# SECTION 6

# WATER SHORTAGE CONTINGENCY PLAN

## 6.1 LAW

> 10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:
>
> 10632 (c) 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 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f) inclusive on the revenue and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

## 6.2 PREPARATION FOR CATASTROPHIC WATER SUPPLY INTERRUPTIONS

Water supplies may be interrupted or reduced significantly in a number of ways - drought, an earthquake that damages water delivery or storage facilities, or a toxic spill that affects water quality. This section of the UWMP describes how the District plans to respond to such emergencies so that emergency needs are met promptly and equitably.

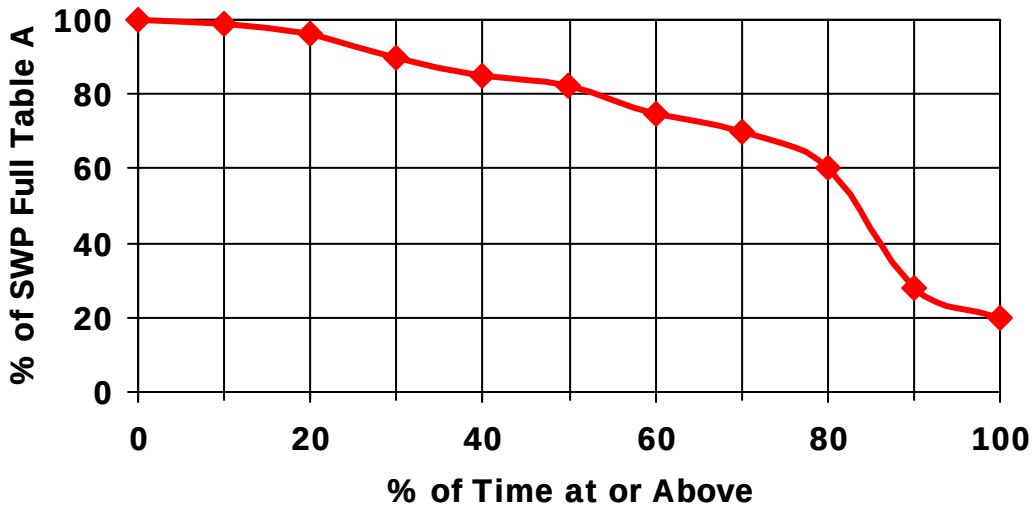
### 6.2.1 Drought Conditions

The Pass Agency is the wholesale contractor for delivery of SWP water to the District. The DWR has prepared a study, which projects the probability of delivering the full entitlement to its wholesale contractors. Figure 6-1, based on data from the Department of Water Resources State Water Project Reliability Report, shows that The State Water Project will be able to deliver 80% of the full Table A amount (4.1 million acre-ft) to their member Agencies approximately 50 percent of the time. The data in the report is based on rainfall and runoff records from 1922 to 1994 (72 years of data) adjusted for current and projected development conditions. During a critical 3-year drought, the project can deliver about 42% of the full Table A; in a single critical dry year, the project can still deliver 20% of full Table A.

As discussed in Section 2, the storage within BSU can be used in times of continued drought and would be recharged with natural water, recycled water and/or imported water during wet years or years of surplus water supply.

**Figure 6-1**

**State Water Project Delivery Reliability**




Source: State Water Project Delivery Reliability Report, California Department of Water Resources, Final 2002

### 6.2.2 Earthquake or other Natural Disasters

The San Andreas Fault passes through the Pass area. If a major earthquake were to occur along the San Andreas Fault in the Pass area many of the District's facilities could be affected.

The California Aqueduct could be ruptured by displacement on the San Andreas Fault, and supply may not be restored for a three to six week period. The situation would be further complicated by physical damage to the pumping equipment and local loss of electrical power. The DWR has a contingency Aqueduct Outage Plan for bringing the California Aqueduct back on line should a major break occur, which they estimate would take approximately four months to repair.

Experts agree it may be at least 72 hours after the earthquake before outside help could get into the local area. Extended supply shortages of both groundwater and imported water, due to power outages and/or equipment damage resulting from a natural disaster, would be severe until the water supply could be restored.

