# CHAPTER 16A

## Article 1. Introduction

### Sec. 16A-1. Purpose.

This revised Water Conservation Plan (WCP) is being submitted to replace the Water Conservation Plan dated November 1992 and previously adopted by the City of Big Spring. As a part of the Engineering Plan, this water conservation plan is written to comply with State regulations and to provide the City of Big Spring with an acceptable plan to eliminate unnecessary water usage in a cost effective manner.

The City of Big Spring is both a Public Water Supplier for municipal uses and a wholesale water supplier. This revised WCP complies with 30 TAC 288.2 and 288.5.

### Sec. 16A-2. General.

The City of Big Spring is a Member City of the Colorado River Municipal Water District (CRMWD). CRMWD supplies all of the raw water needs for Big Spring and its customers as well other member cities and customers.

Under normal conditions, CRMWD blends raw water from four sources to the City: (1) the Ivie Reservoir, (2) the Spence Reservoir, (3) Lake J.B. Thomas, and (4) the Martin County Well Field. Water from the Martin County Well Field is used sparingly. Raw water is delivered to a 15 mg reservoir at the Big Spring Pump Station north of the city. A 27-inch concrete cylinder line conveys raw water to the Big Spring Water Treatment Plant. This line is currently gravity flow and has a capacity of approximately 12 mgd.

The City of Big Spring's water treatment plant is permitted to treat approximately 12 mgd.

The City contracted with the Howard County Water Control and Improvement District No. 1 in the late 1950s to supply water to the City of Coahoma, the community of Sand Springs and others. All the water delivered to these customers comes from CRMWD sources and is treated by the City of Big Spring.

### Sec. 16A-3. Goals.

The City of Big Spring's average daily water usage is high, approximately 258 gpcd when compared to the State estimated average of 180 gpcd in 2000. The specific strategies and time frames for water conservation are located in this WCP.

### Sec. 16A-4. Drought Contingency Plan (DCP).

The Drought Contingency Plan includes measures that can cause the City to significantly reduce water use on a temporary basis. These measures involve voluntary reductions, restriction and/or elimination of certain types of water use, and water rationing. The DCP is a separate document.

**Sec. 16A-5. Conservation Methods.**

Nine principal water conservation methods to be considered in preparing the water conservation plan are considered herein as follows:

1. Education and Information.
2. Plumbing Codes.
3. Retrofit Programs.
4. Water Rate Structures.
5. Universal Meter and Meter Repair.
6. Water Conservation Landscaping.
7. Leak Detection and Repair.
8. Recycling and Reuse.
9. Means of Implementation and Enforcement.

## Article 2. Utility Evaluation Data.

**Sec. 16A-6. Public Utility Profile.**

(A) Population and Water Use Projections for the City of Big Spring:

| | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|---|---|
| **Population*** | 24,528 | 25,451 | 25,885 | 26,148 | 26,281 | 26,348 |
| **Water Demand** (ac-ft/yr.)** | 7,092 | 7,045 | 6,846 | 6,798 | 6,715 | 6,732 |
| **Water Demand (mgd)** | 6.33 | 6.29 | 6.11 | 6.07 | 5.99 | 6.01 |
| **Water Demand (gpcd)** | 258.1 | 247.1 | 236.1 | 232.1 | 228.1 | 228.1 |

* Source: TWDB, Population Projections by City for 2000-2050 (8/21/01).
** Source: TWDB, Municipal Demand Projections by Region for Counties, Cities, and County – other for 2000-2050, Region F (12/18/00).

(B) Number and Type of Connections in Service Area:

1. Residential: 7,355.
2. Commercial: 1,101.
3. Industrial: 8.

4. Public/Institutional: 4.

(C) Recent Population and Water Usage:

1. Population: 25,233 (2000 Census).

2. Water Production in 2000: 2,432,010,000 gal.

3. Demand: 264.1 gpcd.

(D) Water Use Information:

