

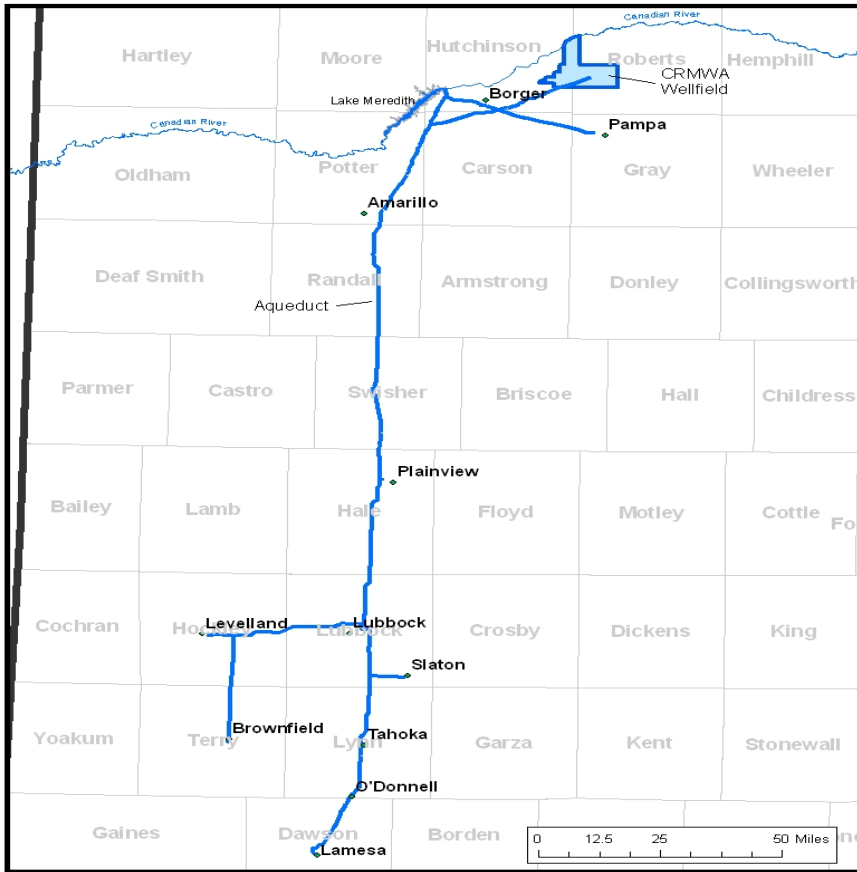
**WATER CONSERVATION PLAN  
FOR THE  
Canadian River Municipal Water Authority**

**Section I. WHOLESALE SERVICE AREA POPULATION AND CUSTOMER  
DATA**

**A. Population & Service Area Data**

The Canadian River Municipal Water Authority (CRMWA) was created by the Texas State Legislature to provide a source of municipal and industrial water for its eleven member cities, which are Amarillo, Borger, Brownfield, Lamesa, Levelland, Lubbock, O'Donnell, Pampa, Plainview, Slaton, and Tahoka. The CRMWA is located in the Texas Panhandle and South Plains, a region of approximately 12,000 square miles with an estimated population of 616,482 people. Of this area the CRMWA only provides water to approximately 490,601 people (Census Bureau estimate for 2006) via a 358- mile aqueduct system. Figure 1 illustrates the CRMWA's service area and aqueduct system.

Figure 1 – The CRMWA's Aqueduct System and Service Area



1. Population served for previous five years (taken from US Census Bureau website – 2007 data are not available):

| <b>Year</b> | <b>Population</b> |
|-------------|-------------------|
| 2006        | 490,601           |
| 2005        | 485,695           |
| 2004        | 481,626           |
| 2003        | 478,223           |
| 2002        | 474,449           |

\*Estimated Population

2. Projected population for service area in the following decades (taken from Texas Water Development Board website):

| <b>Year</b> | <b>Population</b> |
|-------------|-------------------|
| 2010        | 702,069           |
| 2020        | 758,505           |
| 2030        | 802,419           |
| 2040        | 847,924           |
| 2050        | 893,283           |

