A RESOLUTION ADOPTING THE WATER CONSERVATION PLAN

- **WHEREAS,** the City of Grand Prairie operates a public water system having more than 3,300 customer connections and;
- **WHEREAS,** the 80th Legislature of the State of Texas required all cities having at least 3,300 water connections to submit a Water Conservation Plan to the Texas Water Development Board by May 1, 2009 and;
- **WHEREAS**, the City of Grand Prairie has wholesale treated water contracts with suppliers that contractually require water conservation plans and;

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF GRAND PRAIRIE, TEXAS THAT:

- **SECTION 1.** The attached <u>Water Conservation Plan</u> for the City of Grand Prairie is hereby adopted.
- **SECTION 2.** Appropriate ordinances providing for enforcement will be updated from time to time as appropriate and/or required by the State and/or Wholesale supplier contracts.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF GRAND PRAIRIE, TEXAS, THIS THE $7^{\rm TH}$ DAY OF APRIL, 2009.

ATTEST:

City Secretary

APPROVED:

Mayor

APPRQVED AS TO FORM:

City Attorney

WATER CONSERVATION PLAN

1. Minimum Requirements

- A. Utility Profile
 - 1. Water Conservation Utility Profile, WRD-264 See enclosed
 - 2. Identification of water conservation opportunities, potential targets and goals.
- B. Targets and Goals
- C. Implementation Schedule
- D. Tracking implementation and effectiveness
- E. Master Metering
- F. Universal metering program
- G. Measures to determine and control water loss
- H. Leak detection, repair and water loss accounting
- I. Continuing Education Program
- J. Rate Structure
- K. Implementation and Enforcement
 - 1. Water Conservation Ordinance & Resolution
 - 2. Description of Enforcement Authority
- L. Regional Planning Group documentation
- M. Drought Contingency Plan
 - 1. Water Conservation Plan Resolution
 - 2. Water Conservation Ordinance

2. Additional Conservation Strategies

UTILITY PROFILE

The City of Grand Prairie water utility system serves approximately 168,000 residents and is expected to grow to about 175,000 by 2015. The number of connections is 60,677 including some 16,834 "extra units", most of which are apartment units. Average annual water usage in 2008 was 25.2 MGD with a peak usage of 44.1 MGD.

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 special difficulties in providing 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 11 trinity wells supplying up to 9 MGD and wholesale treated water supply contracts with two connections to Dallas providing up to 26 MGD and one connection to Fort Worth, providing up to 2.5 MGD.

In addition, there are two wholesale treated water contracts with the city of Midlothian to 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 also provide additional 6 MGD treated water to the adjacent Johnson County Special Utility District (JCSUD).

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 recommends a reduction of 1% in the gallons per capita per year. However, such a "one size fits all" does not take into account the various demographics and variability of distribution systems and tends to punish those utilities that have done a good job in managing their systems in the past, maintaining relatively low per capita usage.

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 plans, resulting in high water age as well as the Dallas treatment process. While these issues are being addressed by Grand Prairie and Dallas through improvements to the treatment and distributions systems, they are expected to cause some water quality issues for some time.

The most effective remedy available at this time is unidirectional flushing of the system to displace aged water. 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.

History:

Per Capita Usage:

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.

TABLE 1

Year	Population	% Growth Pop.	Per Capita	%Growth Per
			(Gals)	Capita
2004	141,207		152.3	
2005	147,728	4.6%	178.5	17.2%
2006	156,021	5.6%	171.1	-4.1%
2007	161,571	3.6%	152.4	-10.9%
2008	166,654	3.1%	151.5	-0.6%

Whereas many water conservation programs focus 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	Unmetered	Municipal	Unaccounted	Percent
	Use	Water Use	Use	for Usage	Unaccounted
2004	7,849.7 MG	713.4 MG	5,821.4 MG	1,314.7 MG	16.75
2005	9,628.0 MG	1,319.3 MG	6,910.7 MG	1,397.9 MG	14.52
2006	9,743.8 MG	959.5 MG	7,864.0 MG	920.2 MG	9.44
2007	8,988.9 MG	1,430.1 MG	6,451.1 MG	1,107.6 MG	12.32
2008	9,216.5 MG	1,278,1 MG	7,346.2 MG	7,346.2 MG	6.42

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 of 1% per year, we believe it is realistic since we have had a conservation program in place for many years and have effectively keep the per capita usage stable, even as the city was experiencing significant residential growth, adding as many as 2100 irrigation systems per year. The City has a relatively low per capita water usage, we believe that a 1% reduction per year is not a reasonable goal, especially given the special water quality issues associated with aged water in Grand Prairie's system that will be exacerbated by reduced usage.

