliminates the ability to use Pump Station No.1 as a water source for the FWTP, the use of other sources would be implemented. The City has 32.7 million gallons of reservoir storage capacity, the BWTP can produce 14 Million Gallons per Day (MGD) and 21 MGD can be produced from the groundwater well system. The combination of the BWTP and groundwater wells could provide approximately 35 MGD of capacity. Depending on what time of year the incident occurred would dictate the level of conservation and public cooperation required. During the winter months very little impact would be felt. The average demand for the four winter months is 14 MGD. However, during the summer months customers would be required to eliminate all outside irrigation and the use of construction water during the emergency situation. Use of water would be limited to activities necessary to maintain the health, safety, and welfare of the customers of the City of Redding Water Utility.

In the event of Whiskeytown Lake contamination or disruption of the Spring Creek Conduit which eliminates the ability to use it as a water source for the BWTP, the use of other sources would be implemented. During the winter months very little impact would be felt. The City's Foothill Water Treatment Plant rated at 26 MGD would be able to provide the necessary water demand through Pump Houses No. 3 & No. 4. The groundwater well system could also supplement the Foothill Pressure Zone if additional water is required. However, during the summer months customers would be required to eliminate all outside irrigation and the use of construction water during the emergency situation. Use of water would be limited to activities necessary to maintain the health, safety, and welfare of the customers of the City of Redding Water Utility.

It is very unlikely that the Water Utility would lose all of its sixteen groundwater wells in the Cascade and Enterprise areas of the city at the same time. But, if a major disaster did occur, or there was contamination of the Redding Groundwater Basin, which is the supply source for all the utilities

groundwater wells, or if the groundwater basin were to drop to an all time low due to a drought situation, the following mitigation measures would take effect. The Water Utility has 32.7 million gallons of reservoir storage capacity, the BWTP can produce 14 MGD and the FWTP can produce 26 MGD. The combination of the BWTP and FWTP could provide approximately 40 MGD of capacity. Both of these sources can supply water into the Enterprise and Cascade Pressure Zones that is supplied by the groundwater wells. However, during the summer months customers would be required to eliminate all outside irrigation and the use of construction water during the emergency situation. Use of water would be limited to activities necessary to maintain the health, safety, and welfare of the customers of the City of Redding Water Utility.

If the contamination or disruption of the City's water supply, from any of the sources, was determined to be a long-term event, the Water Utility would implement its **Drought Management Plan** to conserve water (see Appendix H, 2010 City of Redding Urban Water Management Plan).

## **Drought Management Plan**

### **Redding Municipal Code - Utilities - 14.09 - DROUGHT MANAGEMENT PLAN**

#### **14.09.010 Purpose:**

The purpose of this chapter is to establish a drought management plan to equitably distribute the available water to the city's customers and to ensure an adequate supply for human consumption, sanitation, and fire protection. The purposes of this plan are met by establishment of a four-stage plan management. (Ord. 1957 § (part), 1991)

## WATER QUALITY NOTIFICATION PLAN

All public notifications (Boil Water Order (BWO), Unsafe Water Alert (UWA) or Do Not Drink Notices) should be coordinated with the California Department of Public Health - Division of Drinking Water (CDPH-DDW) District Engineer, County Environmental Health Department and the County Health Officer prior to issuing a public notice. However, any one of the three agencies can act in an emergency to immediately issue a BWO or UWA, if delays would jeopardize public health and safety. The CDPH-DDW District Engineer or the water system must notify the County Health Department and the County Health Officer prior to or immediately after issuing a public notice. ***“Notice must be given directly to a person,”*** any message left on voice mail or answering machine is not sufficient to meet this requirement. Details of the person responsible for completing this notification and the method that will be utilized is contained in the Disaster Response Plan.

For any contamination or disruption of the Sacramento River or Whiskeytown Lake water source the Water Utility would enact the "Water Quality Notification Plan" as outlined:

(All telephone numbers in "Red Font" are considered **CONFIDENTIAL HOME TELEPHONE NUMBERS** and are deleted from the Urban Water Management Plan, because of its public nature, in order to protect the privacy of the individuals listed.)

<b>WATER QUALITY NOTIFICATION PLAN</b>				
<b>Name</b>	<b>Title</b>	<b>Day Phone</b> <i>All 530 Area Code</i>	<b>Evening Phone</b>	<b>Fax</b>
Brian Crane	Public Works Director	245-7155 638-5098 cell	XXX-XXXX	225-7024
Jon McClain	Asst. Public Works Director	224-6029 227-6082 cell	XXX-XXXX	224-6071
<b>VACANT</b>	Water Utility Manager	-----	-----	224-6071
Conrad Tona	Supervisor - Water Treatment	225-4475 227-4124 cell	XXX-XXXX	225-4552
Mike Sybert	Supervisor - Water Distribution	224-6033 945-8832 cell	XXX-XXXX	224-6071
<b>CALIFORNIA DEPARTMENT OF PUBLIC HEALTH PERSONNEL</b>				
Office	Department of Public Health	224-4800	-----	224-4844
Mike McNamara	Senior Sanitary Engineer	224-2413	XXX-XXXX	“
Kim Hanagan	Assoc. Sanitary Engineer	224-4870	XXX-XXXX	”
Steve Watson	Assoc. Sanitary Engineer	224-4828	XXX-XXXX	“
Sandi Tenney	Sanitary Engineer	224-4876	XXX-XXXX	”
Michael Burgess	Sanitary Engineer	224-6506	XXX-XXXX	“

**If the above personnel cannot be reached contact:**  
**Office of Emergency Service Warning Center (24 hrs) (800) 852-7550 or (916) 845-8911**  
 When reporting a water quality emergency to the Warning Center, please ask for the California  
 Department of Public Health-Drinking Program Duty Officer

**SHASTA COUNTY HEALTH DEPARTMENT**

Jim Smith	County Health Department	225-5787	XXX-XXXX	225-5237
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**SHASCOM - REVERSE 9-1-1 NOTIFICATION SYSTEM**

Emergency Agency	Address	Telephone	Fax
Shasta Area Safety Communications Agency	3101 South St.	225-4200	N/A

**RADIO, TELEVISION STATIONS & NEWSPAPER**

Station	Address	Telephone	Fax
Jefferson Public Radio - KFPR	1721 Market St.	243-8000	782-6191
KLXR & 1230 AM Radio	1236 Market St.	244-5082	244-5698
KESR/KEWB/KKXS/KNCQ Radio	1588 Charles Dr.	244-9700	244-9707
KNNN/KRRX/KRDG/KNRO Radio	4352 Caterpillar Rd.	221-1400	221-6653
KQMS/KSHA Radio	3360 Alta Mesa Dr.	226-9500	221-4940
KVIP Radio	1139 Hartnell Ave.	222-4455	222-4484
KRCR 7R TV	755 Auditorium Dr.	243-7777	243-9382
KHSL 12 TV	900 Dana Dr., Ste B6	226-6600	226-6613
KIXE PBS 9 TV	630 N. Market St.	243-5493	243-7443
KNVN 24 TV	900 Dana Dr., Ste B6	226-6600	226-6613
RECORD SEARCHLIGHT	1101 Twin View Blvd.	243-2424	225-8236

**PHYSICIANS ANSWERING SERVICES**

REDDING ANSWERING SERVICE	1410 Elmwood Dr.	245-1111	245-1101
REPCO	310 Lake Blvd.	241-5624	241-6436

**HOSPITALS AND CLINICS**

MERCY MEDICAL CENTER	2175 Rosaline	225-6000	225-6233
SHASTA REGIONAL MEDICAL CENTER	100 Butte St.	224-5400	244-5169
PATIENTS HOSPITAL	2900 Eureka Way	225-8700	225-8721
EVERYDAY HEALTH CARE	3270 Churn Creek	222-6886	222-4480
CROSSROADS CARE CENTER	1710 Churn Creek Rd.	222-6166	222-6199
HILLTOP MEDICAL CLINIC	1093 Hilltop Dr.	221-1565	221-3912
HILLTOP MEDICAL CLINIC	2123 Eureka Way	246-4629	246-4621

REDDING HEALTH CARE	191 Hartnell Ave.	222-2113	222-1729
REDDING HEALTH CARE	290 Lake Blvd.	244-9007	224-9051
SUNSET URGENT CARE	3689 Eureka Way	247-4211	247-4241

- A. All the above named City, State and County personnel would be notified immediately by the City answering service during non-office hours or by Redding Department of Public Works secretaries during office hours by telephone or facsimile (Time required: 15 minutes two personnel).
- B. City of Redding answering service would be notified and given instructions on how to answer inquires. They would be told to call water utility personnel required to implement a working plan of action (Time required: 15 minutes, two personnel).
- C. SHASCOM would be notified by the City of Redding Water Utility to proceed with the Reverse 9-1-1 Notification System defining the Emergency. This system can quickly target a precise geographic, area such as a pressure zone, and saturate it with thousands of calls per hour. The public notification would include:
1. Who - City of Redding Water Utility
  2. What drinking water regulation has been exceeded.
  3. When it occurred.
  4. Area of the City involved.
  5. Health significance involved.
  6. Action being taken.
  7. What customers should do.
- D. Radio Stations and Television Stations would also be notified by telephone or facsimile to broadcast the Emergency. The public notification would include:
1. Who - City of Redding Water Utility.
  2. What drinking water regulations has been exceeded.
  3. When it occurred.
  4. Area of the City involved.
  5. Health significance involved.
  6. Action being taken.
  7. What customers should do.

**NOTE:** *This information would have California Department of Public Health approval (Time required: ½ hour by telephone or facsimile, two personnel). Written notices would be hand delivered to above radio and television stations as soon as possible (Time required: one hour, two personnel using two vehicles). Estimated area coverage: one-half the population of the City.*

- E. All hospitals, medical facilities, and doctors would be notified, if necessary.

Notification would be by telephone or facsimile followed by hand delivered notice (Time required: ½ hour by telephone, two personnel). Hand-delivered notices to follow (Time required: One hour, four personnel).

- F. The Record Searchlight would be contacted with a written notification or facsimile which would include the items listed for radio and television stations in Section C (Time required: one hour, one personnel). Estimated coverage: thirty-five percent of the City population.
- G. If an outlying area is affected, water service crews and meter readers would be used with the aid of meter route maps, water utility water atlas maps, and street atlas maps to give notification door-to-door. This method could also be used for businesses, such as restaurants, RV parks, hotels, motels, and convalescent hospitals (Time required: one to two hours, 10 to 20 personnel).
- H. A long-term problem would be handled by all of the above, plus notification on our monthly billing of all City electric and water customers.
- I. The majority of water customers could be contacted within two to three hours utilizing a minimum of 15 personnel to a maximum of 30 personnel depending on the type of emergency and size of the area involved.
- J. Whenever a school or school system, the owner or operator of residential rental property, or the owner or operator of a business property receives, a notification from a person operating a public water system under any provision of this section, the school or school system shall notify school employees, students, and parents if the students are minors. The owner or operator of the business property shall notify employees of businesses located on the property.
  - 1. The operator shall provide the customer with sample notification from which may be used by the customer in complying with the requirements of this subdivision and which shall indicate the nature of the problem with the water supply and the most appropriate methods of notification which may include, but is not limited to, the sending of a letter to each water user and the posting of a notice at each site where drinking water is dispensed.
  - 2. The notice required by this subdivision will be given within ten days receipt of notification from the person operating the public water system.
  - 3. Any person failing to give notice as required by this subdivision will be civilly liable in an amount not to exceed One Thousand Dollars (\$1,000) for each day of failure to give notice.
  - 4. If any operator has evidence of a noncompliance with the requirements of this subdivision, the operator will report this information to the County Health Department at 225-5787 and the California Department of Public Health-Division of Drinking Water at 224-4800.
- K. The City of Redding would update the Water Utility website within 24 hours:

<http://www.ci.redding.ca.us/water/index.html>

## **BOIL WATER ORDER**

In the event of a water quality emergency where minimum **Bacteriological Water Quality Standards** cannot be reasonably assured, the California Department of Public Health - Division of Drinking Water will prescribe a "Boil Water Order" (BWO) to the City of Redding Water Utility.

The Boil Water Order can be issued by either one, or combination of the following agencies:

1. California Department of Public Health - Division of Drinking Water
2. Shasta County Department of Health
3. City of Redding Water Utility
4. City of Redding Emergency Operations Plan
5. City of Redding Emergency Operations Center (EOC)

Designated personnel to authorize issuance of Boil Water Order:

1. California Department of Public Health - Division of Drinking Water
  - a. Regional Chief
  - b. District Engineer(s)
2. Shasta County Department of Health:
  - a. Director of Environmental Health
3. City of Redding Water Utility:
  - a. City Manager
  - b. Director of Public Works
  - c. Water Utility Manager
  - d. Supervisor - Water Distribution
  - e. Supervisor - Water Treatment
4. City of Redding Emergency Operations Center (EOC):
  - a. Emergency Operations Incident Commander
  - b. City of Redding Police Chief
  - c. City of Redding Fire Chief

Methods of Boil Water Order Issuance:

The Boil Water Order will be issued through the means of the **Water Quality Notification Plan**.

The conditions in which the Boil Water Order shall be issued:

1. Biological contamination of water supply system including but not limited to:
  - a. Prolonged water outages in areas with ruptured sewer and/or water mains.
  - b. Ruptured water treatment, storage, and/or distribution facilities in areas of

- known sewage spills or other biological contamination.
- c. Illness attributed to water supply.
- 2. Unusual system characteristics including but not limited to:
  - a. Prolonged loss of pressure in distribution system.
  - b. Sudden loss of chlorine residual.
  - c. Severe discoloration and odor.
  - d. Inability to implement emergency chlorination.

**A Sample "Boil Water Order" is Attached - Exhibit "B"**

The conditions in which a Boil Water Order shall be canceled:

1. Biological contamination and the health hazard in the water system have been effectively abated and safe water quality has been reliably confirmed by water quality monitoring throughout the water system.
2. The above-mentioned agency who has the authority to issue the Boil Water Order.

**A Sample "Cancellation of Boil Water Order" is attached - Exhibit "C"**

**UNSAFE WATER ALERT**

In the event of a water quality emergency due to **Known or Suspected Chemical (non-bacteriological) Contamination**, the California Department of Public Health - Division of Drinking Water will prescribe an "Unsafe Water Alert" to the City of Redding Water Utility.

The Unsafe Water Alert can be issued by either one, or combination of the following agencies:

1. California Department of Public Health - Division of Drinking Water
2. Shasta County Department of Health
3. City of Redding Water Utility
4. City of Redding Emergency Operations Center (EOC)

Designated personnel to authorize issuance of Unsafe Water Alert:

1. California Department of Public Health -Division of Drinking Water:
  - a. Regional Chief
  - b. District Engineer(s)
2. Shasta County Department of Health:
  - a. Director of Environmental Health
3. City of Redding Water Utility:
  - a. City Manager
  - b. Director of Public Works
  - c. Water Utility Manager
  - d. Supervisor - Water Distribution

- e. Supervisor - Water treatment
- 4. City of Redding Emergency Operations Center (EOC):
  - a. Emergency Operations Incident Commander
  - b. City of Redding Police Chief
  - c. City of Redding Fire Chief

Methods of Unsafe Water Alert Issuance:

The Unsafe Water Alert will be issued through the means of the **Water Quality Notification Plan**.

