

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 657,000 people (2010 U. S. Census). Of this area the CRMWA only provides water to approximately 527,000 people (Census Bureau estimate for 2012) 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 – 2013 data are not available):

Year	Population
2013	Not Available
2012	526,976
2011	522,875
2010	515,953
2009	Not Available

*Estimated Population

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

Year	Population
2020	566,548
2030	623,190
2040	678,542
2050	734,453
2060	791,131

B. Customer Data

1. Based on 2013 Water Allocations & Deliveries:

Wholesale Customer	Allocated Amount (acre-feet)	Delivered Amount (acre-feet)
Lubbock	24,087.70	23,893.30
Amarillo	26,403.65	26,778.16
Plainview	2,399.15	2,402.58
Pampa	2,340.00	2,002.74
Borger	3,606.85	3,143.55
Levelland	1,813.50	1,627.12
Lamesa	1,416.35	1,124.62
Brownfield	1,428.70	1,415.32
Slaton	1,024.40	990.89
Tahoka	299.00	305.11
O'Donnell	180.70	102.38
Total	65,000.00	63,785.76

Section II. Water Use Data for Service Area

A. Water Delivery

In 2013, the CRMWA delivered 63,786 acre-feet of raw water. In 2010 and 2011, limited quantities of water were delivered from Lake Meredith due to continued decline of storage in the Lake. Since September 2011, all water delivered to CRMWA member cities has been produced

from the John C. Williams Wellfield. The wellfield was expanded in 2011 to increase its production capacity to equal the aqueduct delivery capability of about 65,000 AF/yr.

B. Water Accounting Data

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

Year	2009	2010	2011	2012	2013
January	3,993	3,975	3,467	3,712	4,182
February	4,371	3,757	4,427	4,155	4,767
March	7,103	5,272	4,677	4,399	3,257
April	5,533	5,531	5,169	6,193	6,113
May	6,079	7,873	6,414	5,396	5,320
June	7,370	7,111	7,132	5,315	5,140
July	6,769	6,001	8,208	6,946	6,785
August	8,412	9,070	8,687	5,404	5,378
September	6,247	6,753	5,449	5,346	7,044
October	5,132	6,569	6,286	6,204	5,511
November	5,664	6,199	4,843	44,748	5,036
December	5,109	3,898	4,567	5,092	5,252
Total	71,782	72,009	69,326	62,909	63,786

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

Year	Total Population Served	Total Annual Water Diverted for Municipal Use (acre-feet)
2009	510,000*	71,782
2010	515,593	72,009
2011	522,875	69,326
2012	526,975	62,909
2013	532,500*	63,786

* Estimated

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):

	Source	Amount Authorized
Surface Water	Lake Meredith	151,200
Groundwater	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 considerably less due to extended drought in the watershed area. 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 65,000 acre-feet. Expansion of the Authority's capability to deliver groundwater to increase its capacity is currently being considered. Due to actual delivery capacity and limited demands of the member cities during winter use periods, the CRMWA can only deliver approximately 105,000 acre-feet per year to its member cities if that quantity were available and if Lake Meredith were to recover or if groundwater delivery capacity were increased. 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 2013, the total allocation made available to the cities was 65,000 acre-feet and in 2014, it is also 65,000 acre-feet. If sufficient inflow is received into Lake Meredith, the 2014 allocation could be increased.

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

The CRMWA is under a contractual obligation to supply its eleven member cities with their percentage of the CRMWA's total annual available supply. The CRMWA does not have the authority to regulate their usage with the exception of drought situations where the supply has been reduced proportionately. 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 years.

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 the network. 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. CRMWA and 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 organizations.

Section XI: Plan Adoption, Implementation and Enforcement

The CRMWA plans to adopt this plan on April 9, 2014 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 considering expansion of its capability to deliver water from its groundwater source of supply that will enhance its' water supply quantity. Due to limited aqueduct capacity from the groundwater source, CRMWA can only supply its member cites about half as much water as could be supplied from its surface water source. 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 whenever it is available.

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.