

Memorandum



DATE February 14, 2014

TO Honorable Mayor and Members of the City Council

SUBJECT **Water Conservation and Drought Contingency Plan Updates**

On Wednesday, February 19, 2014, the City Council will be briefed on Water Conservation and Drought Contingency Plan Updates. The briefing material is attached for your review.

Please let me know if you have any questions or need additional information.



Forest E. Turner
Assistant City Manager

Attachment

Cc: A.C. Gonzalez, City Manager
Warren M.S. Ernst, City Attorney
Judge Daniel F. Solis, Administrative Judge
Rosa A. Rios, City Secretary
Craig D. Kinton, City Auditor
Ryan S. Evans, Interim First Assistant City Manager
Jill A. Jordan, P.E., Assistant City Manager
Joey Zapata, Assistant City Manager
Charles M. Cato, Interim Assistant City Manager
Theresa O'Donnell, Interim Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Frank Libro, Public Information Officer
Elsa Cantu, Assistant to the City Manager – Mayor and Council

Water Conservation and Drought Contingency Plan Updates

Presented to
Dallas City Council
February 19, 2014



Briefing Purpose

- Provide background on State Required Water Conservation and Drought Contingency Plans
- Seek City Council support for February 26, 2014 agenda items to adopt:
 - City of Dallas 2014 Water Conservation Plan
 - City of Dallas 2014 Drought Contingency Plan

Outline

- Background
- February 10, 2104 briefed Quality of Life & Environment Committee on State Plans
- Water Conservation Plan
 - State Requirements
 - 2010 Water Conservation Plan
 - 2014 Proposed Plan Changes
- Drought Contingency Plan
 - State Requirements
 - 2010 Drought Contingency Plan
 - 2014 Proposed Plan Changes
- Next Actions & Summary
- Appendix



Background

State of Texas Requirements

- The State of Texas requires Dallas to have Council adopted water conservation and drought contingency plans and to **update the plans every 5 years**
- Current plans adopted by City Council on June 9, 2010
- Next updates are due to the State by May 1, 2014
- With the addition of maximum twice weekly watering in the water conservation ordinance (previously Stage 1 of Drought Contingency Plan) some revisions to the existing plans are needed

Comparison of Water Conservation & Drought Measures

- Conservation measures are used to achieve more efficient use of water resources. Examples include:

- Water Wise landscaping (Xeriscape)
- Time of Day Watering
- Low Flow Showerheads
- Repairing leaking faucets
- Reducing the frequency of watering lawns



- Drought measures are restrictions used to ensure that water is available to meet public health, welfare, and safety needs during times of shortage.

Examples include:

- Restricting lawn watering
- Prohibiting permitting or filling of swimming pools
- Prohibiting operation of ornamental fountains
- Prohibiting recreational water use