The District's recently constructed storage tanks have been fitted with flexible couplings, which should reduce the damage to local storage. The public would be asked to reduce consumption to minimum health and safety levels. This would provide sufficient time to restore groundwater production, if interrupted.

The District is also working on emergency interties at various locations along Highland Springs Road such that water can be supplied in either direction between the City of Banning and the District.

### 6.2.3 Contamination

The local surface and groundwater quality is excellent. The District has been monitoring the nitrate concentration in its wells over the years and has noticed a gradual increase. At this point in time, no wells are shut down because of nitrate contamination. The District is conducting investigations to determine the exact cause, but it is believed to be from septic tanks and on-site disposal systems in Cherry Valley.

To ensure that its water supply is protected, the District is planning on sewering most of Cherry Valley within the next 10 years.

Other than nitrates, there are no other known sources of contamination..

## 6.3 BEAUMONT-CHERRY VALLEY WATER DISTRICT EMERGENCY FACILITIES

To meet emergency water needs the District has a multi-tiered system. First, approximately 24.25 MG (73.6 acre-feet) of gravity storage is available as listed in Table 6-1. Second, emergency engine generators and backup systems are available for the wells and locations provided in Table 6-2; the wells can supply up to a maximum of 13,350 gpm, or 59.1 acre-feet per day (AF/Day). Note that the year 2005 average demand of 8767 acre-feet is equivalent to 24.0 AF/Day as a comparison. Well Nos. 6 and 12 have auxiliary engine-drives, which can be used in the event of an electrical failure. Well Nos. 4A, 14, 16, 21, and 22 have provisions for portable generator hook-up. Wells 23 and 24 have stationary generators. The District has three portable and two stationary generators. The portable units have the capability of running up to 50, 350 and 550 horsepower (hp) motors. The Cherry Yard Booster station also has a natural gas driven pump that has a capability of pumping 1,500 gpm from the Cherry reservoir to the Noble reservoir. There is an emergency booster at the Well 4A site with a 100 hp motor; which is rated at 500 gpm and delivers water to the Upper Edgar Tank. In addition, the 50 hp Noble Tank Booster, which has a rated capacity of 500 gpm, serves as a backup to the Mesa Pressure Zone and Lower Edgar Tank. In 1998 and 1999, Boosters 21A and 21B which pump from the Cherry Reservoir to Noble Reservoir were also retrofited with transfer switches. In 2001 the District installed stationary backup generators with automatic transfer switches at the headquarters and at Highland Springs Hydropneumatic system.

In addition to the wells listed in Table 6-2, the District has awarded a contract to drill two more large capacity wells on the east side of the District between Cherry Avenue and Highland Springs Road. These should be active by late 2006/ early 2007.

## Table 6-1
## Available Emergency Reservoir Storage 2005

| Available Reservoirs | Total Aboveground Storage (MG) | Total Aboveground Storage (acre-feet)) |
|---|---|---|
| Upper Edgar | 0.75 | 1.5 |
| Lower Edgar | 1.0 | 3.1 |
| Noble & Highland Springs | 3.0 | 9.2 |
| Vineland I and II | 3.0 | 9.2 |
| Cherry I and II | 2.0 | 6.1 |
| Taylor | 3.9 | 12.0 |
| Vineland III (in design) | 3.0 | 9.2 |
| 2650 Zone (Construction to start in 2006) | 5.6 | 17.2 |
| Cherry III (Construction to start in 2006) | 2.0 | 6.1 |
| TOTAL | 24.25 | 73.6 |

The above reservoir storage capacity does not include the Twelfth and Palm Reservoir (0.4 MG). This serves as an equalization tank for the Twelfth and Palm Boosters. .

**Table 6-2**
**Wells With Emergency Generators and Backup Systems**

| Wells No. | Location | Total Capacity GPM | Total Capacity AF/Day | Remarks |
|---|---|---|---|---|
| 12 | Upper Edgar Canyon | 400 | 1.8 | Auxiliary engine drive |
| 14 | Upper Edgar Canyon | 500 | 2.2 | Portable generator connection |
| 6 | Middle Edgar Canyon | 600 | 2.7 | Auxiliary engine drive |
| 4A | Lower Edgar Canyon | 650 | 2.9 | Portable generator connection |
| 16 | BSU | 1,250 | 5.5 | Portable generator connection |
| 21 | BSU | 2,200 | 9.7 | Portable generator connection |
| 22 | BSU | 1,750 | 7.7 | Portable generator connection |
| 23 | BSU | 3000 | 13.3 | Standby Generator |
| 24 | BSU | 3000 | 13.3 | Standby Generator |
| TOTAL | | 13,350 | 59.1 | 19.3 mgd capacity |