1 Average Water Production for Last Two Years: 2,427,758 (1,000 gal./yr.).

2 Average Monthly Water Production for Last Two Years: 202,313 (1,000 gal./mo.).

3 Estimated 2000-2001 Monthly Water Sales by User Category (1,000 gal.)

| | Residential | Commercial Institutional | Industrial | Total Billed | Total Produced | Unaccounted for | Unaccounted for (%) |
|---|---|---|---|---|---|---|---|
| **January** | 94,322 | 25,152 | 6,288 | 125,762 | 143,663 | 17,901 | 12.5 |
| **February** | 90,876 | 24,234 | 6,058 | 121,168 | 133,260 | 12,092 | 9.1 |
| **March** | 91,558 | 24,416 | 6,104 | 122,078 | 156,159 | 34,081 | 21.8 |
| **April** | 107,473 | 28,660 | 7,165 | 143,298 | 180,336 | 37,038 | 20.5 |
| **May** | 140,735 | 37,529 | 9,382 | 187,646 | 226,569 | 38,923 | 15.0 |
| **June** | 151,550 | 40,413 | 10,103 | 202,066 | 237,349 | 35,283 | 14.9 |
| **July** | 165,339 | 44,090 | 11,023 | 220,452 | 292,387 | 71,935 | 24.6 |
| **August** | 200,683 | 53,515 | 13,379 | 267,577 | 288,101 | 20,524 | 14.0 |
| **September** | 180,640 | 48,171 | 12,043 | 240,854 | 248,971 | 8,117 | 3.3 |
| **October** | 145,305 | 38,748 | 9,687 | 193,740 | 209,892 | 16,152 | 7.7 |
| **November** | 111,370 | 29,699 | 7,425 | 148,494 | 164,269 | 15,775 | 9.6 |
| **December** | 95,209 | 25,389 | 6,347 | 126,945 | 146,802 | 19,857 | 13.5 |
| **TOTAL** | **1,575,060** | **420,016** | **105,004** | **2,100,080** | **2,427,758** | **327,680** | **13.5** |

4 Peak Daily Use: 12,370,000 (gpd).

5 Peak to Average Use Ratio (average daily summer use divided by annual average daily use): 1.53.

(E) Wastewater Information:

1. Percent of potable water customers serviced by wastewater treatment system: 93%.

2. Percent of potable water customers who have septic tanks or other privately operated sewage disposal systems: 7%.

3. Percent of potable water customers serviced by another wastewater treatment utility: 0%.

4. Percent of total potable water sales to the three categories described in Section 2.1.2:
   a. Percent of total sales to customers served: 96%.
   b. Percent of total sales to customers who are on septic tanks or private disposal systems: 4%.
   c. Percent of total sales to customers who are on other wastewater treatment systems: 0%.

5. Average daily volume of wastewater treated: 2,240,000 (gal.).

6. Peak daily wastewater volumes: 3,000,000 (gal.).

7. Estimated percent of wastewater flows to the treatment plant that originate from the following categories.
   a. Residential: 90%.
   b. Commercial: 5%.
   c. Public and Institutional: 3%.
   d. Stormwater: 2%.
   e. Other – Explain: 0%.

(F) Safe Annual Yield of Water Supply: 3,723,000 (x 1,000 gal.).

(G) Peak Daily Capacity of Water Treatment Plant: 12,000,000 (gpd).

(H) Major High-Volume Customers (50,000 gpd or greater):

1 City of Big Spring.

2 Veterans Administration Hospital.

3 Big Spring State Hospital.

4 Federal Prison Camp.

5 Western Container.

6 Howard County Water District #1.

7 Howard College.

8 Alon.

9 Cornell Corrections.

(I) Percent of Water Supply Connections in System Metered:

1 Residential: 100%.

2 Commercial: 100%.

3 Industrial: 100%.

(J) Water Rate Structure:

The City of Big Spring maintains rate structures for public consumption and for wholesale customers which is cost-based and which does not encourage the excessive use of water.

(K) Wastewater Rate Structure:

The City of Big Spring maintains a rate structure for the public collection system which is cost-based. Each wastewater account shall be charged a "base rate" and charged for wastewater discharge based on water usage.

(L) Applicable Local Regulations:

There are no local regulations that are applicable to the City of Big Spring.

(M) Applicable State, Federal or other Regulations:

The City of Big Spring abides by the rules and regulations of the following agencies:

1. Texas Natural Resource Conservation Commission.
2. Texas Department of Health.
3. Environmental Protection Agency.

**Sec. 16A-7. Wholesale Utility Profile.**

(A) Service Area:

The City of Big Spring is a wholesale water supplier to the Howard County Water Control District (HCWCD). The HCWCD is the water supplier to the City of Coahoma, the community of Sand Springs and others.