## B. Customer Data

### 1. Based on 2008 Water Allocations & Deliveries:

| Wholesale Customer | Allocated Amount<br>(acre-feet) | Delivered Amount<br>(acre-feet) |
|--------------------|---------------------------------|---------------------------------|
| Lubbock            | 29,646.40                       | 29,625.26                       |
| Amarillo           | 31,427.90                       | 24,503.00                       |
| Plainview          | 2,952.80                        | 2,425.54                        |
| Pampa              | 3,948.90                        | 2,701.89                        |
| Borger             | 4,439.20                        | 3,423.15                        |
| Levelland          | 2,232.00                        | 1,609.51                        |
| Lamesa             | 1,743.20                        | 1,540.90                        |
| Brownfield         | 1,758.40                        | 1,235.59                        |
| Slaton             | 1,260.80                        | 1,007.75                        |
| Tahoka             | 368.00                          | 298.01                          |
| O'Donnell          | 222.40                          | 121.18                          |
| Total              | 80,000.00                       | 68,491.78                       |

## Section II. Water Use Data for Service Area

### A. Water Delivery

In 2008, the CRMWA delivered 68,492 acre-feet of raw water.

### B. Water Accounting Data

1. Total amount of water (acre-feet) diverted at points of diversion(s) for previous five years for all water uses:

| Year         | 2003          | 2004          | 2005          | 2006          | 2007          |
|--------------|---------------|---------------|---------------|---------------|---------------|
| January      | 5,366         | 4,443         | 5,153         | 6,030         | 3,500         |
| February     | 5,646         | 5,102         | 4,272         | 5,788         | 4,348         |
| March        | 7,159         | 6,396         | 4,477         | 6,766         | 5,625         |
| April        | 7,642         | 4,893         | 6,297         | 7,216         | 7,292         |
| May          | 8,794         | 6,610         | 8,996         | 9,583         | 5,677         |
| June         | 9,105         | 9,183         | 7,815         | 7,968         | 5,923         |
| July         | 9,222         | 6,571         | 9,080         | 8,952         | 7,967         |
| August       | 9,553         | 7,731         | 9,968         | 5,235         | 7,511         |
| September    | 9,735         | 6,750         | 8,569         | 5,680         | 6,457         |
| October      | 6,322         | 4,433         | 7,376         | 7,839         | 7,068         |
| November     | 6,393         | 5,829         | 5,697         | 5,715         | 5,032         |
| December     | 6,690         | 5,187         | 5,016         | 5,189         | 4,704         |
| <b>Total</b> | <b>91,627</b> | <b>73,129</b> | <b>82,716</b> | <b>81,961</b> | <b>71,104</b> |

2. Wholesale population served and total amount of water (acre-feet) diverted for **municipal use** for previous five years:

| <b>Year</b> | <b>Total Population Served</b> | <b>Total Annual Water Diverted for Municipal Use (acre-feet)</b> |
|-------------|--------------------------------|--|
| 2003        | 483,400                        | 88,312   |
| 2004        | 487,100                        | 67,096   |
| 2005        | 485,695                        | 77,529   |
| 2006        | 490,601                        | 79,481   |
| 2007        | Not Available                  | 69,889   |

### **Section III. Water Supply System Data**

#### **A. Water Supply Sources**

1. Current water supplies available to the CRMWA and amounts authorized (acre-feet per year):

|                      | <b>Source</b>   | <b>Amount Authorized</b> |
|----------------------|-----------------|--------------------------|
| <b>Surface Water</b> | Lake Meredith   | 151,200                  |
| <b>Groundwater</b>   | CRMWA Wellfield | 69,000                   |

The CRMWA is authorized to deliver up to 151,200 acre-feet of lake water and 69,000 acre-feet of ground water per year. Studies performed in 1993 show Lake Meredith to have an estimated annual firm yield of 76,000 acre-feet, but more recent studies have shown the yield to be 69,000 acre-feet per year or less. The yield of Lake Meredith is under study and will probably be reduced from the amount previously determined. Current annual production capacity of the CRMWA wellfield is approximately 45,000 acre-feet. Expansion of the wellfield to increase its capacity is underway. Due to actual delivery capacity and limited demands of the member cities during winter use periods, the CRMWA can only deliver approximately 100,000 acre-feet per year to its member cities. Due to drought conditions and depleted storage in Lake Meredith, the allocation of water to member cities has been restricted to less than the normal supply for the last several years. In 2007, the total allocation made available to the cities was 85,000 acre-feet and in 2008, it is 80,000 acre-feet.