The conditions in which the Unsafe Water Alert shall be issued:

1. Know or suspected widespread chemical or hazardous contamination in the water supply distribution system.
  - a. Ruptured water distribution system in area of known chemical spills coupled with loss of pressure, severe odor and discoloration, loss of chlorine residual; inability of existing water treatment process to neutralize chemical contaminants prior to entering the water system.
2. Threatened or suspected acts of sabotage confirmed by analytical results.
  - a. Suspected contamination triggered by acts of sabotage or threats by vandals is confirmed by analytical testing, and there is reason to believe that the contamination has affected the water system.
3. Implemented by the City Water Utility due to water treatment inadequacies.

**A Sample "Unsafe Water Alert" is attached - Exhibit "D"**

The conditions in which an Unsafe Water Alert can be canceled:

1. Hazardous contamination in the water system has been effectively abated and safe water quality has been reliably confirmed by water quality monitoring throughout the water system.
2. By the above-mentioned agency's who have the authority to issue the Unsafe Water Alert.

**A Sample "Cancellation of Unsafe Water Alert" is attached - Exhibit "E"**

## SAMPLING PLAN

The City of Redding Water Utility has a **Routine Sample Siting Plan** which can be used for bacteriological and water quality monitoring throughout the water distribution system.

The Routine Sample Siting Plan is located at:

1. Foothill Water Treatment Plant office and laboratory, 3100 Foothill Blvd.
2. Water Utility office, Public Works Corp Yard, 20055 Viking Way.
3. California Department of Public Health - Division of Drinking Water, 415 Knollcrest Drive, Redding.

The Water Utility can use the following local laboratory's to do analytical testing to confirm chemical or bacteriological contamination:

1. City of Redding Wastewater Treatment Plants:

Clear Creek Wastewater Treatment Plant, 2220 Metz Rd., Redding CA 96001.

Phone . . . . . 225-4158

Fax . . . . . 245-7208

Stillwater Wastewater Treatment Plant, 9001, Airport Rd., Anderson CA 96007

Phone . . . . . 378-6701

Fax . . . . . 378-6709

2. Basic Laboratory 2218 Railroad Ave., Redding, CA 96001, ph. 243-7234.

Pager 339-9081 (when you hear the tone, input contact phone number)

Liz Clark . . . . . 227-2207

Dave Sprague . . . . . 365-3493 or 209-7951

Matt Rose . . . . . 227-6442 or 722-9364

Nathan Hawley . . . . . 547-3443 or 941-4055

Jim Hawley . . . . . 547-5500 or 941-6959

3. Shasta County Environmental Health Laboratory (bacteriological only).

2650 Breslauer Way, Redding, CA 96001.

Phone . . . . . 225-5072

Fax . . . . . 225-5061

### **ENFORCEMENT**

As part of the notification plan the customers would be directed to conserve water and to eliminate any unnecessary water use and contractors would be directed not to use construction water. Depending on the time of year and normal demands outside water use for irrigation and construction use might not be prohibited. The irrigation and construction water use prohibition would be enforced by the Redding Police Department and Water Utility personnel citing Redding Municipal Code 14.08.260 that would be in effect for emergencies:

**Redding Municipal Code - Utilities - 14.08.260 - Shutting Off Water During Emergency**

All faucets, sprinklers, hose nozzles or other continuous streams must be shut off promptly upon the alarm of fire or other emergency or major disaster; the water not to be turned on again until the fire is known to be extinguished. (Prior code § 29-27)

## **WATER SOURCES AVAILABLE**

The City of Redding has several sources of water available in case of an emergency, disruption of water source and Sacramento River or Whiskeytown Lake water contamination that is not treatable, then the City would rely on groundwater wells and inter-ties with neighboring cities and water districts.

## **GROUNDWATER WELLS**

The City has sixteen groundwater wells with a combined capacity of 21 MGD (million-gallons-per-day). The wells are located in the Cascade and Enterprise areas of the City. The Cascade area has four wells, located in the Southwest part of the City. The Enterprise area has twelve wells located in the Southeastern part of the City. Groundwater water contamination that is not treatable, then the City would rely on the Sacramento River or Whiskeytown Lake water sources and inter-ties with neighboring cities and water districts if needed.

## **INTER-TIES WITH NEIGHBORING CITIES AND WATER DISTRICTS**

The City has existing inter-ties with two neighboring cities and two neighboring water districts and the potential for an emergency inter-tie with another water district south of the city limits.

**City of Anderson** has an inter-tie with the city on Meadow View Drive which could provide water to the Wooded Acres North Subdivision and the P.G. & E. Service Center. That area was previously served by the City of Anderson prior to annexation to the City of Redding. The City of Anderson source is groundwater.

**Bella Vista Water District (BVWD)** is located to the northeast of Redding and has three inter-ties. One located near Canby and Churn Creek Roads at the BVWD Water Treatment Plant, one located at 1431 Edgewood Drive near Tiburon Drive, and one at Old Alturas Road at Abernathy Lane. The combined capacity of these three (3) inter-ties are approximately 1200 g.p.m. (gallons-per-minute). These capacities are estimates because the City has transferred water to BVWD but has not had the occasion to receive water from BVWD. Because BVWD also gets the majority of its water from the Sacramento River, these sources of water may not be available if the Sacramento River was considered contaminated.

**Centerville Community Services District (CCSD)** which is located west of Redding and has two inter-ties with the City. One in the Mary Lake Subdivision and the other one at 16755 Clear Creek Road, just west of the City's Electric Utility's Redding Power Plant. That Mary Lake inter-tie has a capacity of 400 g.p.m. and has been used previously, and the Clear Creek Road inter-tie has a capacity of 1300 g.p.m. CCSD receives their water from the Clear Creek Community Service District Filtration Plant via the Muletown conduit out of Whiskeytown Lake. Whereas CCSD receives all of its water from Whiskeytown Lake, this source of water may not be available if Whiskeytown Lake was considered contaminated.

**City of Shasta Lake** has inter-ties located north of the City in the Buckeye Pressure Zone which is located in Shasta County. The City of Shasta Lake currently supplies water to 18 customers in the Summit City Zone. Depending on the conditions of the Shasta Lake system, water could continue to be supplied to the City of Redding. Whereas the City of Shasta lake receives all of its water from

Shasta Lake this source of water may not be available if Shasta Lake was considered contaminated.

**NOTE:** Before any inter-tie is operated, a representative of the neighboring city or neighboring water district should be notified of the existing emergency and the need for additional water supply.

<b>INTER-TIE NOTIFICATION CONTACTS &amp; TELEPHONE NUMBERS</b>			
<b>City or District</b>	<b>Day Phone</b>	<b>Answering Service</b>	<b>Fax</b>
City of Anderson	378-6636	378-6638	378-6666
BVWD	241-1085	241-1085	241-8354
CCSD	246-0680	246-0680	246-2254
City of Shasta Lake	275-7450	275-7400	275-7414

An emergency inter-tie with the Clear Creek Community Services District (CCCSD) could be constructed at the southern end of the City. This inter-tie could provide approximately 400 g.p.m. and would require the construction of 4000 feet of pipeline from district piping to Redding Ranchettes Reservoir. Clear Creek Community Service District is supplied water from the Muletown conduit out of Whiskeytown Lake. Whereas CCCSD receives the majority of its water from Whiskeytown Lake this source of water may not be available if Whiskeytown Lake was considered contaminated.

The City of Redding Water Utility is also a member of the Northern California Water Agency Response Network (WARN) which helps supply mutual aid during a major disaster. The California Office of Emergency Services would also be requested to assist the City in any major disaster.

### **INTER-TIE LOCATIONS**

Attached are the site plan maps indicating the location of the available inter-ties with the two cities and two water districts depicted as Exhibits “F” through “L.”

### **DISTRIBUTION SYSTEM OPERATION CHANGES:**

#### **FOOTHILL WATER TREATMENT PLANT**

To implement this contingency plan following the shut down of the Foothill water plant or Pump Station No.1, some distribution system operations changes would be required. The locations on the Water Utility water atlas sheets (Water System Atlas located in Redding Public Works Field Operations, 20055 Viking Way and carried in all Water Utility vehicles) and changes would be as follows:

2. Water Atlas Page - G 7

Open the eight-inch pressure relief valve (PRV) located behind Pump House No. 3 at 299 Sulphur Creek Road to supply Buckeye Water Treatment Plant water to the Foothill Pressure Zone.

☞ Water Atlas Page - M 8

Install a booster pump on the Crosstown main at the Cypress Avenue Supervisory Vault located at 760 Parkview Avenue. This pump would allow Enterprise Pressure Zone groundwater to be transferred to the upper Foothill Zone storage reservoir. From the Foothill Zone the Cascade and Hill 900 Pressure Zones could be supplied. The Cascade Zone could also be supplied

through the South Bonnyview Supervisory Vault from the Enterprise Pressure Zone.

☞ Water Atlas Page - SC 14

Isolate the Wooded Acres North Subdivision and P.G.& E. Service Center and supply by the City of Anderson wells.

☞ Water Atlas Page - N 2

Open the inter-tie with the Centerville Community Service District at Inter-tie No. 1, located at Record Lane and O'Connor Avenue, to help supply the Hill 900 Pressure Zone.

☞ Water Atlas Page - SB 6

Request assistance from the WARN Agency and California Office of Emergency Services to construct the inter-tie between the City of Redding Ranchettes Reservoir and the Clear Creek Community Services District water main located at the end of Windsor Lane.

☞ Water Atlas Page - H 10B, H 11, J 13

Determine if water is available from BVWD and open inter-ties No.1, No. 2, & No. 3 if water is available to be transferred.

### **BUCKEYE WATER TREATMENT PLANT**

To implement this contingency plan following the shut down of the Buckeye Water Plant or the Spring Creek Conduit some distribution operation changes would be required. The changes would be as follows:

☞ Water Atlas Page - G 5, G 7

Place into operation the City's Pump Houses No. 3 & No. 4, controlled through the FWTP, this would supply water to all parts of the Buckeye Pressure Zone and Hilltop/Dana Pressure Zone.

☞ Water Atlas Page - NV 5

Open closed valve V 7 from the Summit City Zone from the City of Shasta Lake, to supply water to the northern end of the Buckeye Pressure Zone.

### **CHLORINE EMERGENCY PROCEDURES**

Refer to the Risk Management Plan (RMP) for Hazardous Materials response Foothill Water Treatment Plant, Buckeye Water Treatment Plant, and Enterprise Wells.

### **HAZARDOUS MATERIALS INCIDENT PLAN**

Information and notification of the hazardous materials incident plan can be located in the Department of Public Works Emergency Guideline Plan.

### **EMPLOYEE EMERGENCY CALL OUT LISTS**

Employee call out list can be located in the Department of Public Works Emergency Guideline Plan.

### **SHASTA COUNTY & CAL TRANS EMERGENCY CALL OUT LISTS**

Employee call out list can be located in the Department of Public Works Emergency Guideline Plan and the City of Redding Emergency Operation Center (EOC) Guidebook.

### **MISCELLANEOUS EMERGENCY TELEPHONE NUMBERS**

Miscellaneous emergency call out list can be located in the Department of Public Works Emergency Guideline Plan and the City of Redding Emergency Operation Center (EOC) Guidebook.

### **CONTRACTOR LISTINGS FOR EMERGENCY SITUATIONS**

Contractor listings and emergency telephone numbers for emergency situations can be located in the Department of Public Works Emergency Guideline Plan City of Redding Emergency Operation Center (EOC) Guidebook.

### **SUPPLIERS FOR EMERGENCY SITUATIONS**

Suppliers for emergency situations can be located in the Department of Public Works Emergency Guidelines Plan City of Redding Emergency Operation Center (EOC) Guidebook.

#### **DISASTER-RESPONSE-PLAN**

Electronic Version Location:

S:\Water Treatment Plant Files\Emergency-Plan-Updates\DISASTER-RESPONSE-PLAN

Updated:

11-22-2011



P.O. BOX 496071  
REDDING, CA 96049-6071  
*Conserving resources today...  
For Redding's tomorrow*

**EXHIBIT B**

DATE \_\_\_\_\_

# BOIL WATER ORDER

## FAILURE TO FOLLOW THIS ADVISORY COULD RESULT IN ILLNESS

Due to the recent \_\_\_\_\_, the City of Redding Water Utility in conjunction with the California Department of Public Health - division of drinking Water, and/or Shasta County Health Department are advising residents of Redding to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution.

**All tap water used for drinking or cooking should be boiled rapidly for at least five minutes. This is the preferred method to assure that the water is safe to drink.**

An alternative method of purification for residents that do not have gas or electricity available is to use fresh liquid household bleach (Chlorox, Purex, etc.) To do so, add 8 drops (or 1/4 teaspoon) of bleach per gallon of clear water or 16 drops (or 1/2 teaspoon) per gallon of cloudy water, mix thoroughly, and allow to stand for 30 minutes before using. A chlorine-like taste and odor will result from this purification and is an indication that adequate disinfection has taken place.

Water purification tablets may also be used by following the manufacturers' instructions.

Optional: Potable water is available at the following locations:

---

Please bring clean water container (five gallons maximum capacity).

Emergency water treatment and water quality testing are being conducted by the City's Water Utility to resolve this water quality emergency problem. The City's Water Utility will notify residents as soon as the water is safe to drink through public notification.

**For more information call the:**

- City of Redding Water Utility . . . . . 224-6068
- Foothill Water Treatment Plant . . . . . 225-4192
- Supervisor - Water Treatment . . . . . 225-4475
- Water Utility Manager . . . . . 224-6127
- California Department of Public Health - Division of Drinking Water . . . . . 224-4800
- Shasta County Environmental Health Department . . . . . 225-5787

Issued by: \_\_\_\_\_ Title: \_\_\_\_\_  
(Signature)

Print Name: \_\_\_\_\_



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**EXHIBIT C**

\_\_\_\_\_  
DATE

## CANCELLATION OF BOIL WATER ORDER

On \_\_\_\_\_ (date) you were notified of the need to boil or disinfect all tap water in your home for drinking or cooking purposes. The City of Redding Water Utility in conjunction with the California Department of Public Health - Division of Drinking Water, and/or Shasta County Health Department has determined that, through abatement of the health hazard followed by comprehensive testing of the water, your water is safe to drink. It is no longer necessary to boil your tap water or for you to consume bottled water.

### For more information call:

- City Redding's Water Utility . . . . . 224-6068
- Foothill Water Treatment Plant . . . . . 225-4192
- Supervisor - Water Treatment . . . . . 225-4475
- Water Utility Manager . . . . . 224-6127
- California Department of Public Health - Division of Drinking Water . . . . . 224-4800
- Shasta County Environmental Health Department . . . . . 225-5787

Issued by: \_\_\_\_\_  
(Signature)

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_



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REDDING, CA 96049-6071

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For Redding's tomorrow*

**EXHIBIT D**

\_\_\_\_\_  
DATE

# UNSAFE WATER ALERT

## DO NOT DRINK YOUR TAP WATER!

Due to the recent \_\_\_\_\_ emergency situation, the City of Redding Water Utility in conjunction with the California Department of Public Health, and/or Shasta County Health Department are advising residents of Redding to **NOT USE TAP WATER FOR DRINKING UNTIL FURTHER NOTICE** but to use bottled water for drinking and cooking purposes as safety precaution. Boiling the water will **not** make the water safe.

### FAILURE TO FOLLOW THIS ADVISORY COULD RESULT IN ILLNESS

Emergency water treatment and quality testing are being conducted by the City's Water Utility to resolve this water quality emergency problem. The City's Water Utility will notify residents as soon as the water is safe to drink through public notification.