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 extend until 2016 the effects of the flushing program must be considered along with the process improvements timeline.

TABLE 3

Type Use	2008	5- Year Goal (2014)	10 Year Goal (2018)
	(AGPCD)	(AGPCD)	AGPCD)
Total	151.52	150.00	148.5
Municipal	120.77	119.56	118.37
Unaccounted	9.73	9.63	9.53

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
A. Residential (new) Landscape Ordinance (incl, Conservation)	Implemented Implemented
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Landscape Ordinance (incl, Conservation)	Implemented
Landscape Ordinance (incl, Conservation) Xeriscape of City Facilities	Implemented Implemented
Landscape Ordinance (incl, Conservation) Xeriscape of City Facilities April-Oct 6PM-10AM Irrigation	Implemented Implemented Implemented
Landscape Ordinance (incl, Conservation) Xeriscape of City Facilities April-Oct 6PM-10AM Irrigation Rainwater Harvesting	Implemented Implemented Implemented Implemented
Landscape Ordinance (incl, Conservation) Xeriscape of City Facilities April-Oct 6PM-10AM Irrigation Rainwater Harvesting Impervious Service Prohibition	Implemented Implemented Implemented Implemented Implemented

Comprehensive Leak Detection 2011

Xeriscape of Commercial,

Industrial & Governmental landscapes 2012

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:

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.

The City has an active program for replacement of all meters in the system with AMR (automatic meter reading systems). This program is usually funded each year from \$250,000 to \$1,000,000 depending upon other system needs. This program has been in effect 5 years and approximately 50% of the City's 46,919 meters have been replaced. Because this program, replacing existing meters with new ones, is more effective than repair of meters, we have suspended the meter testing and repair program until all meters have been replaced.

MEASURES TO DETERMINE AND CONTROL WATER LOSS:

Periodic visual inspections of critical pipeline routes is routine.

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

A comprehensive audit of the water system is planned for 2011 to help determine if water is lost to unknown sources such as illegal connections, abandoned services, leaks, theft from fire hydrants or other losses.

LEAK DETECTION, REPAIR AND WATER LOSS ACCOUNTING PROGRAM:

Leak detection utilizing borrowed or rented correlation equipment is performed periodically on an "as needed" basis 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.

We currently have budgeted the purchase leak detection equipment for an on-going ability to enhance leak detecting capability in-house. Depending on effectiveness of the in-house program, we will consider a comprehensive leak detection program on a contract basis as well in future years.

We believe the 2011 water audit will provide some insight as to where we need to concentrate on water loss prevention.

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 includes:

- 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 a annual cost of service study with adjustments made to the tiers to encourage water conservation (the following effective Oct. 1, 2008; subject to annual change)

	RATE PER 1,000	
<u>WATER</u>	GALLONS	
RESIDENTIAL		
TOTAL USAGE: 3,000 G	ALLONS OR LESS	\$1.87
MORE THAN 3,000 GAL	LONS UP TO 20, 000 GALLONS	\$2.80
AFTER FIRST 20,000 EA	CH ADDITIONAL 1,000 GALLON	\$4.50
COMMERCIAL		\$2.50
INDUSTRIAL		\$2.50
GOVERNMENTAL		\$2.40
FIRE HYDRANTS		\$5.00

WATER MINIMUMS BASED ON METER SIZE		
5/8" METER	\$6.46	
1" METER	\$8.62	
1 1/4" METER	\$9.71	
1 1/2 " METER	\$10.79	
2" METER	\$17.82	
3" METER	\$59.67	
4" METER	\$75.90	
6" METER	\$113.77	
8" METER	\$157.05	
10" METER	\$164.63	
12" METER	\$174.17	
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 have 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, entitled "Emergency Water use Plan" in 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.

Adopted: April 7, 2009