

EXHIBIT ‘A’

WATER CONSERVATION PLAN

1. Minimum Requirements

- A. Utility Profile – TWBD Form 1965 enclosed**
- B. Targets and Goals**
- C. Implementation Schedule**
- D. Tracking implementation and effectiveness**
- E. Master Metering**
- F. Universal metering program**
- G. Automated Metering Infrastructure Program**
- H. Measures to determine and control water loss**
- I. Leak detection, repair and water loss accounting**
- J. Continuing Education Program**
- K. Rate Structure**
- L. Implementation and Enforcement**
 - 1. Water Conservation Ordinance & Resolution**

2. Description of Enforcement Authority

M. Regional Planning Group documentation

N. Drought Contingency Plan

- 1. Water Conservation Plan Resolution**
- 2. Water Conservation Ordinance**

2. Additional Conservation Strategies

UTILITY PROFILE (Form 1965 Enclosed)

The City of Grand Prairie water utility system serves approximately 189,430 residents and having an area within the corporate limits of 81.10 square miles. In addition, there is 18.47 square miles of extra-territorial jurisdiction, not currently being served but expected to develop within the next several years and will be served with water and wastewater by the City. The number of connections is 69,121 including some 18,762 “extra units”, most of which are apartment units. Average annual water usage in 2018 was 26,064,236 with a peak usage of 39.9.

The geography and general layout of the city has important impacts upon the utility. The long linear configuration of the City (encompassing 28 miles north to south and ranging from 2 miles to over 8 miles wide from east to west, and divided in the approximate center by Joe Pool Lake) presents difficulties in providing and maintenance of utility infrastructure. For this reason, the city is divided into two service areas, the North Sector, in Dallas and Tarrant Counties is north of and encompassing the lake area. The South Sector is south of the lake, with some corporate boundaries in Ellis county and ETJ in Ellis and Johnson counties.

The Water Utility System consists of 10 trinity wells supplying up to 8 MGD and wholesale treated water supply contracts with two connections to Dallas providing up to 33.8 MGD and one connection to Fort Worth, providing up to 2.5 MGD.

A wholesale treated water contract with the city of Midlothian in the future will serve developing subdivisions in the extreme southern and eastern limits of the City and extra territorial jurisdiction (ETJ). These contracts will provide at least 6.5 MGD to the portion of the City south of Joe Pool Lake.

A wholesale treated water contract with the City of Mansfield is pending that will supply up to 6 MGD to the southern and western portions of the City and ETJ. This contract will at some future date also provide additional 6 MGD treated water to the adjacent Johnson County Special Utility District (JCSUD) on a wholesale basis through a Grand Prairie pipeline.

A wholesale water Contract with the City of Arlington will provide up to 4.0 MGD accommodating future growth in the Northern Sector.

Wastewater treatment is provided by two plants, owned and operated by the Trinity River Authority (TRA). The Northern portion of the City is served by the TRA Central Wastewater Treatment Plant. While the Southern area is currently undeveloped, it will be served by the TRA Mountain Creek Facility.

WATER CONSERVATION TARGETS AND GOALS

The Texas Water Conservation Task Force recommended achieving 140 gpcd or less in the gallons per capita per year. As the report acknowledges, such a “one size fits all” does not take into account the various demographics and variability of distribution systems. However, Grand Prairie has achieved this goal as noted below with an average annual GPCD over the 5 years in spite of significant population growth.

There are several important factors to be considered in the City of Grand Prairie for setting of water conservation goals. These include, but are not necessarily limited to impacts on revenue, customer convenience, and especially water quality.

Revenue:

The impact of revenue includes not only the impact of reduced water usage but the continuation of the “Take or Pay” elements of the wholesale water contracts, impacting some 68% of the cost of water. Such charges are expected to continue regardless of reductions in water usage. While growth may offset some of this impact, it is nevertheless a valid concern and we expect that the impact on revenue will be negative, resulting in some off setting rate increases. However, the larger concern over the general availability of water must not be lost over the question of increased rates that will likely result from effective conservation efforts.