### For more information call:

- City of Redding Water Utility . . . . . 224-6068
- Foothill Water Treatment Plant . . . . . 225-4192
- Supervisor - Water Treatment . . . . . 225-4475
- Water Utility Manager . . . . . 224-6127
- California Department of Public Health - Division of Drinking Water . . . . . 224-4800
- Shasta County Environmental Health Department . . . . . 225-5787

Issued by: \_\_\_\_\_  
(Signature)

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_



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REDDING, CA 96049-6071  
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For Redding's tomorrow*

**EXHIBIT E**

\_\_\_\_\_  
DATE

## CANCELLATION OF UNSAFE WATER ALERT

On \_\_\_\_\_ (date) you were notified of the need to not use the water supply served to your home for drinking or cooking purposes. The City of Redding Water Utility in conjunction with the California Department of Health Services, and/or Shasta County Health Department has determined that, through abatement of the health hazard followed by comprehensive testing of the water, **YOUR TAP WATER IS SAFE TO DRINK.**

**IT IS NO LONGER NECESSARY TO CONSUME BOTTLED WATER.**

**For more information call:**

- City of Redding Water Utility . . . . . 224-6068
- Foothill Water Treatment Plant . . . . . 225-4192
- Supervisor - Water Treatment . . . . . 225-4475
- Water Utility Manager . . . . . 224-6127
- California Department of Public Health - Division of Drinking Water . . . . . 224-4800
- Shasta County Environmental Health Department . . . . . 225-5787

Issued by: \_\_\_\_\_  
(Signature)

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_

## APPENDIX G

### Drought Management Plan

The following is the actual Ordinance that appears in the City of Redding Municipal Code and would become effective should a water shortage condition be declared.

**CITY OF REDDING  
DROUGHT MANAGEMENT PLAN  
Redding Municipal Code  
Chapter 14.09**

**14.09.010 Purpose.**

The purpose of this chapter is to establish a drought management plan to equitably distribute the available water to the city's customers and to ensure an adequate supply for human consumption, sanitation, and fire protection. The purposes of this plan are met by the establishment of a four-stage plan of management. (Ord. 1957 § 1 (part), 1991)

**14.09.020 Stage I—Volunteer conservation program--Fifteen percent reduction in normal usage.**

The following represent the elements of Stage I of the drought management plan:

- A. Notification to customers by direct mailing, newsletters, press releases, public meetings, etc., that a drought condition exists and the city must reduce its water consumption;
- B. Provide educational literature for conservation practices regarding waste, over watering, leaks, etc. Provide information and assistance to customers on reading their water meter and monitoring water usage;
- C. Encourage the use of native plants or other water conserving vegetation. Information on landscaping is available at the customer services office or the parks and recreation office;
- D. Encourage the use of efficient landscaping systems (drip, timed sprinkler, etc). Encourage evening and early morning watering to reduce evaporation;
- E. Discourage the emptying and refilling of swimming pools, ponds, etc.;
- F. Informational/educational warnings for water, over watering, and leaks;
- G. City to reduce the flushing of water mains required for water quality;
- H. Start the Enterprise and Cascade Wells earlier in the season to conserve the use of surface water;

I. Encourage water-reducing methods in household use (full loads for dishwasher and clothes washer, low-flow showerhead, patio sweeping, use shut-off valve on hose for car washing and watering, etc.)  
(Ord. 1957 § 1 (part), 1991)

**14.09.030 Stage II—Mandatory twenty-five percent reduction.**

All Stage 1 requirements apply, plus the following:

A. All customers must reduce their consumption in accordance with the following provisions: For all customers (residential, commercial, retail, and industrial) a base allotment will be determined. That base allotment will be the lesser of the following: (1) the four-year average usage for the winter months of November through March; or (2) the four-year average usage for that month. Customers' monthly allotment will consist of the base allotment plus seventy-five percent of the difference between the previous four-year average usage for that month and the base allotment. That corresponds to a twenty-five percent reduction of the previous four-year average for the month usage over the base allotment. Such water will be charged at the current rates in effect.

A penalty of two dollars and fifty cents per one hundred cubic feet, or any part thereof, will be charged on any water used above the amount allocated.

B. New service applications may be granted upon the condition that the water shall be used for internal household purposes only, and that landscaping must be delayed until drought conditions are lifted. The following consumption conditions will be applicable:

1. New services will be limited to one thousand five hundred cubic feet of water per month, and such water will be charged at the current rates in effect;
2. A penalty of two dollars and fifty cents per one hundred cubic feet, or any part thereof, in addition to the current rate, will be charged on any water used above the maximum stated in subsection B1 of this section.

C. Water service to landscape maintenance districts, parks, cemeteries, or other services, which fall in this category, will be required to comply with same restrictions as the other customers.

D. Water service for construction projects will be handled on a case-by-case basis. A written request detailing water needs, time of use, etc., will be required and reviewed by staff. Final approval for service in this category will be granted by the director of public works. Services in this category will be monitored on a project basis.

(Ord. 1957 § 1 (part), 1991)

**14.09.040 Stage III—Mandatory thirty-five percent reductions.**

All Stage I requirements apply, plus the following:

A. All customers must reduce their consumption in accordance with the following provisions: For all customers (residential, commercial, retail, and industrial) a base allotment will be determined. That base allotment will be the lesser of the following: (1) the four-year average usage for the winter months of November through March; or (2) the four-year average usage for that month. Customers' monthly allotment will consist of the base allotment plus sixty-five

percent of the difference between the previous four-year average usage for that month and the base allotment. That corresponds to a thirty-five percent reduction of the previous four-year average for the month usage over the base allotment. Such water will be charged at the current rates in effect.

A penalty of five dollars per one hundred cubic feet, or any part thereof, will be charged on any water used above the amount allocated.

B. New service applications may be granted upon the condition that the water shall be used for internal household purposes only, and that landscaping must be delayed until drought conditions are lifted. The following consumption conditions will be applicable:

1. New services will be limited to one thousand five hundred cubic feet of water per month, and such water will be charged at the current rates in effect;
2. A penalty of five dollars per one hundred cubic feet, or any part thereof, in addition to the current rate, will be charged on any water used above the maximum stated in subsection B1 of this section.

C. Water service to landscape maintenance districts, parks, cemeteries, or other services, which fall in this category, will be required to comply with same restrictions as the other customers.

D. Water service for construction projects will be handled on a case-by-case basis. A written request detailing water needs, time of use, etc., will be required and reviewed by staff. Final CITY OF REDDING 2010 URBAN WATER MANAGEMENT PLAN approval for service in this category will be granted by the director of public works. Services in this category will be monitored on a project basis.

E. Water mains will only be flushed to solve severe water quality problems.

F. Watering of parks, cemeteries, etc., will be restricted to nights.  
(Ord. 1957 § 1 (part), 1991)

**14.09.050 Stage IV—Mandatory fifty percent reduction.**

All Stage 1 requirements apply, plus the following:

A. All customers must reduce their consumption in accordance with the following provisions: For all customers (residential, commercial, retail, and industrial) a base allotment will be determined. That base allotment will be the lesser of the following: (1) the four-year average usage for the winter months of November through March; or (2) the four-year average usage for that month. Customers' monthly allotment will consist of the base allotment plus fifty percent of the difference between the previous four-year average usage for that month and the base allotment. That corresponds to a fifty percent reduction of the previous four-year average for the month usage over the base allotment. Such water will be charged at the current rates in effect. A penalty of seven dollars and fifty cents per one hundred cubic feet, or any part thereof, will be charged on any water used above the amount allocated.

B. New service applications granted under Sections 14.09.030(B) and 14.09.040(B) will continue to receive service under the following provisions:

1. New services will be limited to one thousand cubic feet of water per month and such water will be charged at the current rates in effect;

2. A penalty of seven dollars and fifty cents per one hundred cubic feet, or any part thereof, in addition to the current rate, will be charged on any water used above the maximum stated in Subsection B1 of this section.

C. Any additional new service applications must be reviewed and approved by the city council.

1. If accepted for service, they will be limited to one thousand cubic feet of water per month, and such water will be charged at the current rates in effect;

2. A penalty of seven dollars and fifty cents per one hundred cubic feet or any part thereof, in addition to the current rate, will be charged on any water used above the base amount allowed in Subsection C1 of this section.

D. Water service to landscape maintenance districts, parks, cemeteries, or other services, which fall in this category, will be required to comply with same restrictions as the other customers.

E. Water service for construction projects will be handled on a case-by-case basis. A written request detailing water needs, time of use, etc., will be required and reviewed by staff. Final approval for service in this category will be granted by the director of public works. Services in this category will be monitored on a project basis.

(Ord. 1957 § 1 (part), 1991)

#### **14.09.060 Special conditions.**

Special conditions:

A. When available, actual previous four-year average usage will be used to determine allocations. For any situations when a full four years of data is not available, the available data will be used. If previous data is not available, the allocation will be based on histories of a comparable-type customer.

B. Previous four-year average consumptions will be used to determine allocations available to each service address (customer). When a new customer transfers a service address into their name, the four-year average consumption for that address will be used to determine their allocation.

C. No transfer of water will be allowed between billing cycles, customers, or service addressees.

D. Any customer who willfully neglects to adhere to the provisions of the mandatory stages of this drought management plan will be issued a written warning. Continued negligence will be reviewed by the director of public works for corrective action necessary to insure compliance. Compliance measures may include the installation of a flow restrictor at the meter.

(Ord. 1957 § 1 (part), 1991)

#### **14.09.070 Exceptions, variances and appeals.**

For hardship cases only, variances may be granted for any of the above regulations upon application in writing stating, in detail, the circumstances warranting special consideration. Appeals of decisions made by the director of public works may be taken to the city council by written request. (Ord. 1957 § 1 (part), 1991)

## **APPENDIX H**

### **2010 City of Redding Customer Confidence Report** (Water Quality Report)

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# CITY OF REDDING

## PUBLIC WORKS DEPARTMENT

### WATER UTILITY

**2011**

To our Customers:

Attached you will find the **2010 Consumer Confidence Report (CCR)** brought to you by the City of Redding Water Utility. The purpose of this report is to provide our water customers with summary information on the water quality of the City's water supply sources, the levels of any detected contaminants, and compliance with drinking water regulations. The CCR is prepared and distributed to the City's water customers each year, in accordance with State and Federal regulations. The information contained in this report was taken from water analysis performed through December 2010. We test the drinking water quality for many constituents as required by State and Federal Regulations to ensure that the water supplied to our customers consistently meets both Federal and State Water Quality Standards. Last year your tap water met all U.S. Environmental Protection Agency and State drinking water health standards.

We would like all our customers to have current and factual information about our drinking water. To that end, water customers who receive this report are asked to share this information with any tenant or water user on the premise. The CCR can also be accessed from the Water Utility web page at <http://www.ci.redding.ca.us/water/index.html>.

We welcome public participation in water quality issues. Information that deals with decisions about our water system is addressed during Redding City Council Meetings. These meetings are held the first and third Tuesday of each month at 6:00 p.m. in the City Council Chambers at City Hall. The address is 777 Cypress Avenue, Redding.

We are available to answer questions and provide information if needed. Please see the contact information below.

How to contact us:

Utility Customer Service & Billing:	(530) 339-7200	Leak Reports:	(530) 224-6068
Water Conservation Materials:	(530) 224-6032	Water Quality Concerns:	(530) 224-6068
General Information:	(530) 224-6068	Water Quality Information:	(530) 225-4475

Website: [www.ci.redding.ca.us/water/index.html](http://www.ci.redding.ca.us/water/index.html)

***Este informe contiene información muy importante sobre su agua potable.***

***Tradúzcalo ó hable con alguien que lo entienda bien***

## 2010 Consumer Confidence Report

### Water Supply Sources

Water sources include surface water from the Sacramento River and Whiskeytown Reservoir which made up 68% of the treated water supply, or approximately 5.43 billion gallons. The groundwater from the Redding Groundwater Basin made up 32% of the treated water supply, or approximately 2.52 billion gallons. The two surface water treatment plants and sixteen groundwater wells supply water to the City of Redding service area. The water system is divided into six pressure zones: Enterprise (east), Cascade (south), Foothill (central), Hilltop-Dana (northeast), Hill 900 (west), and Buckeye (north). The Hill 900 and Foothill zones are supplied with surface water from the Sacramento River via the Foothill Water Treatment Plant (FWTP). The Enterprise and Cascade zones are supplied by a blend of well water and water from the Foothill zone. The Buckeye zone is supplied with surface water from Whiskeytown Reservoir via the Buckeye Water Treatment Plant (BWTP) and water from the Foothill Zone. The Hilltop-Dana zone is supplied with water from both the Enterprise and Buckeye zones. City water is considered soft, with low to moderate alkalinity, and comparatively trace levels of disinfection byproducts.

### Groundwater Quality

Six of the wells in the Enterprise zone have elevated iron and manganese levels that can form black mineral deposits in the distribution system. A sequestrant/corrosion inhibitor (blend of orthophosphate and polyphosphate) is added at these wells to keep the minerals dissolved and minimize deposits in the piping. Areas supplied by well water are flushed each spring to remove accumulated deposits that can cause “discolored water”.

The groundwater source of your drinking water meets the federal and state standards for arsenic, but it does contain low levels of arsenic below the MCL of 10 parts per billion (ppb). The arsenic MCL was reduced from 50 ppb to 10 ppb on January 23, 2006 by the USEPA.

### Source Water Assessment

The City of Redding conducted source water assessments for its surface water in July 2001 and groundwater sources in May 2002. The sanitary survey for our surface water sources was updated in December 2010. For more information, please call (530) 224-6068.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

#### Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides* which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants* which can be naturally-occurring or be the result of oil and gas production and mining activities. *According to the U.S. Nuclear Regulatory Commission (NRC), Japan's nuclear emergency presents no danger to California. California Department of Public Health (CDPH) is working closely with state and federal partners, including NRC, the U.S. Environmental Protection Agency, the U.S. Department of Energy, FEMA Region IX, and the California Emergency Management Agency (CalEMA). CDPH-RHB maintains air monitoring stations throughout California.*

- *Arsenic.* While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. Environmental Protection Agency continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.
- *Nitrate* in drinking water at levels above 45 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

### **Water Quality Standards and Testing Results**

In order to ensure that tap water is safe to drink, the United States Environmental Protection Agency (USEPA) and the California Department of Public Health (CDPH) Division of Drinking Water (DDW) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. CDPH-DDW regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

The City's water supplies must meet stringent water quality standards that are set forth by the USEPA and the CDPH-DDW. The tables on the following pages list all of the drinking water contaminants that were detected during sampling over the past several years. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. *CDPH-DDW allows monitoring for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old.*

### **Additional General Information on Drinking Water**

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline (1-800-426-4791) or on their website at <http://www.epa.gov/safewater>.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Redding Water Utility is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the USEPA's Safe Drinking Water Hotline (1-800-426-4791) or at <http://www.epa.gov/safewater/lead>.

## TERMS USED IN THIS REPORT

To help you better understand these terms, the following definitions are provided:

### **Maximum Contaminant Level (MCL):**

The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

### **Maximum Contaminant Level Goal (MCLG):**

The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

### **Public Health Goal (PHG):**

The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

### **Maximum Residual Disinfectant Level (MRDL):**

The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

### **Maximum Residual Disinfectant Level Goal (MRDLG):**

The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants. MRDLGs are set by the USEPA.

### **Primary Drinking Water Standards (PDWS):**

MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

### **Secondary Drinking Water Standards (SDWS):**

Secondary Maximum Contaminant Levels (SMCLs) for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the SMCL levels.

### **Treatment Technique (TT):**

A required process intended to reduce the level of a contaminant in drinking water.