## 6.4 STAGES OF ACTION

As mentioned earlier, the District presently receives all of its water supply from underground sources. Although the District presently has a relatively uninterrupted source of water to meet water demands, water shortage contingency planning is still of utmost importance to the District in order to meet future water demands during a prolonged drought condition. The District proposes a four-stage plan of action in the event of a long-term drought condition or loss of supply. The action levels for each stage are presented in the subsections that follow, and the water supply rationing stages are provided in Table 6-3.

**Table 6-3**
**Water Supply Shortage Stages and Conditions**

| RATIONING STAGES | | | | |
|---|---|---|---|---|
| Rationing Stages | 1 | 2 | 3 | 4 |
| Water Supply Conditions (% Total Reduction) | $10\%^{v}$ | $10\%^{m}$ / $20\%^{v}$ | $20\%^{m}$ / $30\%^{v}$ | $20\%^{m}$ / $30\%^{v}$ |

v = voluntary reduction
m = mandatory reduction

### 6.4.1 Stage 1

Stage 1 occurs when the District declares a water shortage and imposes voluntary water conservation. In this stage the District shall notify all its customers that water deliveries may be reduced. The District will recommend a voluntary 10 percent water use reduction based on an established base year to be determined by the District at the time Stage 1 is

implemented. At the same time the District shall start its own public awareness program to encourage the efficient use of water. This will be accomplished by printing articles in the local newspaper and distributing literature and publications to its customers. Public awareness programs will also include educational conservation programs that would be introduced in the schools.

### 6.4.2 Stage 2

Stage 2 occurs when the District determines voluntary water reduction goals are not being met and the declared water shortage has been in effect for two consecutive years. In this stage the District will recommend a 10 percent mandatory reduction in water use and continue its public awareness efforts and conduct a survey on a 20 percent voluntary water use reduction program. The District at this time will begin to establish a water conservation advisory committee. This committee will comprise of officials from the District, the City of Beaumont, and the Cherry Valley community.

### 6.4.3 Stage 3

Stage 3 occurs if the water shortage continues for four consecutive years. In this stage the District will recommend a mandatory 20 percent and a voluntary 30 percent water use reduction from the established base year. The District will adopt a rate structure with financial incentives to encourage efficient water use. The District will also develop a plan and ordinance to enforce penalties for excessive water use and include prohibition against specific wasteful practices such as gutter flooding, open hose car washing, and driveway washdown, etc. The District will analyze the impacts of the plan on the revenues and expenditures of the District and propose measures to overcome those impacts, such as adjustments in customer rates, to help pay for additional sources of water.

### 6.4.4 Stage 4

Stage 4 occurs if the declared water shortage continues for one year after Stage 3. In this stage the District shall conduct a survey on the mandatory 20 percent and voluntary 30 percent water use reduction programs and consider enforcing penalties described in the ordinance developed under Stage 3.

### 6.4.5 Stage 4 Plus –Up to 50% Reduction in Water Supply

The Critical Dry Year identified in Table 4-1 and re-iterated in Table 6-4 results in a water supply of 41% of average (year 2030 development conditions). This represents an almost 60% reduction in water supply. The year 2030 potable water demand is 23,424 AFY. (Refer to Table 2-8).

On the average year in Table 6-4 the total potable water supply is shown as 21,119 AFY which indicates a shortfall of 2305 AFY. This shortfall is intentional in order to reduce the amount of water the District has in storage in the Beaumont Basin. The District could balance the supply and demand through the planned purchase of additional State Project Water.