Customer Convenience & Acceptance:

The issue of customer convenience is one of gaining customer acceptance and is mitigated with the proliferation of automatic irrigation systems in recent years. We expect that when conservation and accompanying public education programs are applied statewide, customers will adapt to any added inconvenience. However, issues associated with water quality issues, discussed below, will have an impact on the willingness of the customer to accept mandated conservation measures.

Water Quality:

Of greatest concern to this City is the impact on water quality. We have demonstrated that lowered water consumption coupled with warm water temperatures may cause excessive bacterial growth resulting in water quality violations. In the case of Grand Prairie, this is exacerbated by the distance from the water treatment plants, resulting in high water age as well as the Dallas treatment process. While these issues are being addressed by Grand Prairie and Dallas, they are expected to cause some water quality until the treatment processes in Dallas is upgraded. Dallas has made significant progress in this area and plans to complete improvements to their treatment process in 2016, adding biologically active filtration to reduce assumable organic molecules that spur bacterial growth.

The remedies available at this time are unidirectional flushing of the system to displace aged water and increased chloramine residuals. Unidirectional flushing, which is a program designed to displace aged water while minimizing water waste, nevertheless has negatively impacted the City's ongoing water conservation program. Customers, who would otherwise be conscientious about water conservation have difficulty understanding why they are restricted from watering while fire hydrants are being flushed wasting thousands and in some cases millions of gallons of water. We have added additional chloramination stations to help raise and stabilize disinfectant residuals.

History:

Municipal Water Demand

The City of Grand Prairie has had an on-going water conservation program for a number of years which we believe has been effective in controlling the per capita usage that inevitably comes with the relatively high growth rates of the City and associated demands of new lawn and landscape installations. It should be pointed out that the table below shows significant reductions from the plan submitted 5 years ago (2014) where per capita figures for the five years were 125 GPCD, 136 GPCD, 151 GPCD, 136 GPCD, and 126 GPCD for 2009 through 2013 respectively.

TABLE 1. Municipal Water Demand 2014-2018

<u>Year</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
<u>Peak GPCD</u>	<u>38 MGD</u>	<u>40 MGD</u>	<u>39 MGD</u>	<u>39 MGD</u>	<u>40 MGD</u>
<u>Annual Average GPCD</u>	<u>129</u>	<u>126</u>	<u>133</u>	<u>130</u>	<u>134</u>
<u>Peak Day (MGD)</u>	<u>37.7 MGD</u>	<u>40.2 MGD</u>	<u>42.4 MGD</u>	<u>36.3 MGD</u>	<u>39.9 MGD</u>
<u>Average Day (MGD)</u>	<u>22.9 MGD</u>	<u>23.1 MGD</u>	<u>24.5 MGD</u>	<u>25.6 MGD</u>	<u>26.0 MGD</u>
<u>Peaking Factor</u>	<u>1.65</u>	<u>1.74</u>	<u>1.73</u>	<u>1.42</u>	<u>1.53</u>

Whereas many water conservation programs focus only on water supply, we believe that the water quality issues coupled with an already relatively low per capita water use creates a situation wherein we have to carefully manage water demands paying close attention to water quality issues as well as supply.

Municipal v. Unaccounted for Water Loss:

Municipal Water Use is calculated by taking the difference in total water usage and subtracting unmetered water used for various municipal purposes such as fire fighting, street cleaning, sanitary sewer flushing and most significantly water system flushing for water quality purposes.

Unaccounted for water is then the difference in the Municipal Use plus unmetered use and total water use. Unaccounted for water is assumed to be due to leaks, thefts and meter inaccuracies.