### **Regulatory Action Level (AL):**

The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

### **Variations and Exemptions:**

Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

**NA:** not applicable

**ND:** not detectable at testing limit

**NTU:** Nephelometric Turbidity Units

**ppm:** parts per million or milligrams per liter (mg/L)\*

**ppb:** parts per billion or micrograms per liter (ug/L)\*

**ppt:** parts per trillion or nanograms per liter (ng/L)

**pCi/L:** picocuries per liter (a measure of radiation)

*\*Analogies that may put ppm and ppb into better perspective.*

*One ppm is equal to:*

- One inch in 16 miles
- One second in 11.5 days
- One minute in two years

*One ppb is equal to:*

- One second in nearly 32 years
- One pinch of salt in 10 tons of potato chips

## Sampling Results

<b>SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES</b>	
<b>Treatment Technique</b> (Type of approved filtration technology used):	Conventional treatment (coagulation, sedimentation, and filtration) and direct filtration (coagulation and filtration) in combination with chlorination
<b>Turbidity Performance Standards</b> (that must be met through the water treatment process)	<u>Turbidity of the filtered water must:</u> 1 – Be less than or equal to 0.5 NTU in 95% of measurements in a month 2 – Not exceed 1.0 NTU for more than eight consecutive hours 3 – Not exceed 5.0 NTU at any time
Lowest monthly percentage of four-hour samples that met Turbidity Performance Standard No. 1.	Foothill WTP: 99.9% were less than or equal to 0.3 NTU Buckeye WTP: 99.9% were less than or equal to 0.3 NTU
Highest single instantaneous turbidity measurement during the year.	0.69 NTU (0.02 to 5.0 NTU range) for Foothill Water Treatment Plant 2.41 NTU (0.02 to 5.0 NTU range) for Buckeye Water Treatment Plant
Number of violations of any surface water treatment requirements.	None

Note: Turbidity (measured in NTU) is a measurement of the cloudiness of water. Monitoring turbidity is a good indicator of water quality and to verify compliance and effectiveness of our water filtration systems.

<b>SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA</b>					
Microbiological Contaminants	Highest No. of Detections	No. of Months in Violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria (Total Coliform Rule)	1 (In a month)	0	Greater than 5% of monthly samples positive.	0	Naturally present in the environment
Fecal Coliform or <i>E. coli</i> (Total Coliform Rule)	0 (In the year)	0	A routine sample and a repeat sample detect total coliform and either sample also detects fecal coliform or <i>E. coli</i>	0	Human and animal fecal waste
Fecal Indicators ( <i>E. coli</i> , enterococci or coliphage) (Federal Groundwater Rule)	0 (In a month)	0	Treatment Technique (TT) for untreated groundwater	N/A	Human and animal fecal waste

Note: The City of Redding analyzes a minimum of 23 water samples per week throughout the year in the water distribution system for coliform bacteria.

<b>SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER</b>						
Lead and Copper	No. of Samples Collected	90 <sup>th</sup> Percentile Level Detected	No. Sites Exceeding AL	AL	PHG	Typical Source of Contaminant
Lead (ppb) [August 2010]	30	ND	0	15	< 2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm) [August 2010]	30	0.32	0	1.3	< 0.17	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

**SAMPLING RESULTS FOR SODIUM, HARDNESS, AND GENERAL CHEMISTRY**

Contaminant (and reporting units)	Sample Dates	Average Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	1/10 – 12/10	34.8	34.8 to 104.5	N/A	N/A	Generally found in ground & surface water
Hardness (ppm as CaCO <sub>3</sub> )	1/10 – 12/10	83	35 to 125	N/A	N/A	Generally found in ground & surface water
Calcium (ppm)	1/10 – 12/10	15	.40 to 23	N/A	N/A	Naturally occurring dissolved mineral
Magnesium (ppm)	1/10 – 12/10	10	4 to 19	N/A	N/A	Naturally occurring dissolved mineral
pH	1/10 – 12/10	7.5	6.8 to 8.5	N/A	N/A	pH 6.5 to 8.5 is typical for drinking water
Alkalinity (ppm as CaCO <sub>3</sub> )	1/10 – 12/10	91	34 to 127	N/A	N/A	Measures the buffering capacity of the water

**DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD**

Contaminant (and reporting units)	Sample Date	Level (or Average) Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Chlorine (Distribution System)	1/10 – 12/10	0.8	0.5 to 0.9	4.0	4.0	Disinfectant required by regulation to be added to drinking water
Arsenic (ppb) <sup>(1)</sup>	1/10 – 12/10	5.8	0 to 9.4	10	0.004	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes. Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.
Nitrate (ppm as NO <sub>3</sub> ) (Wells and Surface Water)	2010	4.3	0 to 12.2	45	45	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits. Infants below the age of six months who drink water containing nitrate in excess of the MCL may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant's blood to carry oxygen. Symptoms include shortness of breath and blueness of the skin. High nitrate levels may affect the oxygen-carrying ability of the blood of pregnant women.
Total Trihalomethanes (ppb) (Distribution system)	Quarterly 2010	24	0 to 40.7	80	N/A	By-product of drinking water disinfection

Contaminant (and reporting units)	Sample Date	Level (or Average) Detected)	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Total of Five Haloacetic Acids – HAA5 (ppb) (Distribution system)	Quarterly 2010	35	0 to 49.2	60	N/A	By-product of drinking water disinfection
Total Organic Carbon (TOC) <sup>(2)</sup>	Quarterly 2010	0.98	0.5 to 1.3	N/A	N/A	Various natural and man made sources
Gross Alpha (pCiL)	2010	1.25	1.0 to 1.5	15	(0)	Erosion of natural deposits.
Asbestos (MFL)	1/98 to 6/08	0.27	0.2 to 0.4	7	7	Internal corrosion of asbestos cement water mains; erosion of natural deposits
Fluoride	2010	0.1	0.1 to 0.2	2.0	1	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories

1. Only Enterprise Wells 11 and 13 have had detections above the arsenic standard. These wells blend with other wells in the Enterprise pressure zone and operate on a limited basis during the summer. Blending reduces the arsenic concentration below the MCL in the water distribution system. In 2010, EW-11 and EW-13 were not operated or pumped into the water distribution system. The arsenic MCL was reduced from 50 ppb to 10 ppb on January 23, 2006 by the USEPA.

2. Total organic carbon is a precursor for disinfection byproduct formation. The TT requirement applies to water filtered from the Buckeye Water Treatment Plant and Foothill Water Treatment Plant.

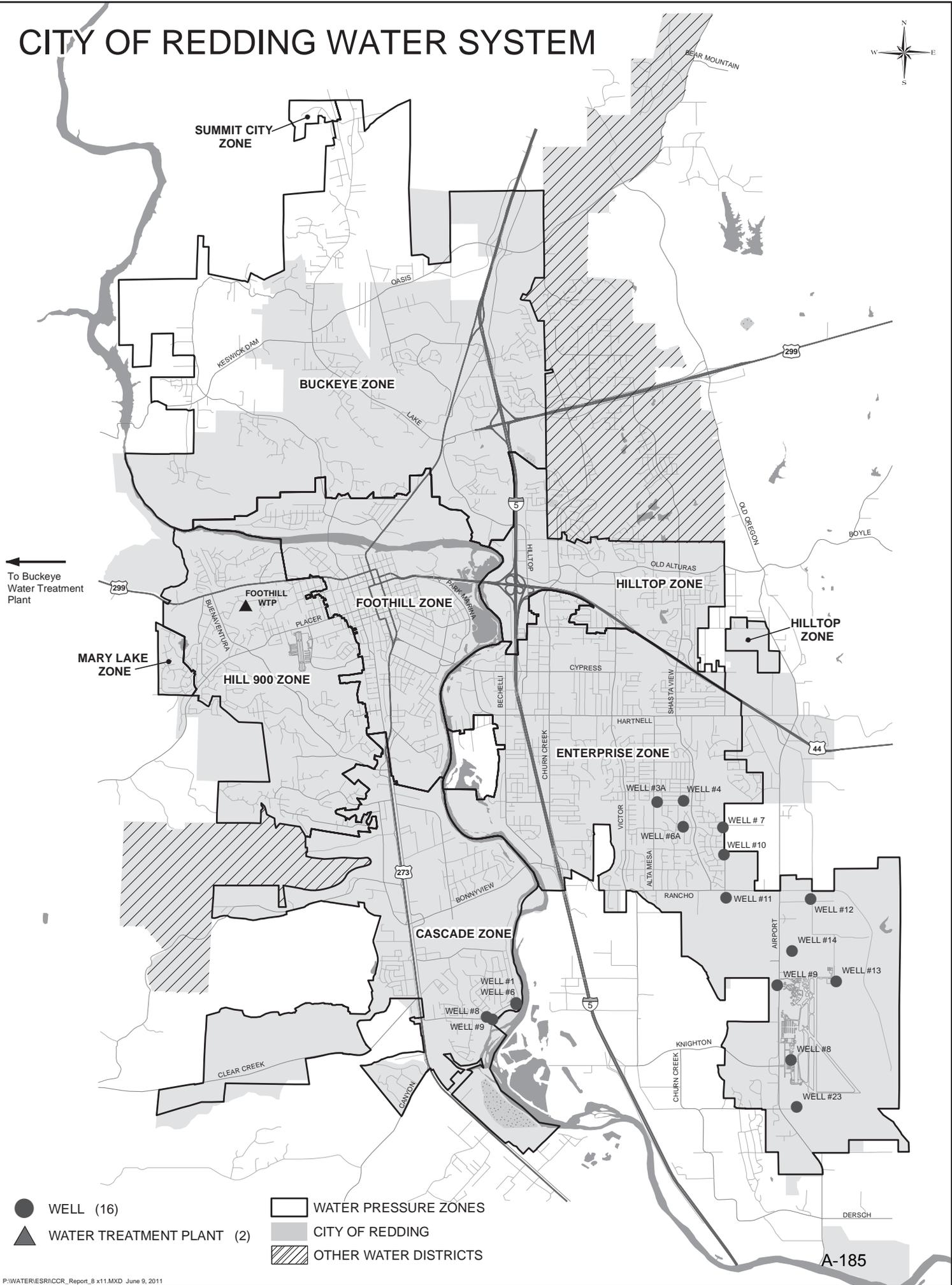
#### DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Contaminant (and reporting units)	Sample Date	Level (or Average) Detected)	Range of Detections	SMCL	PHG (MCLG)	Typical Source of Contaminant
Manganese (ppb) *	1/10 – 12/10	19	0.1 to 66	50	N/A	Leaching from natural deposits
Sulfate (ppm)	1/10 to 12/10	4.8	2.6 to 7.8	500	N/A	Runoff/leaching from natural deposits; industrial waste
Chloride (ppm)	1/10 to 12/10	28	10 to 85	500	N/A	Runoff/leaching from natural deposits; seawater influence
Total Dissolved Solids (ppm)	1/10 – 12/10	125	41 to 177	1000	N/A	Runoff/leaching from natural deposits
Specific Conductance	1/09 – 12/09	267	94 to 360	1600	1600	Substances that form ions when in water; seawater influence
Iron (ppb) *	1/10 – 12/10	18.6	6.6 to 45	300	N/A	Leaching from natural deposits; industrial wastes

\* Several wells in the Enterprise pressure zone have elevated iron and manganese. Polyphosphate is added to sequester these minerals and minimize brown water complaints.

As a division of Public Works, the Water Utility's mission is to provide our customers with a reliable supply of high quality drinking water now and in the future. Towards that end, 26 full time employees maintain approximately 558 miles of water mains, 28,165 metered services, one 24 MGD treatment plant, one 14 MGD treatment plant, 16 groundwater wells, ten pump stations, eleven reservoirs, six pressure zones and serve approximately 90,000 people within a service area of approximately 60 square miles. We are proud of the fact that our water quality not only meets Federal and State Standards each and every day of the year, but in most cases, contaminant levels fall far below published Primary and Secondary Standards. This means you, as the consumer, are assured of the safest water we can deliver to your tap. Water System map on back of page 7.

# CITY OF REDDING WATER SYSTEM



- WELL (16)
- ▲ WATER TREATMENT PLANT (2)
- WATER PRESSURE ZONES
- CITY OF REDDING
- ▨ OTHER WATER DISTRICTS

## **APPENDIX I**

**Notice of Public Hearing and Public Review Availability  
Redding Record Searchlight**

**and**

**Screen Shots of Draft Plan Available for Review  
on the City of Redding Website**

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**LEGAL NOTICE  
CITY OF REDDING  
WATER UTILITY  
NOTICE OF PUBLIC MEETING**

The City of Redding Water Utility will hold a Public Meeting on April 5, 2012 from 4:00 p.m. to 6:00 p.m. at the City of Redding Community Room 777 Cypress Avenue Redding, California for the purpose of receiving comments on the 2010 Urban Water Management Plan (UWMP).

The UMWP, prepared for the State of California Department of Water Resources, will establish the City's compliance with the California Water Code, Division 6, Part 2.6, Urban Water Management Planning. Urban water suppliers who provide municipal water to more than 3,000 customers or supply its customers with more than 3,000 acre-feet of water are required to assess the reliability of water sources over a 20-year planning horizon considering normal, dry, and multiple dry years, and develop the framework necessary to satisfy the Urban Water Management Plan Act requirements to reduce the amount of water each person uses per day (Per Capita Daily Consumption, which is measured in gallons per capita per day) by 20 percent by year 2020. This assessment is prepared every 5 years and submitted to the Department of Water Resources. Its purpose is to consolidate regional information regarding water supply and demand, provide public information, and improve statewide water planning. Oral and written comments will be taken at the meeting.

**The UWMP may be reviewed at the following locations:**

**City of Redding Public Works Department, City Hall**

777 Cypress Avenue, Redding, California

**City of Redding Corporation Yard**

20055 Viking Way Building # 3, Redding, California

**On the Water Utility's web site:**

<http://www.ci.redding.ca.us/water/waterdocs.html>

Written or e-mail comments for receipt prior to the meeting may be submitted to:

City of Redding

Pam Clackler

Water Conservation Specialist

P.O. Box 496071

Redding CA 96049-6071

530-224-6068

[admin@ci.redding.ca.us](mailto:admin@ci.redding.ca.us)

In the Superior Court of the State of California  
in and for the County of Shasta

CERTIFICATE OF PUBLICATION  
RECORD SEARCHLIGHT

PURCHASING DEPT  
REDDING CITY OF  
777 CYPRESS AVE  
REDDING CA 96001

REFERENCE: 00600008 PAM CLACKLER  
6760402 LEGAL NOTICECITY OF

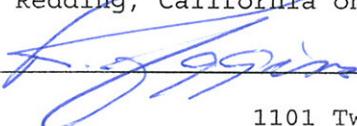
State of California  
County of Shasta

I hereby certify that the Record Searchlight is a newspaper of general circulation within the provisions of the Government Code of the State of California, printed and published in the City of Redding, County of Shasta, State of California; that I am the principal clerk of the printer of said newspaper; that the notice of which the annexed clipping is a true printed copy was published in said newspaper on the following dates, to wit;

PUBLISHED ON: 03/23 03/29

FILED ON: 03/23/12

I certify under penalty of perjury that the foregoing is true and correct,  
at Redding, California on the above date.