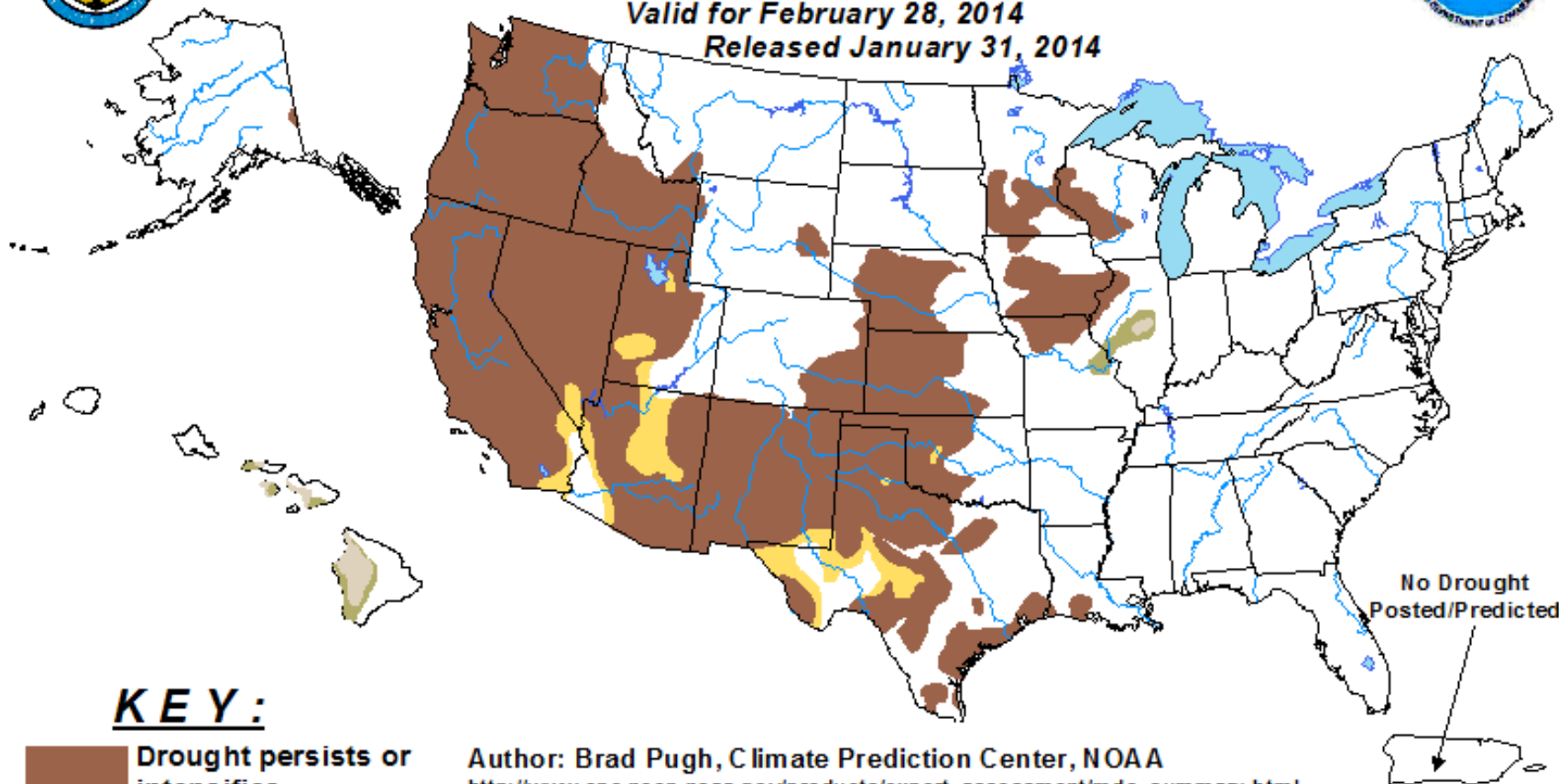
U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period







Valid for February 28, 2014

Released January 31, 2014



KEY:

-  Drought persists or intensifies
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely

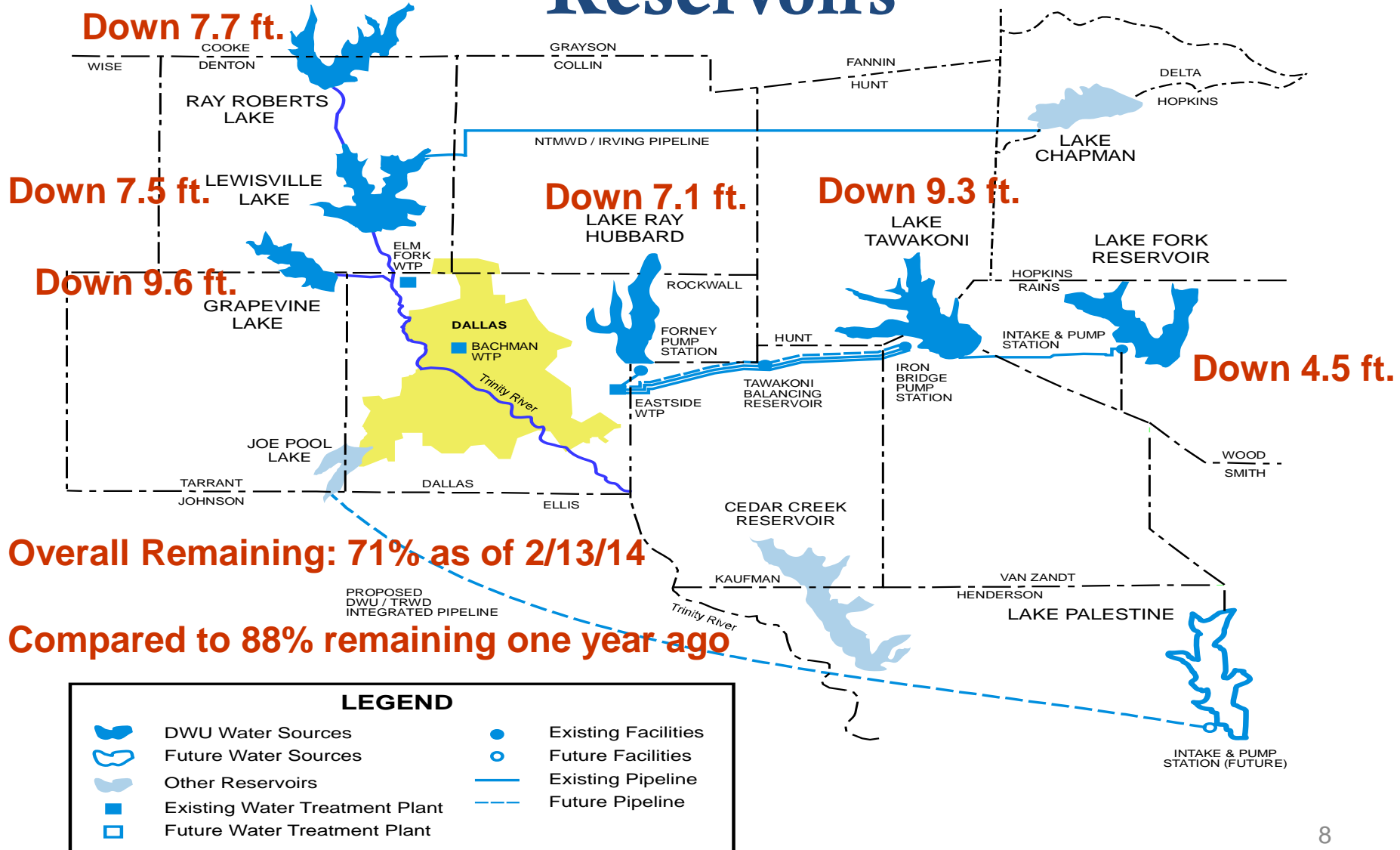
Author: Brad Pugh, Climate Prediction Center, NOAA

http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.html

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events – such as individual storms – cannot be accurately forecast more than a few days in advance. Use caution for applications – such as crops – that can be affected by such events. “Ongoing” drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor.

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain. The green areas imply drought removal by the end of the period (D0 or none)

Status of Dallas Water Supply Reservoirs



Water Conservation Plan



Water Conservation Plan

- The State of Texas under the Texas Administrative Code (TAC) Title 30, Chapter 288.2 Subchapter A requires all surface water rights holders to develop, submit and implement a water conservation plan and update the plan every 5 years

State of Texas Water Conservation Plan Requirements

- TAC rules require that water conservation plans include:
 - Utility profile, specific quantifiable 5 and 10 year goals for water savings, information on accuracy of metering devices, testing and replacement of meters, leak detection, reservoir operating plan and control of unaccounted for water
- The minimum requirements also include:
 - Continuing public involvement/education
 - Non-promotional rate structure
 - A means for implementation and enforcement of the plan
 - Coordination with regional water planning groups

Dallas' 2010 Water Conservation Plan

- Water Conservation plays an integral role in the City's long range water supply and environmental initiatives
- Plan developed to provide long term measures to improve the efficiency of water use and conserve water resources
- 2010 Water Conservation Plan based on Water Conservation Five-Year Strategic Plan also adopted by Council in 2010
 - State Plan goals based on Strategic Plan Programs
 - Work continues on implementing and expanding strategies in 2010 Strategic Plan
- Since 2001, the combination of Water Conservation Programs have resulted in:
 - An estimated water savings of over 200 billion gallons
 - A reduction in gallons per capita per day of 21% since 2001
- Enforcement under existing plan is by Code Compliance with criminal penalties administered through the municipal court system

Proposed Changes in the 2014 Water Conservation Plan

- Proposed State Plan includes continuation of 2010 Strategic Plan Programs
 - Programs outlined in the Appendix
 - Includes maximum twice weekly watering as a part of DWU's Water Conservation Program
- Water Conservation Plan Targets and Goals revised to match State reporting period through 2024
- Proposed Plan assumes the same reduction rate goals as 2010 Plan
 - 4% to 2019
 - 4.5% through 2024
- Targeted water savings are based on the combined effects of all program elements
- Allows for administrative enforcement process
- Draft Water Conservation Plan attached