### **Section IV. Conservation Goals**

In order to conserve the total available water supply, the CRMWA would make every effort to supply its Member Cities with as much surface water (renewable resource) as reasonably possible in order to conserve their groundwater reserves (essentially non-renewable). This, coupled with the Cities' Conservation Plans, will insure continued water availability to CRMWA Member Cities.

### **Section V: Quantified 5 & 10-Year Targets**

Under this article the CRMWA is under a contractual obligation to supply its eleven member cities with their percentage of the CRMWA's total annual supply. The CRMWA does not have the authority to regulate their usage with the exception of drought situations where the supply has been reduced. Additionally, each member city retains its own independent water supply from that of the CRMWA with varying supplies and demands. Each member city is responsible for creating and enforcing its own individual conservation plan where such targets and goals are identified. The CRMWA fully supports such targets and goals established by its' member cities.

A goal for maximum acceptable unaccounted-for water system wide is 5% or less. The CRMWA has had unaccounted water losses as high as 7% in the past. Through a regular program of meter calibration and careful watch of meter comparisons, the CRMWA has been able to lower this loss percentage for the past three years. The CRMWA will make every effort to achieve this goal in the current and future calendar year.

#### **Section VI: Measurement of Diverted Water**

To quantify the amount of water diverted from Lake Meredith (the CRMWA's current surface water source) and from the John C. Williams Wellfield (the groundwater source), weekly readings are taken from multiple locations throughout the aqueduct system. Larger meters are typically venturi tube flow measurement devices, but sonic meters are also used in some locations. Smaller meters are typically propeller, turbine, or magnetic. The CRMWA reads all meters on the last Monday of each month. All large meters are read each Monday.

#### **Section VII: Record Management**

Weekly readings are entered into meter reading books that are kept for each calendar year. These readings are entered into an Excel worksheet and compared with previous month readings to get monthly and annual to date usage. These totals are saved to two hard disks and hard copies are printed monthly. Additionally, all records such as these will be archived on CD. All computer data recorded on the network are saved to an off-site archive on a regular basis.

#### **Section VIII: Leak and Loss Control and Repair**

The Excel worksheet referenced above includes a sheet called Loss Analysis. This section compares each main meter with all delivery meters downstream. Percentage and gallon loss or gain is calculated at multiple locations in this manner.

The Northern System is monitored 24 hours by personnel in the headquarters control room. Lubbock Treatment Plant personnel monitor the Southern System 24 hours. Any unusual tank level changes are reported immediately and appropriate action is taken.

Leaks that are found through the above methods or reported are repaired immediately by the CRMWA crews, unless the leak is small and the interruption of deliveries during peak demand periods dictates delay.

### **Section IX: Contract Provisions**

The following provisions will be included in every wholesale water supply contract entered into or renewed after official adoption of this plan, including any contract extension:

1. Wholesale customer must develop and implement a water conservation plan or water conservation measures using the applicable elements of Chapter 288 of the Texas Administrative Code.
2. If wholesale customer intends to resell the water, then the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with applicable provisions of Chapter 288 of the Texas Administrative Code.

### **Section X: Regional Planning Group Coordination**

The service area of the CRMWA is located within the Region A and Region O regional planning areas, and the CRMWA has provided a copy of this water conservation plan to the Region A and Region O regional planning areas.

### **Section XI: Plan Adoption, Implementation and Enforcement**

The CRMWA plans to adopt this plan on January 14, 2009, at its quarterly Board of Directors meeting. This plan will be supplied to each of the CRMWA's Member Cities, TCEQ, TWDB, Region A & O Planning Groups, and will be available on the Internet at the CRMWA website.

The CRMWA will limit each City to its allocated share by controlling quantities with supply valves. If a City exceeds its allocated share, service will be discontinued.

### **Section XII: Future Supply**

The CRMWA is currently in the process of expanding production from its groundwater source of supply that will enhance its' water supply quantity. Even though the groundwater will add additional volume, the CRMWA will strive to conserve its' groundwater (essentially non-renewable) resources by using surface water (renewable) resources as its' primary supply.

The Lake Meredith Salinity Control Project will enhance the water quality available from Lake Meredith. This will further the usefulness of Lake Meredith water and could allow fuller use of the surface water resource thereby conserving groundwater supplies.