(B) Population of Service Area:

1. City of Coahoma: 1,369.
2. Community of Sand Springs (estimated): 903.
3. Other (estimated): 316.
4. Total: 2,588.

(C) Water Use Information:

1 Average Annual Water Purchased from Big Spring for Last Two Years: 107,333 (1,000 gal./yr.).

2 Average Monthly Water Purchased from Big Spring for Last Two Years: 8,944 (1,000 gal./mo.).

3 Estimated 2000-2001 Monthly Water Sales: (1,000 gal.).

| | Total Water Purchased |
|---|---|
| January | 7,775 |
| February | 7,196 |
| March | 6,887 |
| April | 8,325 |
| May | 10,341 |
| June | 10,117 |
| July | 11,260 |
| August | 12,707 |
| September | 11,125 |
| October | 8,660 |
| November | 5,540 |
| December | 7,400 |

(D) Population Projections:

| | **2000** | **2010** | **2020** | **2030** | **2040** | **2050** |
|---|---|---|---|---|---|---|
| **Coahoma*** | 1,369 | 1,435 | 1,477 | 1,492 | 1,500 | 1,504 |
| **Sand Springs and Other**** | 1,219 | 1,263 | 1,300 | 1,314 | 1,321 | 1,323 |
| **TOTAL** | **2,588** | **2,698** | **2,777** | **2,806** | **2,821** | **2,827** |

*Source: TWDB, Population Projections by City for 2000-2050 (8/21/01).
** Estimated.

(E) Water Usage Projection:

For City of Coahoma:

| | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|---|---|
| **Population*** | 1,369 | 1,435 | 1,477 | 1,492 | 1,500 | 1,504 |
| **Water Demand (ac-ft/yr)**** | 174 | 172 | 165 | 160 | 154 | 155 |
| **Water Demand (mgd)** | 0.16 | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 |
| **Water Demand (gpcd)** | 113.5 | 107.0 | 99.7 | 95.7 | 91.6 | 92.0 |

* Source: TWDB, Population Projections by City for 2000-2050 (8/21/01).
** Source: TWDB, Municipal Demand Projections by Region for Counties, Cities, and County – other for 2000-2050, Region F (12/18/00).

For City of Coahoma, community of Sand Springs and others:

| | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|---|---|
| **Population** | 2,588 | 2,698 | 2,777 | 2,806 | 2,821 | 2,827 |
| **Water Demand (ac-ft/yr)** | 329 | 327 | 320 | 315 | 310 | 311 |
| **Water Demand (mgd)** | 0.29 | 0.29 | 0.29 | 0.28 | 0.28 | 0.28 |
| **Water Demand (gpcd)** | 113.6 | 108.2 | 102.9 | 100.2 | 98.1 | 98.1 |

(F) Wastewater Information:

The HCWCD does not provide or maintain a wastewater collection system for its customers.

(G) Applicable Local Regulations:

There are no local regulations that are applicable to the Howard County Water District.

(H) Applicable State, Federal or Other Regulations:

The Howard County Water District abides by the rules and regulations of the following agencies:

1. Texas Natural Resource Conservation Commission.
2. Texas Department of Health.
3. Environmental Protection Agency.

## Article 3. Water Conservation Plan.

### Sec. 16A-8. Conservation Goals.

(A) Usage:

The City of Big Spring has a relatively high average daily water usage compared to the state average. The average daily water usage currently is approximately 258 gallons per capita per day (gpcd). The short-term (30 years) and the long term (40 years or more) conservation goals for the City of Big Spring:

| Year | Reduction from Current Usage Goal (gpcd) | Usage Goal (gpcd) |
|---|---|---|
| **2000** | - | 258.1 |
| **2010** | 11.0 | 247.1 |
| **2020** | 22.0 | 236.1 |
| **2030** | 26.0 | 232.1 |
| **2040** | 30.0 | 228.1 |
| **2050** | 30.0 | 228.1 |

The long term conservation goal is reasonable based on the following considerations:

1. Water-conserving Plumbing Fixtures:
   The TNRCC uses 20.5 gpcd as the "most likely" conservation scenario (and 21.7 gpcd for an "advanced" scenario) for water saving plumbing fixtures.

2. Public Education Programs:
   The technical potential for water conservation due to public education programs is estimated to be in the range of 2% to 5% of the average annual per capita use. Two percent is the "most likely" conservation scenario.
   Average annual per capita use = 258.1 gpcd.
   Potential reduction of water use = (258.1 x 2%) = 5.2 gpcd.