Drought Contingency Plan

Drought Contingency Plan



- 30 TAC 288 Subchapter B – Drought Contingency Plan
 - Update Plan every five (5) years
 - Specific criteria for the beginning and end of drought response stages
 - Emergency response stage measures for:
 - Drought
 - Water production or distribution system limitations
 - Supply source contamination
 - System outage due to the failure or damage of major water system components
 - Specific, quantified targets for water use reductions

State of Texas Drought Requirements

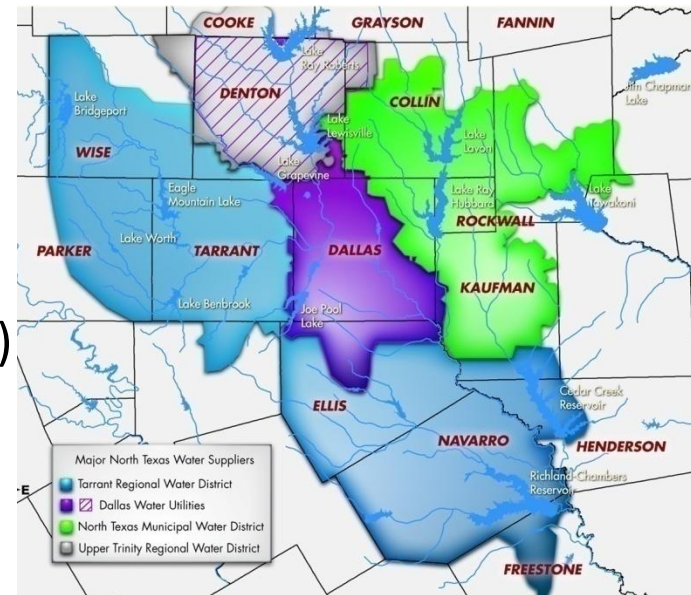
- Since droughts are a frequent and inevitable factor in the climate of Texas, the State requires drought contingency plans
- The amended Texas Administrative Code (TAC) Title 30, revised Chapter 288 rules require that drought contingency plans include:
 - specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought
- The rules additionally specify the minimum elements including
 - Public involvement/education
 - Notification procedures
 - Staged implementation based on triggers

Dallas' 2010 Drought Contingency Plan

- Plan based on a simulation of the repeat of the drought of record (1950 to 1957)
- Plan developed to provide adequate water through such a drought
 - Dallas' lakes during a drought equivalent to the drought of record
 - After 1.5 years into a drought, Dallas' lakes should be 75 percent full
 - After 3.5 years into a drought, Dallas' lakes should be 50 percent full
- Triggers for each Stage set for:
 - Raw water supply constraints
 - Treated water capacity constraints
 - Natural or man-made contamination
- Enforcement under existing plan is by Code Compliance with criminal penalties administered through the municipal court system

Regional Coordination

- Goal: To streamline and consolidate regional drought stages and action measures
- Cooperative effort to establish consistency among Drought Contingency Plans across the Regional Providers in the Metroplex
 - Process initiated through maximum twice weekly watering discussions
- Dallas Water Utilities met with:
 - North Texas Municipal Water District
 - Upper Trinity Regional Water District
 - Tarrant Regional Water District (including Cities of Fort Worth and Arlington)



Reached Consensus on the Following Issues for Drought Contingency Plans

- Three Stages and Responses
 - Stage 1 – Twice per week outdoor watering
 - Stage 2 – Once per week outdoor watering
 - Stage 3 – No Outdoor Watering
 - (Except Foundations and Trees)

- Areas of Plan Simplification
 - Car Washes
 - Swimming Pools
 - Hosing or power washing
 - Ornamental fountains and ponds
 - Golf Course and large property irrigation

DWU Revised Stages and Triggers		
Stage	Current Trigger	Proposed Trigger
Stage 1	65% full	65% full
Stage 2	55% full	50% full
Stage 3	45% full	30% full
Stage 4	30 % full	