**Table 6-4**
**Available Potable Water Supply Average and Worst Case Conditions**
**Acre-ft/yr**

| Water Source | Average / Normal Water Year | Single Critical Dry Year |
|---|---|---|
| **Development Basis Year(s) =>** | **2030** | **2030** |
| SWP via San Gorgonio Pass Agency | 6800 | - |
| Groundwater Produced from Edgar Canyon | 1,800 | 0 |
| Groundwater Produced from Beaumont Storage Unit from Temporary Surplus up to BCVWD Adjud. Right | -0 | -0 |
| Total Overlier Rights Distributed to BCVWD | 1049 | 1049 |
| Potable Water Supplied to Overlying Parties (Sunny Cal Egg Ranch and Surroundings) | 549 | 549 |
| Recycled or Non-potable Water Supplied to Overlying Parties | 3,150 | 3,150 |
| Urban Runoff/Groundwater Recharge | 1129 | 100 |
| Captured Infiltration (shallow groundwater) | 300 | 100 |
| Stormwater Capture/Groundwater Recharge | 4,100 | 500 |
| Recycled Water Recharged | 2171 | 2171 |
| Total Allowable Extractions from Beaumont Storage Unit | 19,319 | 7619 |
| **Total Potable Water Supply** | **21,119** | **8219** |
| **Total Potable Water Demand** | **23,424** | **23,424** |

Assumes recycled water meets non-potable water demands

Need to discuss impact of critical dry year on storage etc.

### 6.4.6 Implementation

It is highly unlikely that the District will need to implement any of these stages within the next 20 to 25 years since the available water supply even under worst case conditions is nearly equal to or greater than the demand for the next 3 years. Because of this it is not possible to link specific water supply quantities with "stages" at this time. A Groundwater Management Plan (GWMP) is being developed by STWMA and Watermaster. Data on the BSU characteristics will be collected and analyzed and the

BSU will be modeled to better understand basin performance under varying hydrologic (wet/dry) conditions. This information could be used to determine if specific trigger mechanisms are necessary to protect the BSU.

## 6.5 METHODS OF DEMAND REDUCTION

### 6.5.1 Health and Safety Requirements for Residential Households

Based on commonly accepted estimates of interior residential water use in the United States, Table 6-5 indicates minimum per capita health and safety water requirements. In Stage 1 shortages, customers may adjust either interior or outdoor water use or both, in order to meet the voluntary water reduction goals. Where mandatory reduction is required, Stages 2, 3, and 4, the District staff may recommend to the Board that residential customers meet the interior water use shown below or be subject to penalties and charges.

**Table 6-5**
**Per Capita Health & Safety Water Quantity Calculations**

| | Non-Conserving Fixtures | | Habit Changes[1] | | Conserving Fixtures[2] | |
|---|---|---|---|---|---|---|
| Toilets | 5 flushes x 5.5 gpf | 27.5 | 3 flushes x 5.5 gpf | 16.5 | 5 flushes x 1.6 gpf | 8.0 |
| Shower | 5 min x 4.0 gpm | 20.0 | 4 min x 3.0 gpm | 12.0 | 5 min x 2.0 gpm | 10.0 |
| Washer | 12.5 gpcd (1/3 load) | 12.5 | 11.5 gpcd (1/3 load) | 11.5 | 11. 5 gpcd (I /3 load) | 11.5 |
| Kitchen | 4 gpcd | 4.0 | 4 gpcd | 4.0 | 4 gpcd | 4.0 |
| Other | 4 gpcd | 4.0 | 4 gpcd | 4.0 | 4 gpcd | 4.0 |
| Total | gpcd | 68.0 | Total | 48.0 | Total | 37.5 |

[1] Reduced shower use results from shorter and reduced flow. Reduced washer use results from fuller loads.
[2] Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads, and efficient clothes washers.

### 6.5.2 Consumption Reduction Methods and Prohibitions

The City of Beaumont Water Use Regulations Ordinances (Appendices L-M) include prohibitions on various wasteful water uses such as washing sidewalks and driveways with potable water, and allowing plumbing leaks to go uncorrected more than 48 hours after customer notification.

### 6.5.3 Penalties or Charges

Any customer violating the regulations and restrictions on water use set forth in the Water Use Ordinance shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the City may cause a flow-restrictor to be installed in the service. If a flow-restrictor is placed, the violator shall pay the cost of the installation and removal. Any willful violation occurring subsequent to the issuance of the second written warning shall constitute a misdemeanor and may be referred to the City of Beaumont Police Department for prosecution.