TABLE 2

Year	Total Water Use	Total Billed	Unmetered Water Use	Unaccounted* for Usage	Percent Unaccounted*
2014	8,549,231,056	6,811,295,000	242,393,57	1,495,542,299	17.49%
2015	8,491,613,699	7,299,826,000	343,488,131	848,299,568	9.98%
2016	9,075,231,997	7,348,863,000	371,095,308	1,355,273,689	14.93%
2017	9,179,069,685	7,196,940,000	295,369,224	1,686,760,461	18.37%
2018	9,252,281,742	7,429,429,000	279,137,424	1,543,715,318	16.68%

Specific Targets:

The specific goals below are based on a 1% reduction in each 5-year period. While this is a more conservative number than recommended by the State's Water Conservation Task Force, we believe it is realistic since we have had a conservation program in place for many years and have effectively kept the per capita usage stable, even as the city was experiencing growth.. However, while focusing on these goals, we realistically have to account for water quality flushing which will be dependent upon changes in the Dallas treatment process to mitigate the impact of water age. Since the Dallas plans to improve the treatment process extends until 2016 the effects of the flushing program must be considered along with the process improvements timeline.

TABLE 3

	<u>Historic 5 yr. Average</u>	<u>Baseline</u>	<u>5 year goal for year 2019</u>	<u>10 year goal for year 2024</u>	
<u>Total GPCD</u>	<u>130</u>	<u>141 ?</u>	<u>10 ?</u>	<u>10 ?</u>	
	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
<u>Residential GPCD</u>	<u>72.68</u>	<u>74.88</u>	<u>72.79</u>	<u>69.59</u>	<u>73.51</u>
<u>Water Loss GPCD</u>	<u>22.61</u>	<u>12.53</u>	<u>20.11</u>	<u>23.98</u>	<u>22.33</u>
<u>Water Loss %</u>	<u>17.49</u>	<u>9.98</u>	<u>14.93</u>	<u>18.37</u>	<u>16.68</u>

IMPLEMENTATION PLAN SCHEDULE:

The implementation plan is already in place. The following indicates the existing elements as well as planned dates for future implementation:

Public Education	Implemented
Conservation Pricing	Implemented
Universal Metering	Implemented
Moisture and Freeze Sensors	
A. Commercial, residential	
And governmental	Implemented
B. Residential	Implemented
Wind Sensors	
A. Residential (new)	Implemented
Landscape Ordinance (incl, Conservation)	Implemented
Xeriscape of City Facilities	Implemented
April-Oct 6PM-10AM Irrigation	Implemented
Rainwater Harvesting	Implemented

Impervious Service Prohibition	Implemented
Comprehensive Leak Detection	Implemented
Automated Metering Infrastructure Program 2014	

All of the above will be evaluated annually for effectiveness with changes proposed as needed to achieve specified goals.

TRACKING IMPLEMENTATION AND EFFECTIVENESS:

The AGPCD will be tracked annually and the implementation plan adjusted with modifications to existing and proposed measures as well as consideration of imposition of new measures if necessary. Reductions of AGPCD assume normal weather conditions and changes to the plan will be based on effectiveness during a normal weather period. Therefore if during any one year having a normal weather pattern, AGPCD is not reduced by at least 1% modification to the plan will be considered.

MASTER METER TO MEASURE AND ACCOUNT FOR THE AMOUNT OF WATER DIVERTED FROM THE SOURCES OF SUPPLY:

Currently, sources of Supply are Dallas (90%), Fort Worth (5%) and 10 groundwater sources (5%). Each of these sources is metered with accuracy tested each year.

PROGRAM OF UNIVERSAL METERING; TESTING, REPAIR AND REPLACEMENT:

The City requires all connections to be metered, including public uses except for firefighting and the unidirectional system flushing program. Neither of these programs will allow for the restrictions imposed by a meter. In the case of firefighting, the time to set up metering and the flow restriction imposed by such is not acceptable. In the case of the unidirectional flushing program, we are trying to achieve maximum velocity on the water stream to create a “scrubbing” effect on the pipe walls making metering impractical. However, a pitot tube is used to measure the flow rate and that is multiplied time the time of flow to estimate usage.