RECORD SEARCHLIGHT  
1101 Twin View Blvd, Redding, CA 96003

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Redding CA 96049-6071  
530-224-6068  
[admin@ci.redding.ca.us](mailto:admin@ci.redding.ca.us)

March 23, 29, 2012

6760402

In the Superior Court of the State of California  
in and for the County of Shasta

CERTIFICATE OF PUBLICATION  
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REFERENCE: 00600008 PAM CLACKLER  
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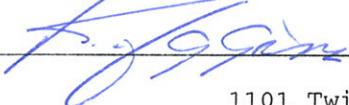
State of California  
County of Shasta

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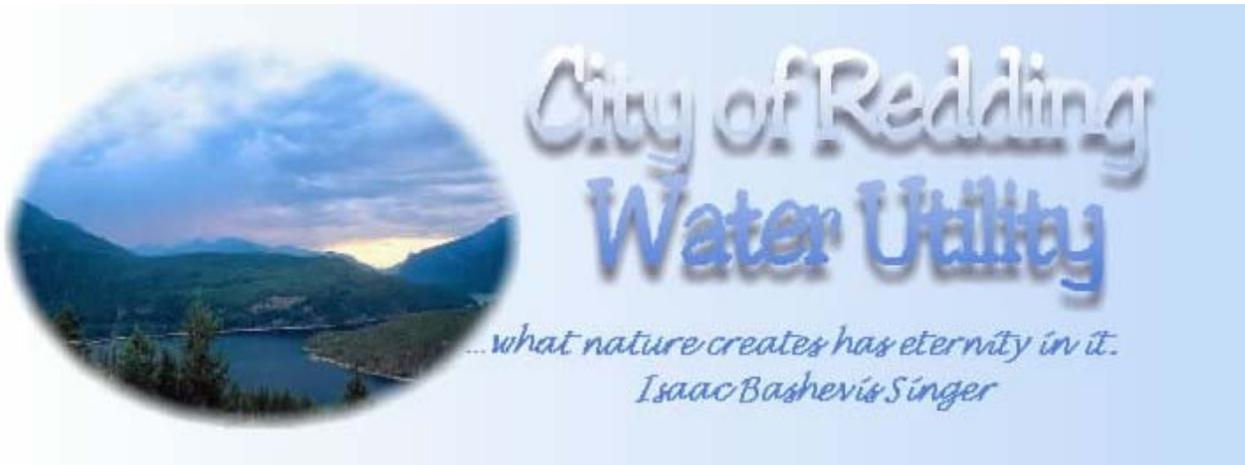
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March 23, 29, 2012

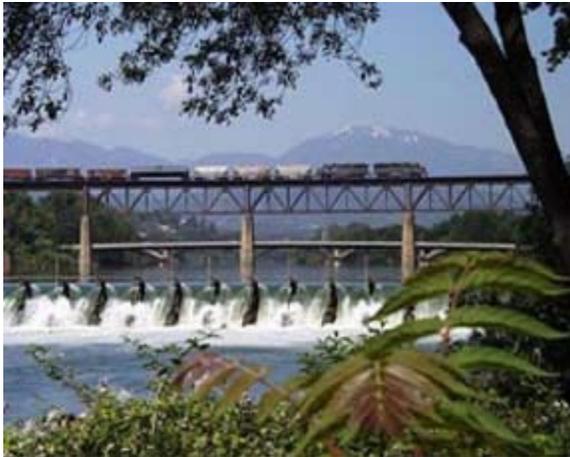
6760402



**Today is Thursday, April 12, 2012**

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We invite you to explore the following pages and learn a little about who we are and what we do.



**Sacramento River  
Redding, California**

[City of Redding Homepage](#)  
[Public Works - Engineering](#)  
[Public Works - Field Operations](#)

## General Information

[NEW - DRAFT Urban Water Management Plan for Public Comment](#)

[NEW - 2012 Water Main Flushing](#)

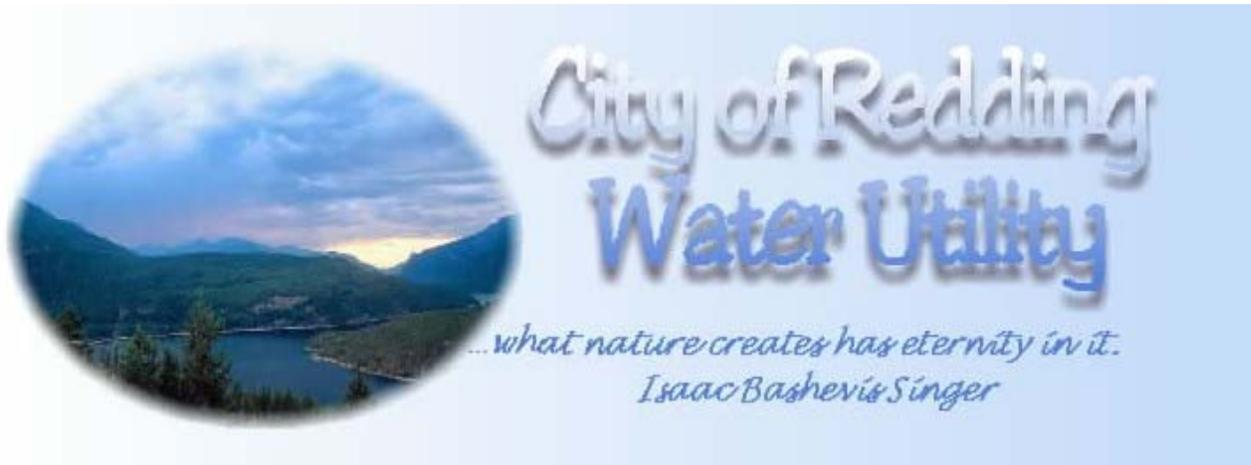
[COMING SOON - 2011 Consumer Confidence Report](#)

(this link temporarily directs you to the 2010 CCR)

## Special Information - Radiation in Drinking Water

The Environmental Protection Agency (EPA) RadNet Drinking Water Program is designed to protect the public by notifying scientists, in near real time, of elevated levels of radiation so they can determine whether protective action is required. EPA obtains quarterly drinking water samples from more than 50 sites across the country. Due to the Japanese nuclear incident, EPA has increased monitoring and is reporting results through Press Releases and on their website.

All results are measured in picocuries per liter (pCi/L). A picocurie is one trillionth of a curie. It's important to



## Water Utility Plans and Documents

### **DRAFT Urban Water Management Plan 2010**

[2010 Draft Urban Water Management Plan - Plan and Appendices \(7.61 MB\)](#)

[2010 Draft Urban Water Management Plan \(963 KB\)](#)

[2010 Draft Urban Water Management Plan Appendices A - J \(4.79 MB\)](#)

[2010 Draft Urban Water Management Plan Appendices K - R \(2.22 MB\)](#)

[2010 Draft Urban Water Management Plan Notice of Public Hearing](#)

### **Urban Water Management Plan 2005**

[2005 Urban Water Management Plan \(2.34 MB\)](#)

[2005 Urban Water Management Plan Appendices A - E \(4.97 MB\)](#)

[2005 Urban Water Management Plan Appendices F - k; Figure 1 - 2 \(4.28 MB\)](#)

### **Cross Connection Control Program**

[Cross Connection Control Program - Elements, Policies, Procedures](#)

### **The Water Cooler - RMU Newsletter**

[July 2008](#)

[October 2008](#)

[January 2009](#)

[April 2009](#)

## **APPENDIX J**

### **Redding City Council Agenda**

**&**

### **Resolution To Adopt the 2010 Urban Water Management Plan**

**(To be inserted once Plan is adopted)**

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## **APPENDIX K**

### **Documentation of Notification to Shasta County of Plan Review and Revisions**

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# CITY OF REDDING



## PUBLIC WORKS DEPARTMENT

### FIELD OPERATIONS

Shipping: 20055 Viking Way, Bldg. #3 Redding, CA 96003

Mail: P.O. Box 496071, Redding, CA 96049-6071

530.224.6068 FAX 530.224.6071

February 9, 2012  
W-030-075

Mr. Patrick Minturn, Director  
Shasta County Public Works  
1855 Placer Street  
Redding CA 96001

Dear Mr. Minturn: *PAT*

The City of Redding's Water Utility wishes to inform you that we are in the process of reviewing and revising our Urban Water Management Plan. This letter confirms, in writing, our initial announcement that took place at the December 7, 2011, Water Resource Managers of Shasta (WRMS) meeting. We are informing you of this revision because we serve water within Shasta County boundaries and wanted to give you the opportunity to provide input through the process. The revised Urban Water Management Plan will be submitted to the Department of Water Resources after final review and adoption by the City Council.

The City will be holding a public hearing on the draft revision of the Urban Water Management Plan in advance of the adoption and will send a notice of this hearing to you as the time gets nearer.

Please contact Pam Clackler, Water Conservation Specialist, at 530-224-6032 if you would like to participate in the City's urban water management planning process or if there is another individual within your jurisdiction who should be our primary point of contact.

Sincerely,

Jon McClain, P.E.  
Assistant Director of Public Works

JM/ro

c: Pam Clackler, Water Conservation Specialist



## **APPENDIX L**

### **Documentation of Delivery of Approved Urban Water Management Plan**

**to**

**Shasta County  
and the  
California State Library**

### **Documentation of Plan Availability for Public Review**

- Provide documentation that within 30 days of submitting the UWMP to DWR, the adopted UWMP has been or will be submitted to the California State Library and any city or county to which the supplier provides water.
- Provide documentation that within 30 days of submitting the UWMP to DWR, the adopted UWMP has been or will be available for public review during normal business hours (will be available at City Hall, Corporation Yard, and on the City website).

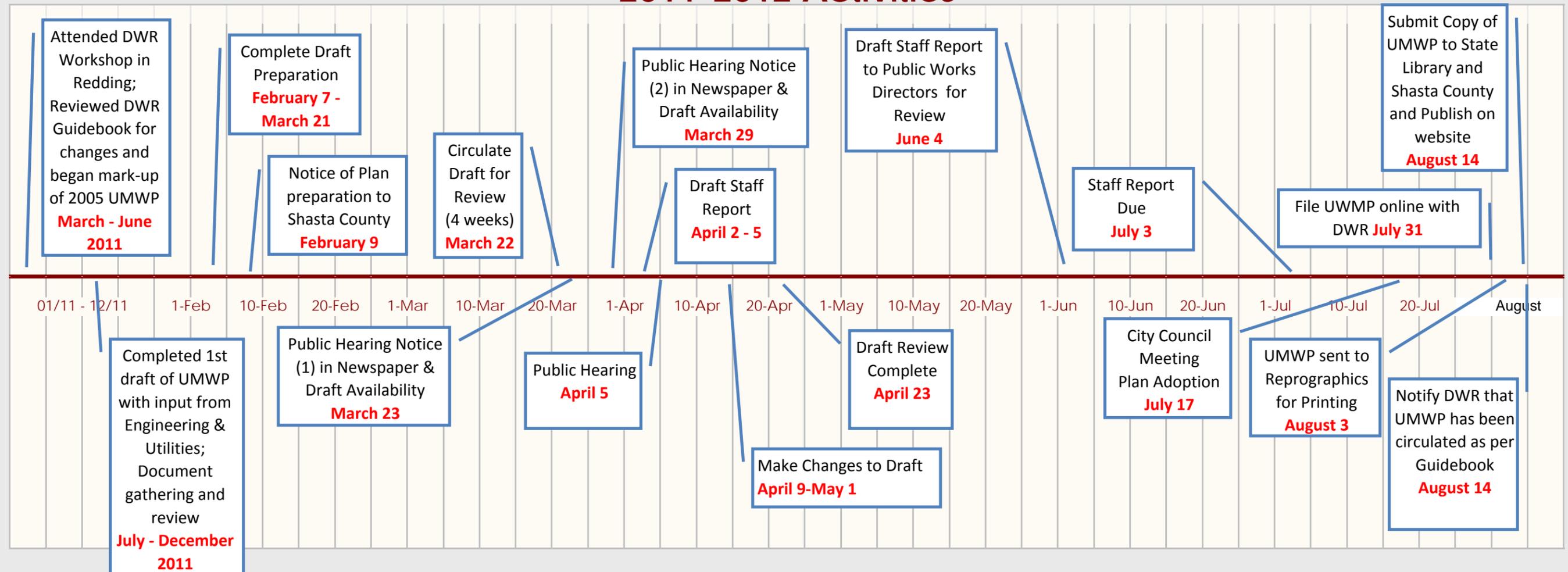
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## **APPENDIX M**

### **Timeline of 2010 Urban Water Management Plan Preparation, Review and Approval Process**

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## City of Redding Urban Water Management Plan Process 2011-2012 Activities



## **APPENDIX N**

### **FIGURE 2: City of Redding Existing Water System Map**

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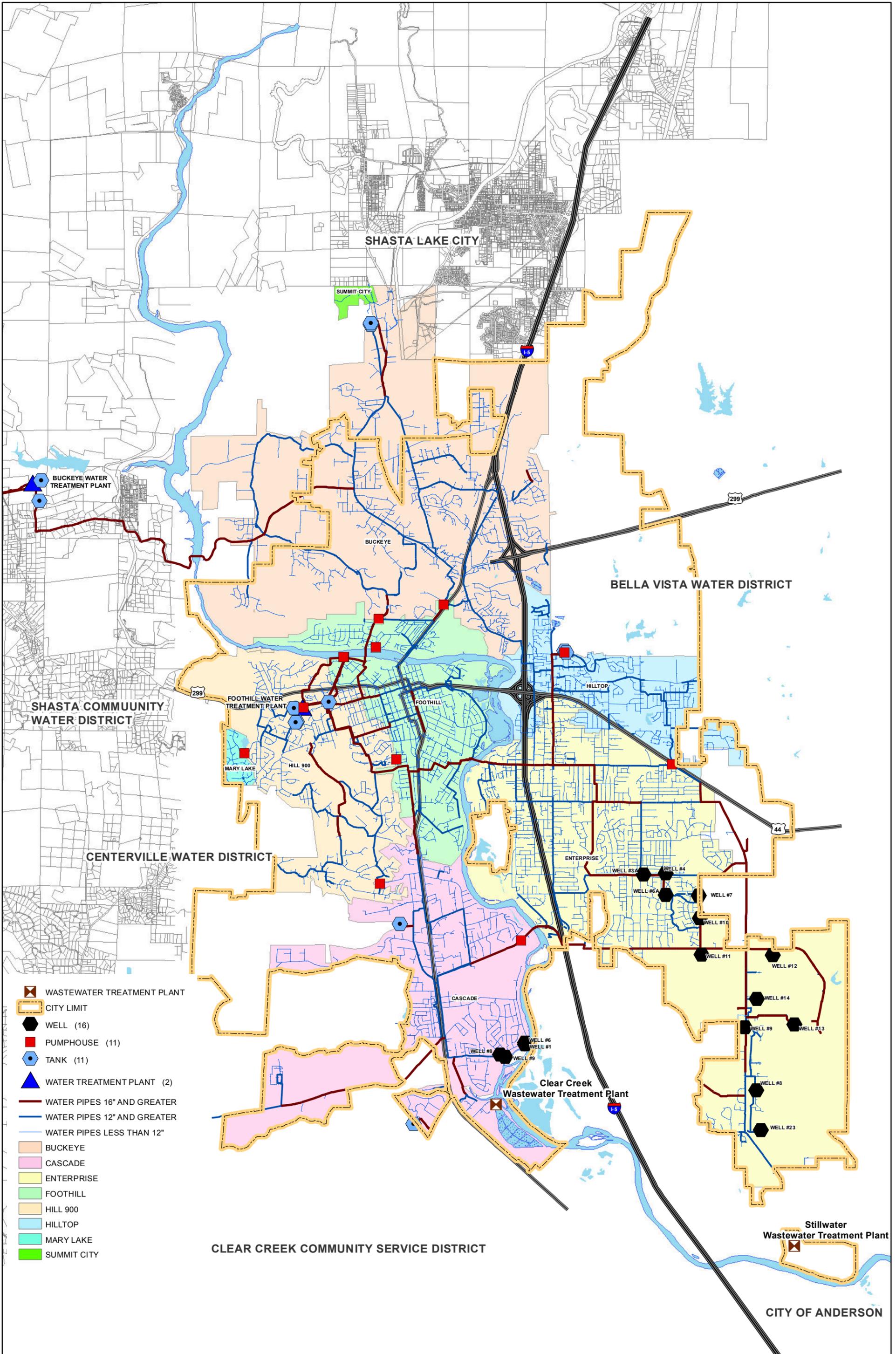