3. Reducing Seasonal Water Use:
The TWDB has calculated seasonal use as a percentage of average annual per capita use for West Texas to be 25%. Seasonal water use is calculated by multiplying the average annual per capita use by 25% for West Texas cities.

The technical potential for reduction in seasonal use is then multiplied by a factor of between 7% ("most likely" conservation scenario) to 20% ("advanced" scenario).

Average annual per capita use = 258.1 gpcd.
Geographic location = West Texas.
Seasonal use = (258.1 x 25%) = 64.53 gpcd.
Potential reduction in seasonal use = (64.53 x 7%) = 4.5 gpcd.

The total technical potential savings is the sum of the 3 considerations: 20.5 + 5.2 + 4.5 = 30.2 gpcd, using the "most likely" conservation scenarios. The goal of reducing current usage by 30.0 gpcd is reasonable.

(B) Wholesale Water Usage:

The current average daily water usage is approximately 113.6 gpcd. The short term (30 years) and the long term (40 years or more) conservation goals for the Howard County Water Control and Improvement District as determined from projections:

| Year | Reduction from Current Usage Goal (gpcd) | Usage Goal (gpcd) |
|---|---|---|
| **2000** | - | 113.6 |
| **2010** | 5.4 | 108.2 |
| **2020** | 10.7 | 102.9 |
| **2030** | 13.4 | 100.2 |
| **2040** | 15.5 | 98.1 |
| **2050** | 15.5 | 98.1 |

The long term conservation goal is reasonable based on the following considerations:

1. Water Saving Plumbing Fixtures:
20.5 gpcd

2. Public Education Programs:
Average annual per capita use = 113.6 gpcd.
Potential reduction of water use = (117.6 x 2%) = 2.3 gpcd.

3. Reducing Seasonal Water Use:
Average annual per capita use = 113.6 gpcd.
Geographic location = West Texas.
Seasonal use = (113.6 x 25%) = 28.4 gpcd.
Potential reduction in seasonal use = 28.4 x 7% = 2.0 gpcd.

The total technical potential savings is the sum of the 3 considerations: 20.5 + 2.3 + 2.0 = 24.8 gpcd, using the "most likely" conservation scenarios. The goal of reducing current usage by 15.5 gpcd is reasonable.

**Sec. 16A-9. Metering Devices.**

All metering devices will be accurate within 5% (+/-) and will be used to measure and account for the amount of water for both public water distribution and wholesale water sales.

**Sec. 16A-10. Universal Metering.**

With the implementation of this Water Conservation Plan, all users, including the City and other public facilities, will be metered.

The City of Big Spring will continue to monitor water consumption and inspect meters which vary from their previously established norms. The City has established the following meter maintenance programs:

| Meter Type | Test Period |
|---|---|
| Master Meter | Annually |
| Larger than 2 inch | Annually |
| 2 inch and smaller | 10 years |

Through a successful meter maintenance program coupled with computerized billing and leak detection programs, the City of Big Spring will maintain water delivery rates, from production to consumer, above 85 percent.

**Sec. 16A-11. Monitoring.**

The City of Big Spring will continue its water usage monitoring and record management program for determining water deliveries, sales and losses.

**Sec. 16A-12. Unaccounted-for Water Usage/Leak Detection.**

The City of Big Spring will continue measures to determine and control unaccounted-for uses of water, including monthly audits of the water system (storage, delivery and distribution) to determine illegal connections, abandoned services, leaks, etc. Once located, all leaks will be immediately repaired, all illegal connections will be disconnected and all abandoned services will be shut off at the valve.

**Sec. 16A-13. Education and Information.**

The City of Big Spring began a program of continuing public education and information regarding water conservation when it adopted its first water conservation plan (Water Conservation And Drought Contingency Plan, November 1992).

The City of Big Spring will continue to promote water conservation by informing water users about the ways to save water inside of homes and other buildings, in landscaping and lawn uses, and in recreational uses. Information will be distributed to water users as follows:

1. Distribution of educational materials will be made annually, timed to correspond with peak summer demand periods. The city will incorporate material available from the American Water Works Association (AWWA), Texas Water Development Board (TWDB) and other similar associations to expand the scope of this project. Current materials may be obtained from:

   Texas Water Development Board

   PO Box 1321, Capitol Station

   Austin, Texas 78711-3231

2. Articles will be published in the Big Spring newspaper. These publications will correspond to the mailouts or more often, if conditions warrant.