AUTOMATED METERING INFRASTRUCTURE PROGRAM:

The City has implemented an Automated Metering Infrastructure Program that will replace all older meters in the system and upgrade all meters to remote read as well as provide hourly meter reading. This should improve metering accuracy as well as help customer's track and control water usage as well as detect leaks.

MEASURES TO DETERMINE AND CONTROL WATER LOSS:

Periodic visual inspections of critical pipeline routes are routine.

Comparisons of water purchased/produced versus that sold (or otherwise accounted for) are done monthly.

Public Education program is making customers more aware of wasted water and prompt reporting is the norm

LEAK DETECTION, REPAIR AND WATER LOSS ACCOUNTING PROGRAM:

Leak detection utilizing correlation equipment is performed periodically on a routine basis and in particular where suspected leaks are not apparent at the surface or are difficult to locate. Repairs are, of course, done as soon as the leak is discovered.

PUBLIC EDUCATION AND INFORMATION:

The city employs a full-time person in the water utility to provide employee training and public education.

Features of the Public Education Program on water conservation include:

1. Promotion of water conservation utilizing a talking, bicycle riding robot named "Professor G.P. Goodwater". The "professor" gives water conservation messages and has his photo taken with children at schools and community events.
2. Informational booths with distribution of Water Conservation literature and give-away items at community events.
3. New Customer packets including conservation literature, and various devices such as rain gauges, water bottles, water conservation comic books, pencils, pens, etc.
4. Web site information – City Website and WFAA-TV Website.
5. Short film segments at the local theaters with a water conservation message shown to customers waiting for the movie to start.

6. Rain barrel classes for rainwater harvesting several time annually depending upon demand.
7. Wise water use landscaping classes at least once per year.
8. Newspaper ads featuring water conservation information during summer months
9. Local Cable TV programming year-round
10. Speaker's Bureau for local clubs and other organizations.

WATER RATE STRUCTURE:

The city utilizes a tiered "inverted" rate structure for residential uses. Industrial, Commercial and Governmental uses are competitively priced but not tiered. Tiered rates are difficult due to the differences in the water demands for different types of businesses. However, future considerations include requiring the use of native and adaptive plants (xeriscape) in commercial, industrial and governmental landscape plans.

The water rate is based on an annual cost of service study with adjustments made to the tiers to encourage water conservation (the following effective Oct. 1, 2017; subject to annual change)

<u>WATER</u>	<u>RATE PER 1,000 GALLONS</u>
RESIDENTIAL	
TOTAL USAGE: 3,000 GALLONS OR LESS	.12
MORE THAN 3,000 GALLONS UP TO 20, 000 GALLONS	3.87
AFTER FIRST 20,000 EACH ADDITIONAL 1,000 GALLON	6.93
COMMERCIAL	4.31
INDUSTRIAL	4.31
GOVERNMENTAL	3.62
FIRE HYDRANTS	8.07

WATER MINIMUMS BASED ON METER SIZE

5/8" METER	14.18
1" METER	18.25
1 1/4" METER	21.83
1 1/2 " METER	23.70
2" METER	39.02
3" METER	121.00
4" METER	150.01
6" METER	224.90
8" METER	313.01
10" METER	326.58
12" METER	343.64
Extra Units	\$2.35

MEANS OF ENFORCEMENT:

Copies of the Water Rate Ordinance and Resolution adopting the Water Conservation Plan are attached.

Authority to enforce the plan is by virtue of the police powers of the City

REGIONAL PLANNING GROUP NOTIFICATION:

A copy of this plan along with appropriate ordinances and resolutions has been transmitted to the Region C Water Planning Group as evidenced by the letter attached hereto.

DROUGHT CONTINGENCY PLAN:

The latest version of the City's Drought Contingency Plan, aka "Emergency Water use Plan" is provided herewith. It has been developed following guidelines of the Texas Water Development Board.

ADDITIONAL WATER CONSERVATION STRATEGIES:

The City has, when needed, utilized pressure control during peak usage times to reduce the amount of water usage and preserve storage. This remains an option.