FIGURE 2: CITY OF REDDING EXISTING WATER SYSTEM



## **APPENDIX O**

### **City of Redding Water Efficient Landscape Ordinance**

#### **Municipal Code 16.70**

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**ORDINANCE NO. 1338**

**AN ORDINANCE OF THE CITY OF REDDING AMENDING TITLE 16 (BUILDINGS AND CONSTRUCTION) BY ADDING CHAPTER 16.70 (WATER EFFICIENT LANDSCAPE) RELATING TO IMPLEMENTING STATE REQUIREMENTS MANDATED BY THE CALIFORNIA WATER CONSERVATION IN LANDSCAPING ACT OF 2006**

**WHEREAS**, the California Water Conservation in Landscaping Act of 2006 (AB 1881) mandates that after January 1, 2010, the City of Redding is required to implement and apply certain new regulations to specified landscape projects; and,

**WHEREAS**, as a means to implement the regulatory mandates of AB 1881, it is necessary for the City to either adopt a model ordinance crafted by state regulators or adopt a local ordinance containing the mandatory provisions of AB 1881 in a format consistent with how the City processes development applications; and

**WHEREAS**, the City Council finds it is in the best interest of the local development community to adopt a City of Redding ordinance containing the basic requirements of AB 1881;

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF REDDING AS FOLLOWS:**

Section 1. Title 16 of the Redding Municipal Code is amended to add Chapter 16.70 with a title to read as follows:

**WATER EFFICIENT LANDSCAPE**

**Sections:**

**16.70.010 Purpose**

**16.70.020 Applicability**

**16.70.030 Definitions**

**16.70.040 Landscape Plan Review and Approval Required**

**16.70.050 Elements of Landscape Documentation Package**

**16.70.060 Certificate of Completion**

**16.70.070 Irrigation Scheduling**

**16.70.080 Irrigation Maintenance Schedule**

**16.70.090 Irrigation Audit, Survey, and Water Use Analysis**

**16.70.100 Irrigation Efficiency**

**16.70.110 Recycled Water**

**16.70.120 Stormwater Management**

**16.70.130 Model Homes**

- 16.70.140 Environmental Review**
- 16.70.150 Provisions for Existing Landscapes**
- 16.70.160 Water-Waste Prevention**
- 16.70.170 Reserved**
- 16.70.180 Enforcement**

**Section 2.** Title 16 of the Redding Municipal Code is amended to add Sections 16.70.010 through 16.70.180 to Chapter 16.70 to read as follows:

**16.70.010 PURPOSE**

This chapter is intended to comply with the provisions of the California Water Conservation in Landscaping Act of 2006 (AB 1881), Chapter 3, Article 10.8, Government Code. The specific purposes of these regulations are to:

- A. Promote the values and benefits of landscapes, while recognizing the need to invest water and other resources as efficiently as possible.
- B. Retain flexibility and encourage creativity through appropriate design.
- C. Ensure the attainment of water efficient landscape goals by requiring that landscapes not exceed a maximum water demand.
- D. Establish a structure for designing, installing, and maintaining water efficient landscapes in new projects.
- E. Establish provisions for water-management practices and water-waste prevention for established landscapes.
- F. Establish the City's responsibilities for administering programs to ensure compliance with the provisions for this chapter and of the California Water Conservation in Landscaping Act of 2006.
- G. Establish provisions for water-management programs that may include, but are not limited to: irrigation water use analyses, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.
- H. Achieve water conservation by raising public awareness of the need for an effective management program through education and incentives.

**16.70.020 APPLICABILITY**

This section shall apply to all the following landscape projects:

- A. New construction and rehabilitated landscapes for public-agency projects and private commercial or industrial development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review.

- B. New construction and rehabilitated landscapes which are developer-installed in single-family and multiple-family projects with a common landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review.
- C. New construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multiple-family residential projects with a total project landscape area equal to or greater than 5,000 square feet requiring a building or landscape permit, plan check, or design review.
- D. All subdivision model homes with front-yard landscape installed by the developer.
- E. Landscapes over one acre in size installed before January 1, 2010, are subject to the limited provisions in Section 16.70.150.
- F. Cemeteries. Recognizing the special landscape management needs of cemeteries, the following shall apply:
  - 1. New and rehabilitated cemeteries are subject to the limited provisions of Sections 16.70.050.B, 16.70.080, and 16.70.090.
  - 2. Existing cemeteries are subject to the limited provisions in Section 16.70.150.
- G. This chapter does not apply to:
  - 1. Registered local, state, or federal historical sites.
  - 2. Ecological restoration projects that do not require a permanent irrigation system.
  - 3. Mined land reclamation projects that do not require a permanent irrigation system.
  - 4. Plant collections, as part of botanical gardens and arboretums, open to the public.

### 16.70.030 DEFINITIONS

For the purpose of this chapter, the following words shall have the meanings set forth below:

**Applied Water** The portion of water supplied by the irrigation system to the landscape.

**Backflow Prevention Device** A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

**Certificate of Completion** The document required under Section 16.70.060, *Certificate of Completion*.

**Certified Landscape Irrigation Auditor** A person certified to perform landscape irrigation audits by an accredited academic institution; a professional trade organization; or other programs, such as the U.S. Environmental Protection Agency’s WaterSense irrigation auditor certification program and the Irrigation Association’s Certified Landscape Irrigation Auditor program.

**Certified Irrigation Designer** A person certified to design irrigation systems by an accredited academic institution; a professional trade organization; or other programs, such as the U.S. Environmental Protection Agency's WaterSense irrigation designer certification program and the Irrigation Association's Certified Irrigation Designer program.

**Check Valve or Anti-Drain Valve** A valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

**Common Interest Developments** Community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

**Controller** An automatic timing device used to remotely control valves to operate an irrigation system. A weather-based controller is a controller that uses evapotranspiration or weather data to determine when to irrigate. A self-adjusting irrigation controller is a controller that uses sensor data (i.e., soil-moisture sensor).

**Conversion Factor (0.62)** The number that converts acre-inches per acre per year to gallons-per-square-foot per year.

**Drip Irrigation** Any nonspray low-volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low-volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

**Ecological Restoration Project** A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

**Effective Precipitation or Usable Rainfall (Eppt)** The portion of total precipitation which becomes available for plant growth.

**Emitter** A drip-irrigation emission device that delivers water slowly from the system to the soil.

**Established Landscape** The point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

**Establishment Period of the Plants** The first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

**Estimated Total Waster Use (ETWU)** The total water used for the landscape as described in Section 16.70.050.B.

**ET Adjustment Factor (ETAF)** A factor of 0.7 that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

A combined plant mix with a site-wide average of 0.5 is the basis of the plant-factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is  $(0.7) = (0.5/0.71)$ . ETAF for a Special Landscape Area shall not exceed 1.0. ETAF for existing, nonrehabilitated landscapes is 0.8.

**Evapotranspiration Rate** The quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

**Flow Rate** The rate at which water flows through pipes, valves, and emission devices measured in gallons per minute, gallons per hour, or cubic feet per second.

**Hardscapes** Any durable material (pervious and nonpervious).

**Homeowner-Provided Landscape** Any landscape either installed by a private individual for a single-family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this chapter, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.

**Hydrozone** A portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or nonirrigated.

**Infiltration Rate** The rate of water entry into the soil expressed as depth of water per unit of time (e.g., inches per hour).

**Invasive Plant Species** Species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. "Noxious weeds" refers to any weed that is designated by the Weed Control Regulations in the Weed Control Act and identified on a regional district noxious weed control list. Lists of invasive plants are maintained in the California Invasive Plant Inventory and U.S. Department of Agriculture's invasive and noxious weeds database.

**Irrigation Audit** An in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

**Irrigation Efficiency (IE)** The measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation-system characteristics and management practices. The minimum average irrigation efficiency for purposes of this chapter is 0.71. Greater irrigation efficiency can be expected from well- designed and maintained systems.

**Irrigation Survey** An evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

**Irrigation Water Use Analysis** An analysis of water use data based on meter readings and billing data.

**Landscape Architect** A person who holds a license to practice landscape architecture in the state of California (Business and Professions Code, Section 5615).

**Landscape Area** All the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or nonpervious hardscapes, and other nonirrigated areas designated for nondevelopment (e.g., open spaces and existing native vegetation).

**Landscape Contractor** A person licensed (with a valid C-27 license) by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

**Landscape Documentation Package** The documents required under Section 16.70.050.

**Landscape Project** Total area of landscape in a project as defined in "landscape area" for the purposes of the Water Efficient Landscape chapter, meeting requirements under Section 16.70.020.

**Lateral Line** The water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

**Local Water Purveyor** Any entity, including a public agency, city, county, or private water company, that provides retail water service.

**Low-Volume Irrigation** The application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters, such as drip, drip lines, and bubblers. Low-volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

**Main Line** The pressurized pipeline that delivers water from the water source to the valve or outlet.

**Maximum Applied Water Allowance (MAWA)** The upper limit of annual applied water for the established landscaped area as specified in Section 16.70.050B.3. It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas—including recreation areas; area permanently and solely dedicated to edible plants, such as orchards and vegetable gardens; and areas irrigated with recycled water—are subject to the MAWA, with an ETAF not to exceed 1.0.

**Microclimate** The climate of a small specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

**Mine Land Reclamation Projects** Any surface mining operation with a reclamation plan approval in accordance with the Surface Mining and Reclamation Act of 1975.

**Mulch** Any organic material (such as leaves, bark, or straw) or inorganic mineral materials (such as rocks, gravel, and decomposed granite) left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

**New Construction** For the purposes of the Water Efficient Landscape chapter, a new building with a landscape or other new landscape.

**Operating Pressure** The pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

**Overhead Sprinkler Irrigation Systems** Systems that deliver water through the air (e.g., spray heads and rotors).

**Overspray** The irrigation water which is delivered beyond the target area.

**Permit** An authorized document issued by the City of Redding for new construction or rehabilitated landscape.

**Pervious** Any surface or material that allows the passage of water through the material and into the underlying soil.

**Plant Factor or Plant Water Use Factor** A factor, when multiplied by ETo, that estimates the amount of water needed by plants. For purposes of the Water Efficient Landscape chapter, the plant factor range for low-water-use plants is 0 to 0.3, the plant factor range for moderate-water-use plants is 0.4 to 0.6, and the plant factor range for high-water-use plants is 0.7 to 1.0. Plant factors cited in the Water Efficient Landscape chapter are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."

**Precipitation Rate** The rate of application of water measured in inches per hour.

**Project Applicant** The individual or entity submitting a Landscape Documentation Package required under Section 16.70.050 to request a permit, plan check, or use permit from the City of Redding. A project applicant may be the property owner or his or her designee.

**Rain Sensor or Rain-Sensing Shutoff Device** A component which automatically suspends an irrigation event when it rains.

**Record Drawing or As-Builts** A set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

**Recreational Area** Areas dedicated to active play, such as parks, sports fields, and golf courses, where turf provides a playing surface.

**Recycled Water, Reclaimed Water, or Treated Sewage Effluent Water** Treated or recycled wastewater of a quality suitable for nonpotable uses, such as landscape irrigation and water features. This water is not intended for human consumption.

**Reference Evapotranspiration, or ETo** A standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Section 16.70.050.B.2.a, Water Efficient Landscape Worksheet, and is an estimate of the evapotranspiration of a large field of 4- to 7-inch-tall cool-season grass that is well-watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowances, so that regional differences in climate can be accommodated.

**Rehabilitated Landscape** Any re-landscaping project that requires a permit, plan check, or use permit; meets the requirements of Section 16.07.020, Applicability; where the modified landscape area is greater than 2,500 square feet; and 50 percent of the total landscape area and the modifications occur within one year.

**Runoff** Water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or where there is a slope.

**Soil Moisture Sensing Device or Soil Moisture Sensor** A device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

**Soil Texture** The classification of soil based on its percentage of sand, silt, and clay.

**Special District** Bella Vista, Centerville, Clear Creek.

**Special Landscape Area (SLA)** An area of the landscape dedicated solely to edible plants; areas irrigated with recycled water; water features using recycled water; and areas dedicated to active play, such as parks, sports fields, golf courses, and where turf provides a playing surface.

**Sprinkler Head** A device which delivers water through a nozzle.

**Static Water Pressure** The pipeline or municipal water-supply pressure when water is not flowing.

**Station** An area served by one valve or by a set of valves that operate simultaneously.

**Swing Joint** An irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

**Turf** A groundcover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermuda grass, Kikuyu grass, Seashore Paspalum grass, St. Augustine grass, Zoysia grass, and Buffalo grass are warm-season grasses.

**Valve** A device used to control the flow of water in the irrigation system.

**Water-Conserving Plant Species** A plant species identified as having a low plant factor.

**Water Feature** A design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high-water-use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

**Watering Window** The time of day irrigation is allowed.

**WUCOLS** The Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

#### **16.70.040 LANDSCAPE DOCUMENTATION PACKAGE REVIEW AND APPROVAL REQUIRED**

A complete landscape documentation package must be submitted and found to satisfy the requirements of this chapter prior to authorization for water service and the installation of a new water meter or a change in water service.

- A. City Water Applications. Landscape plans submitted as part of a building plan application through the Building Division shall be routed for review in accordance with procedures established by the Building Official for review.
- B. Water District Applications. Water-conservation measures adopted by any special water district with jurisdiction within the city limits that are more restrictive than these standards shall supercede City standards.
- C. Plan Check Approval Process. The project applicant shall be notified in writing if plans are found to be incomplete or inconsistent with the standards and indicate where such additions or revisions are necessary.
- D. Application Fee. A filing fee set by resolution of the City Council shall accompany each application.
- E. Upon approval of the Landscape Documentation Package, the project applicant shall:
  - 1. Receive a building permit and record the date of the permit on the Certificate of Completion.
  - 2. Provide a copy of the approved Landscape Documentation Package to the property owner or site manager.

- 3. Submit a copy of the Water Efficient Landscape Worksheet to the Municipal Utility Department or to the appropriate water district, whichever is applicable to the project site.
- F. In the event that a water-supply emergency is declared by a water purveyor, these landscape requirements shall be deferred for those projects served within the impacted area until such time as the water-supply emergency has been lifted.