**Table 6-6**
**Penalties and Charges**

| Examples of Penalties and Charges | Stage When Penalty May Take Effect |
|---|---|
| Penalties for not reducing consumption | **4** |
| Charges for excess use | **4** |
| Flat fine | **4** |
| Charge per unit over allotment | **4** |
| Flow restriction | **4** |

### 6.5.4 Water Use Restrictions for New Construction

In Stage 4, it may be necessary to discontinue all use of construction water (unless recycled water is used), even if a permit has been issued, and consider banning all use of water for nonessential uses, such as new landscaping and filling pools.

## 6.6 MONITORING WATER DEMANDS & USAGE TRENDS

The District keeps historic and current pumping records on all of its wells and implemented a computer accounting system on its customer's water usage. These records are then used to determine seasonal and annual fluctuations in water use. Within the District, since total water pumped closely approximates water use, the District can compare pumping records from one year to the next to determine actual reductions in water use. The District also, through its accounting system, is able to determine historic and current use by service account and therefore track customer usage during a drought and evaluate the effectiveness of each conservation measure implemented under this plan.

## 6.7 IMPACTS OF WATER RESTRICTIONS ON REVENUES AND EXPENDITURES

The District water rate structure includes a meter charge (bimonthly, regardless of how much water is used) and a commodity charge per 100 cu ft of water used. During times of drought, the revenue from the commodity charge would be reduced by an amount equal to the water conservation effort. The meter charge would not be affected. The reduction in consumption would also reduce the District's energy cost to produce the water.

For 2005, the budget estimated $4.7 million in water sales revenue (meter charge plus commodity charge) and over $890,000 in purchased power to pump the water. About $2.8 million of the $4.7 million water sales revenue is do to the commodity charge. Assuming a given conservation effort impacts the commodity revenue and the energy costs equally, a 10% reduction in water sales would result in net loss of $200,000, (sales less power cost savings). A 20% reduction in water sales would result in a net revenue loss of $400,000. To put this in perspective, the District's total operating revenue for 2005 is $6.56 million. The $400,000 lost revenue represents 6% of the budget.

The year 2005 budget included $92,000 for emergency reserve and $210,000 for

operating reserve. These could be used to absorb the cash shortfall for one year, but it would have to be made up the following year with an appropriate rate increase.

For the case where the water supply would be reduced by 50%, the District would continue to supply water to its customers relying on banked water and the large BSU underground reservoir. Water sales would be reduced but not by 50%. The District anticipates that a 20 to 30% reduction in water sales would result due to increased public awareness, penalties, and tiered rates.

Other factors that should be considered include:

- Increased staff cost with public information programs, water conservation programs, audits, inspections etc. This could amount to as much as one more staff position.
- Increased public outreach costs for publication material, ads, etc.
- Increased cost for water conservation devices such as low flush toilets, hose nozzles etc.

# DRAFT

**RESOLUTION _____**

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE BEAUMONT CHERRY VALLEY WATER DISTRICT
WATER SHORTAGE CONTINGENCY REGULATIONS**

The Board of Directors of the Beaumont Cherry Valley Water District (District) does hereby resolve:

WHEREAS, the Urban Water Management Plan (UWMP), 2005 Update, adopted by the Board contains provisions relating to water shortages and contingencies due to catastrophic outage of state, regional and District supply facilities, hydrologic conditions resulting in lower than normal water supply or other factors which prevent the District from providing as much water as is customary; and

WHEREAS, the District endeavors to supply water in sufficient quantities to protect public health; and

WHEREAS, the District has established four stages of action in the UWMP 2005 Update which impose both voluntary and mandatory reductions in water use depending on the severity of the shortage,

NOW, THEREFORE, BE IT RESOLVED, by the Board of Directors of the District as follows:

1. The General Manager is hereby authorized to declare a Water Shortage according to the Water Shortage Contingency Plan in the UWMP 2005 Update
2. The General Manager is hereby authorized and directed to implement the various stages identified in the UWMP 2005 Update
3. The General Manager shall monitor water use and recommend to the Board of Directors additional measures as may be required to conserve water resources and ensure public health.

ADOPTED this _____

BEAUMONT CHERRY VALLEY WATER DISTRICT

_____

President of the Board of Directors of the

Beaumont Cherry Valley Water District