3. New customers will be provided with general conservation literature when applying for service.

**Sec. 16A-14. Contracts with other Political Subdivisions.**

The City of Big Spring will, as part of contract for sale of water to any other political subdivision, require that entity to adopt applicable provisions of the City's water conservation plan or to have a plan in effect previously approved by the TWDB. These provisions will be through contractual agreement prior to the sale of any water to the political subdivision. Contracts for the sale of water that are already in effect will be revised to reflect the applicable programs of the water conservation plan when the contracts are renewed.

**Sec. 16A-15. Contracts with Wholesale Customers.**

The City of Big Spring will require in every water supply contract entered into or renewed after official adoption of the WCP, including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements of this WCP. If the customer intends to resell the water, then the contract between the City of Big Spring and the customer must provide that the contract for 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 this WCP.

**Sec. 16A-16. Water Rate.**

The City of Big Spring maintains rate structures for public consumption and for wholesale customers which is cost-based and which does not encourage the excessive use of water.

**Sec. 16A-17. Reservoir Systems Operations Plan.**

The City of Big Spring owns no reservoir within a common watershed or river basin. A reservoir systems operations plan is not applicable. If the City becomes an owner of such a reservoir, it will develop an operations plan.

**Sec. 16A-18. Implementation/Enforcement.**

The City Manager for the City of Big Spring or his/her designee will act as the Administrator of the Water Conservation Program. The Administrator will oversee the execution and implementation of all elements of the program. He will supervise the keeping of adequate records for program verification.

The City will adopt the final approved plan and commit to maintain the program. A sample resolution of adoption is included in the Appendix.

The plan will be enforced through adoption of the Water Conservation Plan by ordinance of the City Council of the City of Big Spring in the following manner:

1 Service tap will not be provided to customers not meeting the plan requirements.

2 The existing rate structure should encourage retrofitting of old plumbing fixtures which use large quantities of water.

3 Customers who do not pay their water bills will have service discontinued.

4 The building inspection will not certify new construction which fails to meet the plan requirements.

**Sec. 16A-19. Coordination.**

This WCP has been sent to Regional Water Planning Group F, the Colorado River Municipal Water District. Neither entity had any comments.

**Sec. 16A-20. Plumbing Codes.**

In accordance with SB 587, the City of Big Spring requires that all new construction and rehabilitation utilize water conserving sinks and lavatory faucets, showerheads, drinking water fountains, urinals, toilets, flush valve toilets and other plumbing fixtures. SB 587 has been distributed to the City's plumbing inspection department as a guideline for inspecting and approving all new plumbing fixtures. In addition, City plumbing inspectors require that all new swimming pools have recirculation filtration equipment.

**Sec. 16A-21. Retrofit Program.**

The City of Big Spring will continue to make available, through its education and information programs, information for water customer's use when purchasing and installing plumbing fixtures, lawn watering equipment, or using appliances. The advertising program will inform existing users of the advantages of installing water savings devices. The City will contact local plumbing and hardware stores and encourage them to stock water conserving fixtures including retrofit devices.

**Sec. 16A-22. Water Conserving Landscaping.**

In order to reduce the demands placed on the water system by landscape watering, the City of Big Spring, through its information and education program, will encourage customary and local landscaping companies to utilize water saving practices in installation of landscaping for residential and commercial installations.

Some of the methods to be promoted by the education and information program are as follows:

1 Encourage landscape architects to use low-water-using plants and grasses and efficient irrigation systems.

2 Encourage licensed irrigation contractors to use drip irrigation systems, where possible, and to design all irrigation systems with water conservation features, such as sprinklers which emit large drops rather than a fine mist and a sprinkler layout which accommodates prevailing wind patterns.

3 Encourage commercial establishments to use drip irrigation for landscape watering, when practical, and to install only ornamental fountains that recycle and use minimal quantities of water.

4 Encourage local nurseries to offer adapted, low water using plants and grasses and efficient water devices.

**Sec. 16A-23. Recycle and Reuse.**

The City of Big Spring owns and operates the wastewater treatment plant east of the City. The City currently discharges treated effluent into Beal's Creek.

Because of the high mineral content of the treated effluent and the location of the plant in relation to industrial users, wastewater reuse is not being utilized at this time.

With implementation of this plan, all industrial users will be contacted to determine if reuse and recycle is being utilized or could be utilized.

(Chapter 16A-Ord. of 4-12-11)

# WATER CONSERVATION PLAN