**16.70.050 ELEMENTS OF LANDSCAPE DOCUMENTATION PACKAGE**

The Landscape Documentation Package shall contain the following:

- A. Water Efficiency Application Form.
- B. Water Efficient Landscape Worksheet consisting of:
  - 1. A hydrozone information table and a hydrozone map for the landscape project.
  - 2. A water budget calculation for the landscape project, adhering to the following:
    - a. For the calculation of the Maximum Applied Water Allowance and Estimated Total Water Use, the following ETo values shall apply:

REFERENCE EVAPOTRANSPIRATION (ETo) TABLE												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
1.2	1.4	2.6	4.1	5.6	7.1	8.5	7.3	5.3	3.2	1.4	0.9	48.8

- b. The plant factors used shall be from WUCOLS, which are as follows:
  - i. Low-water-use plants = 0 to 0.3
  - ii. Moderate-water-use plants = 0.4 to 0.6
  - iii. High-water-use plants= 0.7 to 1.0
- c. All water features shall be included in the high-water-use hydrozone, and temporarily irrigated areas shall be included in the low-water-use hydrozone.
- d. All Special Landscape Areas shall be identified and their water use calculated; the ETAF for all Special Landscape Areas shall not exceed 1.0.
- 3. Maximum Applied Water Allowance (MAWA)
  - a. A project’s Maximum Applied Water Allowance shall be calculated using the following formula:

$$MAWA = (ETo) (0.62) [(0.7 \times LA) + (0.3 \times SLA)]$$

Where:

- MAWA = Maximum Applied Water Allowance (gallons per year)
- 0.62 = Conversion Factor
- 0.7 = ET Adjustment Factor
- LA = Landscape Area (square feet)
- 0.3 = Additional Water Allowance for SLA
- SLA = Special Landscape Area (square feet)
- ETo = Reference Evapotranspiration (inches per year)

4. Estimated Total Water Use (ETWU)

- a. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance.
- b. The sum of the Estimated Total Water Use calculations for all hydrozones shall not exceed the Maximum Applied Water Allowance.
- c. A project's Estimated Total Water Use shall be calculated using the following formula:

$$ETWU = (ETo) (0.62) [(PF \times HA) \div IE + SLA]$$

Where:

- ETWU = Estimated Total Water Use (gallons per year)
- ETo = Reference Evapotranspiration (inches per year)
- PF = Plant Factor from WUCOLS
- HA = Hydrozone Area (square feet)
- 0.62 = Conversion Factor
- IE = Irrigation Efficiency (minimum 0.71)
- SLA = Special Landscape Area (square feet)

C. Soil Management Report

In order to reduce runoff and encourage healthy plant growth, a soil management report satisfying the following criteria shall be submitted as a part of the Landscape Documentation Package:

Results of a soils analysis prepared by a qualified professional or laboratory; soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

- 1. The soil analysis shall include the following:
  - a. Determination of soil texture, indicating the percentage of organic matter.
  - b. An appropriate soil infiltration rate determined by laboratory test or soil texture/infiltration rate tables.
  - c. Measure of pH.

- d. Total soluble salts and sodium.
  - e. Recommendations
2. The project applicant shall submit documentation verifying implementation of soil analysis report recommendations in the Landscape Plan.

D. Landscape Design Plan.

A landscape design plan meeting the following requirements shall be submitted as part of the Landscape Documentation Package.

1. Plant Material

- a. Any plant may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance. To encourage the efficient use of water, the following practices are highly recommended:
  - i. Protection and preservation of native species and natural vegetation.
  - ii. Selection of water-conserving plant and turf species.
  - iii. Selection of plants from local and regional landscape program plant lists.
- b. Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use as specified in Section 16.70.050.E.1.d, *Elements of Landscape Documentation Package - Irrigation Design Plan - Irrigation System*.
- c. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:
  - i. Use the Sunset Western Climate Zone System, which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate.
  - ii. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, power lines).
  - iii. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
- d. Turf is not allowed on slopes greater than 25 percent where the toe of the slope is adjacent to an impermeable hardscape and where 25 percent means 1 foot of

vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).

- e. A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required in accordance with Public Resources Code Section 4291(a) and (b) and Chapter 9.20 of the Redding Municipal Code. Avoid fire-prone plant materials and highly flammable mulches.
- f. The use of invasive and/or noxious plant species is discouraged.
- g. The architectural guidelines of a common-interest development, which includes community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water-use plants as a group.

## 2. Water Features

- a. Recirculating water systems shall be used for water features.
- b. Where available, recycled water shall be used as a source for decorative water features.
- c. Surface area of a water feature shall be included in the high-water-use hydrozone area of the water budget calculation.
- d. Pool and spa covers are highly recommended.

## 3. Mulch and Amendments

- a. A minimum 2-inch layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting ground covers, or direct seeding applications.
- b. Stabilizing mulching products shall be used on slopes.
- c. The mulching portion of the seed/mulch slurry in hydroseeded applications shall meet the mulching requirement.
- d. Soil amendments shall be incorporated according to recommendations of the Soil Management Report and what is appropriate for the plants selected.

## 4. Landscape Plan

The project Landscape Plan shall, at a minimum, provide the following information, in addition to meeting the form and content of the City of Redding Landscape Plan Standards adopted by the Planning Commission:

- a. Delineation and labeling of each hydrozone by number, letter, or other method.
- b. Identification of each hydrozone as low, moderate, high, or mixed water use.
- c. Identification of recreational areas.
- d. Identification of areas permanently and solely dedicated to edible plants.
- e. Identification of areas irrigated with recycled water
- f. Identification of type of mulch and application depth.
- g. Identification of soil amendments, type, and quantity.
- h. Identification of type and surface area of water features.
- i. Identification of hardscapes (pervious and nonpervious).
- j. Location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the Landscape Design Plan and examples include, but are not limited to:
  - i. Infiltration beds, swales, and basins that allow water to collect and soak into the ground.
  - ii. Constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants.
  - iii. Pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete) that minimize runoff.
- k. Identification of any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.).
- l. Contain the following statement: "I have complied with the criteria of the Water-Efficient Landscape chapter and applied it for the efficient use of water in the Landscape Design Plan."
- m. The signature of a licensed landscape architect; licensed landscape contractor, who is a designer/builder; or as stipulated under the State Business and Professions Code.

E. Irrigation Design Plan.

For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturer's recommendations. The irrigation system and its related

components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

1. Irrigation System

- a. Dedicated landscape water meters are required for landscape projects greater than 5,000 square feet to facilitate water management and are highly recommended for projects less than 5,000 square feet.
- b. Weather-based irrigation controllers or soil moisture-based controllers or other self-adjusting irrigation controllers shall be required for irrigation scheduling in all irrigation systems.
- c. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
  - i. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices, such as in-line pressure regulators, booster pumps, or other devices, shall be installed to meet the required dynamic pressure of the irrigation system.
  - ii. Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
- d. Sensors (rain, freezing weather, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
- e. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required as close as possible to the point of connection to the water supply to minimize water loss in case of an emergency (such as a mainline break) or routine repair.
- f. Backflow-prevention devices shall be required to protect the water supply from contamination by the irrigation system. Backflow-prevention devices shall be installed in accordance with the City of Redding Public Works Construction Standards and State Building, Plumbing, and Health and Safety Codes.
- g. High-flow sensors that detect and report high-flow conditions created by system damage or malfunction are recommended.
- h. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto

nontargeted areas, such as adjacent property, nonirrigated areas, hardscapes, roadways, or structures.

- i. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
- j. The design of the irrigation system shall conform to the hydrozones of the Landscape Design Plan.
- k. The irrigation system must be designed and installed to meet irrigation efficiency criteria as described in Section 16.70.050.B, *Elements of Landscape Documentation Package - Water Efficient Landscape Worksheet*, regarding the Maximum Applied Water Allowance.
- l. If water is being provided by a local water district (i.e., Bella Vista, Centerville, or Clear Creek Water District), the project applicant shall consult with the appropriate district about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
- m. In mulched planting areas, the use of low-volume irrigation is required to maximize water infiltration into the root zone.
- n. Sprinkler heads and other emission devices shall have matched precipitation rates unless otherwise directed by the manufacturer's recommendations.
- o. Head-to-head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
- p. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high-traffic areas.
- q. Check valves or anti-drain valves are required for all irrigation systems.
- r. Narrow or irregularly shaped areas, including turf less than 8 feet in width in any direction, shall be irrigated with subsurface irrigation or low-volume irrigation technology.
- s. Overhead irrigation shall not be permitted within 24 inches of any nonpermeable surface. Allowable irrigation within the setback from nonpermeable surfaces may include drip, drip line, or other low-flow nonspray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if any of the following occur:
  - i. The landscape area is adjacent to permeable surfacing and there is no overspray or runoff.

- ii. The adjacent nonpermeable surfaces are designed and constructed to drain entirely to landscape.
- iii. The irrigation designer specifies an alternative design or technology as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 16.70.050.E.1.h, *Elements of Landscape Documentation Package - Irrigation Design Plan - Irrigation System*. Prevention of overspray and runoff must be confirmed during an irrigation audit.
- t. Slopes greater than 25 percent shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inch per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology as part of the Landscape Documentation Package and clearly demonstrates that no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during irrigation audit.
- u. Hydrozone.
  - i. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
  - ii. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
  - iii. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
  - iv. Individual hydrozones that mix plants of moderate- and low-water use or moderate- and high-water use may be allowed if either of the following occurs:
    - (a) Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor.
    - (b) The plant factor of the higher-water-using plant is used for calculations.
  - v. Individual hydrozones that mix high- and low-water-use plants shall not be permitted.
  - vi. On the Landscape Design Plan and Irrigation Design Plan, hydrozone areas shall be designated by number, letter, or other designation. On the Irrigation Design Plan, the areas irrigated by each valve shall be designated and assigned a number to each valve. This valve number shall be provided in the Hydrozone Information Table and used to assist with preinspection and final inspection of the irrigation system and programming the controller.

2. Irrigation Design Plan Specifications.

The Irrigation Design Plan shall, at a minimum, contain the following:

- a. Location and size of separate water meters for landscape.
- b. Location, type, and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture-sensing devices, rain switches, quick couplers, pressure regulators, and backflow-prevention devices.
- c. Static water pressure at the point of connection to the public water supply.
- d. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station.
- e. Recycled water-irrigation systems as specified in Section 16.70.110, *Recycled Water*.
- f. The following statement: "I have complied with the criteria of the water efficient landscape chapter and applied it accordingly for the efficient use of water in the Irrigation Design Plan."
- g. The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor who is a designer/builder, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641 through 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.

F. Grading Design Plan.

For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for a grading permit satisfies this requirement.

1. The project applicant shall submit a Landscape Grading Plan that indicates finished configurations and elevations of the landscape area, including the height of graded slopes, drainage patterns, pad elevations, finish grade percent or ratios of slope, and stormwater-retention improvements, if applicable.
2. To prevent excessive erosion and runoff, the grading plan shall be designed to the extent practical to:
  - a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain onto nonpermeable hardscapes.

- b. Avoid disruption of natural drainage patterns and undisturbed soil.
  - c. Avoid soil compaction in landscape areas.
3. The Grading Design Plan shall bear the signature of a licensed professional as authorized by law and contain the following statement: "I have complied with the criteria of the Water Efficient Landscape Chapter and applied it accordingly for the efficient use of water in the Grading Design Plan."

#### **16.70.060 CERTIFICATE OF COMPLETION**

Upon completion of the installation of landscape and irrigation systems in compliance with the approved Landscape Design Plan, a Certificate of Completion shall be submitted to the City or appropriate water district for review and to the owner of record. The City or appropriate water district shall review the Certificate of Completion and shall approve or deny the certificate. If the Certificate of Completion is denied, the City or appropriate water district shall provide information to the project applicant regarding reapplication, appeal, or other assistance. The Certificate of Completion shall include the following elements:

- A. Project information. This shall include, but is not limited to the date; project name; project address and location; project applicant's name, telephone number, and mailing address; and property owner's name, telephone number, and mailing address.
- B. Certification by either the signer of the Landscape Design Plan, the signer of the Irrigation Design Plan, or the licensed landscape contractor that the landscape project has been installed in accordance with the approved Landscape Documentation Package. Where there have been significant approved changes made in the field during construction, "as-built" or record drawings shall be included with the certification.
- C. Irrigation scheduling parameters used to set the controller (see Section 16.70.070, *Irrigation Scheduling*).
- D. Landscape and irrigation maintenance schedule (see Section 16.70.080, *Irrigation Maintenance Schedule*).
- E. Irrigation audit report (see Section 16.70.090, *Irrigation Audit, Survey, and Water Analysis*).
- F. Soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 16.70.050.C, *Elements of Landscape Documentation Package - Soil Management Report*).

#### **16.70.070 IRRIGATION SCHEDULING**

For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

- A. Irrigation scheduling shall be regulated by automatic irrigation controllers.
- B. Overhead irrigation shall be scheduled between 8 p.m. and 10 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the City or water district, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
- C. For implementation of the irrigation schedule, irrigation run times, emission device, flow rate, and current reference evapotranspiration shall be considered, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data or soil moisture sensor data.
- D. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
  - 1. The plant establishment period.
  - 2. The established landscape.
  - 3. Temporarily irrigated areas.
- E. Each irrigation schedule shall consider for each station all the following that apply:
  - 1. Irrigation interval (days between irrigation).
  - 2. Irrigation run times (hours or minutes per irrigation event to avoid runoff).
  - 3. Number of cycle starts required for each irrigation event to avoid runoff.
  - 4. Amount of applied water scheduled to be applied on a monthly basis.
  - 5. Application-rate setting.
  - 6. Root-depth setting.
  - 7. Plant-type setting.
  - 8. Soil-type setting.
  - 9. Slope-factor setting.
  - 10. Shade-factor setting.
  - 11. Irrigation-uniformity or efficiency setting.

**16.70.080 LANDSCAPE AND IRRIGATION MAINTENANCE SCHEDULE**

Landscapes shall be maintained to ensure water use efficiency.

- A. A regular maintenance schedule shall be submitted with the Certificate of Completion. A regular maintenance schedule shall include, but is not limited to: routine inspection, adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas; and removing obstructions to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
- B. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.

- C. A project applicant is encouraged to implement sustainable or environmentally friendly practices for overall landscape maintenance.

**16.70.090 IRRIGATION AUDIT, IRRIGATION SURVEY, AND IRRIGATION WATER USE ANALYSIS**

An irrigation audit is required for new construction and rehabilitated landscape projects installed after January 1, 2010. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor. The project applicant shall submit an irrigation audit report with the Certificate of Completion to the local agency that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

**16.70.100 IRRIGATION EFFICIENCY**

For the purpose of determining Maximum Applied Water Allowance, average irrigation efficiency is assumed to be 0.71. Irrigation systems shall be designed, maintained, and managed to meet or exceed an average landscape irrigation efficiency of 0.71.

**16.70.110 RECYCLED WATER**

The installation of recycled water irrigation systems shall allow for the current and future use of recycled water unless a written exemption has been granted as described in Section 16.70.110(A).

- A. Decorative water features shall use recycled water unless a written exemption has been granted by the City or water district, whichever is applicable, stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future. An exemption shall be presumed to exist for the connection of recycled water irrigation systems unless the utility with jurisdiction requires such connection.
- B. All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and state laws.
- C. Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for Special Landscape Areas shall not exceed 1.0.

**16.70.120 STORMWATER MANAGEMENT**

Stormwater-management practices minimize runoff and increase infiltration, which recharges groundwater and improves water quality. Implementing stormwater best management practices into the Landscape and Grading Design Plans to minimize runoff and to increase on-site retention and infiltration are encouraged.

- A. Project applicants shall refer to the City or Regional Water Quality Control Board for information on any applicable stormwater ordinances and stormwater-management plans.
- B. Rain gardens, cisterns, and other landscapes features and practices that increase rainwater capture and create opportunities for infiltration and/or on-site storage are recommended.

### **16.70.130 MODEL HOMES**

All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes described this chapter.

- A. Signs shall be used to identify the model as an example of a water efficient landscape featuring elements, such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme.
- B. Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

### **16.70.140 ENVIRONMENTAL REVIEW**

Projects subject to the Water Efficient Landscape chapter shall comply with the California Environmental Quality Act (CEQA), as appropriate.

### **16.70.150 PROVISIONS FOR EXISTING LANDSCAPES**

This section shall apply to all existing landscapes that were installed before January 1, 2010, and are over one acre in size.

- A. Landscapes that have a water meter are subject to a City irrigation or appropriate water district audit of irrigation water use to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as:  $MAWA = (0.8)(ET_o)(LA)(0.62)$ . Landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
- B. Landscapes that do not have a water meter are subject to a City audit of irrigation water use to evaluate water use and provide recommendations, as necessary, in order to prevent water waste.

### **16.70.160 WATER-WASTE PREVENTION**

- A. It shall be unlawful for any Responsible Party (as defined in Section 1.14.020 of the Redding Municipal Code) to willfully permit runoff to leave the target landscape area due to low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways, parking lots, or structures.
- B. Restrictions regarding overspray and runoff may be modified if either of the following occurs:
  - 1. The landscape area is adjacent to permeable surfacing and no runoff occurs.
  - 2. The adjacent nonpermeable surfaces are designed and constructed to drain entirely to landscape.

### **16.70.170 RESERVED**

**16.70.180 ENFORCEMENT**

A violation of any portion of this chapter and of guidelines adopted pursuant to this chapter is subject to the provisions in Redding Municipal Code Chapter 1.13, *Administrative Citations*, in addition to other civil or administrative remedies.

**Section 3.** The passage of this ordinance is not a "project" according to the definition in the California Environmental Quality Act and, therefore, is not subject to the provisions requiring environmental review.

**Section 4.** This ordinance shall take effect 30 days after the date of its adoption, and the City Clerk shall certify to the adoption thereof and cause its publication according to law.

**I HEREBY CERTIFY** that the foregoing ordinance was introduced and read by the City Council at a regular meeting on the 5<sup>th</sup> day of January 2010 and was duly read and adopted at a regular meeting on the \_\_\_ day of \_\_\_\_\_ 2009 by the following vote:

**AYES: COUNCIL MEMBERS:**  
**NOES: COUNCIL MEMBERS:**  
**ABSENT: COUNCIL MEMBERS:**  
**ABSTAIN: COUNCIL MEMBERS:**

\_\_\_\_\_  
**PATRICK JONES, Mayor**

**ATTEST:**

**FORM APPROVED:**

\_\_\_\_\_  
**PAMELA MIZE, Deputy City Clerk**

\_\_\_\_\_  
**RICHARD A. DUVERNAY, City Attorney**

## **APPENDIX P**

### **Notice of Approved Plan Availability for Public Review**

**(within 30 days of Approval)**

**Plan will be available for public review at City Hall, Corporate Yard office and on the City website.**

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## **APPENDIX Q**

### **California Urban Water Conservation Council**

#### **2010 GPCD Target Worksheets**

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# GPCD Matrix

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL GPCD
2010	117.4	105.6	130.1	131.6	217.8	362.7	447.4	445.9	350.1	260.1	129.7	116.5	234.6
2009	153.0	130.2	153.7	242.7	319.0	352.0	491.5	477.6	411.4	249.1	163.5	140.8	273.7
2008	138.0	129.6	215.7	300.1	386.3	441.1	475.2	478.0	412.5	283.8	159.1	147.9	297.3
2007	153.6	132.6	197.1	233.0	342.1	450.8	499.4	479.7	387.6	216.9	178.0	144.4	284.6
2006	128.1	128.4	128.8	152.8	353.7	424.6	534.3	445.4	413.9	282.8	158.5	153.8	275.4
2005	132.4	131.6	167.3	178.7	237.9	358.4	516.5	517.6	392.1	305.6	172.5	145.0	271.3
2004	146.4	134.5	202.4	256.8	345.4	444.4	518.4	491.8	413.8	271.6	160.0	150.1	294.6
2003	128.3	124.1	146.8	155.9	258.7	451.9	504.1	435.5	407.3	351.2	177.2	140.5	273.5
2002	118.3	122.1	155.3	227.7	248.0	430.7	507.5	476.5	406.8	330.3	175.6	142.3	278.4
2001	130.2	108.6	169.4	208.2	395.7	432.2	440.1	448.4	370.4	315.1	157.0	129.8	275.4
2000	143.2	121.4	165.4	249.7	308.8	431.1	481.6	489.9	314.0	247.9	163.5	157.9	272.9
1999	143.0	109.4	139.7	197.8	363.2	421.0	483.8	412.1	385.1	316.6	152.3	144.5	272.4
1998													
1997													
1996													
1995													
1994													
1993													
1992													
1991													
1990													

Recycled water accounts for 0 % of 2008 deliveries, therefore select a 10 year baseline period using the selection buttons below

Baseline Ending In...	Baseline 10- years	N/A	N/A	N/A	N/A	N/A
	<input checked="" type="radio"/>	<input type="radio"/>				
2010	<input type="radio"/>	275.9				
2009	<input type="radio"/>	279.7				
2008	<input checked="" type="radio"/>	279.6				
2007	<input type="radio"/>	277.6				
2006	<input type="radio"/>	276.7				
2005	<input type="radio"/>	276.9				

Ending in...	Baseline 5- years
<input type="radio"/>	2010 273.1
<input type="radio"/>	2009 280.5
<input checked="" type="radio"/>	2008 284.7
<input type="radio"/>	2007 279.9

Base daily per capita water use (10-15yr baseline) **279.6**  
 Base daily per capita water use (5yr baseline) **284.7**

User selection buttons:



## TARGETS / COMPLIANCE (CUWCC MOU)

### Baseline / Initial GPCD (Use option buttons to select)

GPCD in 2006  275.4  
 Baseline GPCD (1997 to 2006)  276.7

GPCD in 2010 234.6  
 GPCD Target for 2018 225.9

### Potable Water GPCD for each Year in the Baseline Period

Year	GPCD
2006	275.4
2005	271.3
2004	294.6
2003	273.5
2002	278.4
2001	275.4
2000	272.9
1999	272.4
1998	
1997	

### Biennial GPCD Compliance Table

Year	Report	Target		Highest Acceptable Bound	
		% Base	GPCD	% Base	GPCD
2010	1	96.4%	265.5	100%	275.4
2012	2	92.8%	255.6	96.4%	265.5
2014	3	89.2%	245.7	92.8%	255.6
2016	4	85.6%	235.8	89.2%	245.7
2018	5	82.0%	225.9	82.0%	225.9

### Monthly GPCD Data for Weather Normalization

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010	117.4	105.6	130.1	131.6	217.8	362.7	447.4	445.9	350.1	260.1	129.7	116.5
Baseline avg*	133.8	122.5	159.4	203.4	313.9	424.3	498.3	464.7	387.9	302.7	164.6	145.5

\* The average for each month is based on the baseline period 1997 to 2006

## **APPENDIX R**

### **United States Bureau of Reclamation Redding and Buckeye Contract Supplies by Year & Redding Contract Supply by Month**

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**BUREAU OF RECLAMATION**  
**Redding Contract**  
**No. 14-06-200-2871A**  
**Schedule of Water Requirements In Acre Feet**

Year	Base Supply	Project Water Supply	Total Supply
1964	3,825	675	4,500
1965	4,250	750	5,000
1966	4,675	825	5,500
1967	5,100	900	6,000
1968	5,525	975	6,500
1969	5,950	1,050	7,000
1970	6,375	1,125	7,500
1971	6,800	1,200	8,000
1972	7,225	1,275	8,500
1973	7,650	1,350	9,000
1974	8,075	1,425	9,500
1975	8,500	1,500	10,000
1976	8,925	1,575	10,500
1977	9,350	1,650	11,000
1978	9,775	1,725	11,500
1979	10,200	1,800	12,000
1980	10,625	1,875	12,500
1981	11,050	1,950	13,000
1982	11,390	2,010	13,400
1983	11,730	2,070	13,800
1984	12,070	2,130	14,200
1985	12,410	2,190	14,600
1986	12,750	2,250	15,000
1987	13,090	2,310	15,400
1988	13,345	2,355	15,700
1989	13,600	2,400	16,000
1990	13,855	2,445	16,300
1991	14,110	2,490	16,600
1992	14,365	2,535	16,900
1993	14,620	2,580	17,200
1994	14,875	2,625	17,500
1995	15,130	2,670	17,800
1996	15,385	2,715	18,100
1997	15,640	2,760	18,400
1998	15,895	2,805	18,700
1999	16,150	2,850	19,000
2000	16,405	2,895	19,300
2001	16,660	2,940	19,600
2002	16,830	2,970	19,800
2003	17,850	3,150	21,000

Point of Diversion (River Mile): 246.7R and 246.25L

No contract fee charged on Base Supply.

\$9.00 per acre foot fee charged on Project Water Supply annually.

If Project Water Supply is diverted there is also a \$13.76 per acre foot fee charged for the CVPIA (Central Valley Project Improvement Act - Restoration Fund).

Exhibit A

CITY OF REDDING  
Sacramento River

SCHEDULE OF WATER REQUIREMENTS

	<u>Base Supply</u> (acre-feet)	<u>Project Water</u> (acre-feet)	<u>Contract Total</u> (acre-feet)
March	<u>1,100</u>	<u>0</u>	<u>1,100</u>
April	<u>1,400</u>	<u>0</u>	<u>1,400</u>
May	<u>1,925</u>	<u>0</u>	<u>1,925</u>
June	<u>2,675</u>	<u>25</u>	<u>2,700</u>
July	<u>2,150</u>	<u>850</u>	<u>3,000</u>
August	<u>750</u>	<u>2,250</u>	<u>3,000</u>
September	<u>2,150</u>	<u>25</u>	<u>2,175</u>
October	<u>1,800</u>	<u>0</u>	<u>1,800</u>
November	<u>1,150</u>	<u>0</u>	<u>1,150</u>
December	<u>1,050</u>	<u>0</u>	<u>1,050</u>
January	<u>900</u>	<u>0</u>	<u>900</u>
February	<u>800</u>	<u>0</u>	<u>800</u>
Total	<u>17,850</u>	<u>3,150</u>	<u>21,000</u>

Points of Diversion: 246.7R, 246.25L

Dated: 01-31-2005

# WATER UTILITY

## Buckeye Contract

### No. 14-06-200-5272A

#### Schedule of Water Requirements In Acre Feet

Year	Cumulative Minimum
1970	375
1971	840
1972	930
1973	1,025
1974	1,170
1975	1,215
1976	1,310
1977	1,410
1978	1,510
1979	1,610
1980	1,710
1981	1,810
1982	1,920
1983	2,030
1984	2,140
1985	2,250
1986	2,360
1987	2,470
1988	2,590
1989	2,710
1990	2,830
1991	2,960
1992	3,090
1993	3,240
1994	3,390
1995	3,540
1996	3,700
1997	3,860
1998	4,030
1999	4,200
2000	4,370
2001	4,540
2002	4,720
2003	4,900
2004	5,090
2005	5,280
2006	5,480
2007	5,690
2008	5,910
2009	6,140

All Totals Reported In Acre Feet.

#### Buckeye Contract Water Fees Per Acre Foot:

Sacramento River (through Pump House #3 & #4)	= \$21.48
Spring Creek Conduit (Buckeye W.T.P.)	= \$19.85
Toyon Pipeline (Summit City Pressure Zone)	= \$15.00
CVPIA Restoration Fund (fee for all Buckeye water)	= \$13.96

BOFRBC.XLS



# United States Department of the Interior

BUREAU OF RECLAMATION  
Northern California Area Office  
16349 Shasta Dam Boulevard  
Shasta Lake, California 96109-8400

PUBLIC WORKS  
FIELD OPERATIONS  
FEB 27 2012

IN REPLY REFER TO:

NC-442  
WTR-4.00

FEB 23 2012

Mr. Ray Duryee  
City of Redding  
777 Cypress Avenue  
Redding, California 96001-2718

Subject: Notice of 2012 Contract Water Allocation Pursuant to Contract No.  
14-06-200-5272A-LTR1 (Contract), - Municipal and Industrial Supply -  
Central Valley Project (CVP), California

Dear Mr. Duryee:

Although reservoir levels in both the Federal and state water projects are average for this time of year, current forecasts indicate below average precipitation and runoff. Based upon the conservative forecast identified in the February 22, 2012, press release and consistent with Article 12 of your contract with the Bureau of Reclamation, this letter shall serve as notice that there will be a reduction in the water supply available for the 2012 contract year, resulting in an allocation of 75 percent of the City of Redding's historical use for M&I which equals 4,304 acre-feet. Please refer to the draft CVP M&I Water Shortage Policy dated September 11, 2001, and the corresponding environmental assessment dated October 2005 for information on the historic use calculation.

Pursuant to Article 4(a) of your contract, Reclamation may update the 2012 water allocation on a monthly basis consistent with the most recent operational and hydrologic information. Please contact Mr. Jake Berens at 530-934-1356 or [jberens@usbr.gov](mailto:jberens@usbr.gov) or Ms. Natalie Wolder at 530-934-1356 or [nwolder@usbr.gov](mailto:nwolder@usbr.gov), if you have any questions.

Sincerely,

Brian Person  
Area Manager

## APPENDIX S

### Completed Urban Water Management Plan Checklist

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
<b>PLAN PREPARATION</b>				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1.1 Section 1.3 Appendix A
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1.4 Appendix L
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Section 1.5 Appendix J
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 1.5 Appendix K
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Table 1 Appendix A
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1.4 Appendix I
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Section 1.5 Appendix J Appendix M
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 1.5 Section 6

**CITY OF REDDING 2010 URBAN WATER MANAGEMENT PLAN**

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Section 1.5 Appendix L
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Appendix P
<b>SYSTEM DESCRIPTION</b>				
8	Describe the water supplier service area.	10631(a)		Section 2.1
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.1 Section 2.2 Section 2.3
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.1 Section 2.3 Table 4
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.3 Table 4
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2.4
<b>SYSTEM DEMANDS</b>				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 3.2 Tables 7-11 Figure 6

**CITY OF REDDING 2010 URBAN WATER MANAGEMENT PLAN**

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	N/A—the City is a water retailer only
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Appendix Q: CUWCC GPCD Worksheets Section 3.2 Figure 6 Section 3.7
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Past: Section 3.1, Table 5 Present: Section 3.1, Table 6 Projected: Section 3.3 Tables 12-14 Totals: Section 3.6 Table 18
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	N/A—no wholesale sales or purchases
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3.4 Table 15
<b>SYSTEM SUPPLIES</b>				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	All sources: Section 4.1 Groundwater: Section 4.2 Table 21 Figure 10 Table 32

**CITY OF REDDING 2010 URBAN WATER MANAGEMENT PLAN**

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate “not applicable” in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4.1 Section 4.2
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Section 4.2 Figure 8 Appendix B
16	Describe the groundwater basin.	10631(b)(2)		Section 4.2 Appendix B
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 4.2
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		N/A—basin is not adjudicated
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		No overdraft present or projected—Section 4.2
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 4.1 (Figure 9) Section 4.2 Table 20 Appendix N (Figure 2)
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4.1 Figure 9 Section 4.2 Table 21 Appendix N (Figure 2)

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No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4.3
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 4.6 Section 5.2
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 4.4
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4.5.1 Tables 23-24 Section 4.5.2
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 4.5.1 Table 23
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 4.5.1 Table 24
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 4.5.2 Table 26
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 4.5.2
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 4.5.2: Projected—Table 25 Comparison—Table 26
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 4.5.2

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No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 4.5.2
<b>WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING <sup>b</sup></b>				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 6
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5.2 Tables 28-34 Figures 10 & 11
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 5.2 Section 5.4 Appendix G
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5.4 Appendix G
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 5.2 Table 31
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Section 5.4 Appendix G
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 5.4 Tables 36-39 Appendix F
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 5.4 Appendix F Appendix G

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No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Appendix G
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 5.5
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Appendix F Appendix G
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5.4, Appendix F, Appendix G
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5.3, Table 35
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5.2, Table 34, Figure 11
<b>DEMAND MANAGEMENT MEASURES</b>				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6 Table 40
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6 Table 40 Appendix E
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		N/A—Data not available

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No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 6 Table 40
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Appendix E

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.