Proposed 2014 Drought Contingency Plan

- Resulting impact to Dallas' Plan is to:
 - Reduce stages and responses from four to three
 - Middle two stages combined into new Stage 2
- Increased rate charged for highest residential and commercial rate tiers in Stages 2 and 3
- Stage 3 when Dallas' system is 70% depleted prohibits all discretionary water use and protects property by allowing:
 - Watering of foundations and trees by hand, drip or soaker hoses
 - Draining and refilling of pools to maintain operation and water quality
 - Vehicle washing restricted to commercial car washes
- Allows for administrative enforcement process
- Draft Drought Contingency Plan attached

Future Actions & Summary

Future Actions

- **Watering Restriction Enforcement**
 - S.B. 654 amended Sec. 54.012 and 54.032 of the Local Government Code authorizing the use of civil adjudication for violations of watering restrictions
 - City Code will need to be amended to allow for a civil enforcement process
- **2015 Water Conservation Five-Year Strategic Plan Update**
 - Current 2010 Water Conservation Five-Year Strategic Plan due for update in 2015
 - Continuing implementation of 2010 recommended programs
 - Provides time to evaluate impacts of maximum twice weekly watering on water use demands
- **Will brief Council in the Fall of 2014 on:**
 - Revisions to enforcement process for watering restriction violations
 - Process to update the Water Conservation Five-Year Strategic Plan

Summary

- Seeking City Council approval of February 26 agenda items for State required plans
 - Water Conservation Plan
 - Drought Contingency Plan

Appendix

Water Conservation Plan 5- and 10- Goals for Water Savings

	Historical 5 Year Average	Baseline	5-yr Goal for 2019	10-yr Goal for 2024
Total GPCD	204	204	196	195
Residential GPCD	101	101	97	96
Water Loss GPCD	29	29	28	27
Water Loss Percentage	10%	10%	10%	10%

Note: Residential GPCD includes single family and multi-family

Water Conservation Programs to Attain Goals and Targets in Required State Water Conservation Plan

- Continuing Public Education Program
 - Public Awareness Campaign
 - Environmental Education Initiative K-12
 - Water Conservation Mascot
 - Free Irrigation System Inspections
 - Water Wise Landscape Events
 - Industrial, Commercial, and Institutional (ICI) Programs
 - Customer Audits
 - Hospitality Programs
 - Other Public Education
 - Water bill inserts, brochures
 - Special events and promotions
 - Speaking engagements



Water Conservation Programs to Attain Goals and Targets in Required State Water Conservation Plan

- City Leadership and Commitment Measures
 - Retrofit City Owned Facilities
 - Retrofit irrigation system in Dallas Fire Academy
 - Replaced plumbing fixtures at Dallas City Hall
 - Replaced plumbing fixtures at Oak Cliff Municipal Center
 - Irrigation, landscaping and rain water harvesting at Central Library
 - Irrigation and landscaping upgrades at Kleberg Library
 - Irrigation and landscape upgrades at Kidd Springs Park
- Rebate and Incentive Programs
 - Toilet Voucher Program
 - Minor Plumbing Repair Program
 - ICI Rebate Program



Revised Drought Stage Triggers

Stage	Current Trigger	Proposed Trigger
Stage 1	65% full	65% full
Stage 2	55% full	50% full
Stage 3	45% full	30% full
Stage 4	30 % full	

Comparison of Current and Proposed Drought Triggers and Action Measures – Stage 1

Current Stage 1	Proposed Stage 1
65% Remaining or 35% Depleted	Same
Target 5% reduction in total GPCD	Same
Mandatory Actions	Mandatory Actions
<ul style="list-style-type: none"> ❑1. Mandatory maximum 2 day a week landscape irrigation, with no exception for drip irrigation, soaker hoses or hand watering. ❑2. Foundations may be watered any day during allowed watering hours with soaker or hand-held hoses <u>only</u> 	<ul style="list-style-type: none"> ❑1. Same schedule, but drip irrigation, soaker hoses and hand watering allowed at anytime, on any day. ❑2. Foundations may be watered at any time, on any day with soaker or hand-held hoses or drip irrigation ❑3. Restrict washing of vehicles to hand held bucket and hose with positive shut-off nozzle (commercial car washes exempt) <i>Moved from Stage 2</i> ❑4. Recreational use of water resulting in run-off prohibited <i>Moved from Stage 2</i> ❑5. Enforcement efforts will increase in all stages through pro-active code enforcement

Comparison of Current and Proposed Drought Triggers and Action Measures – Stage 2

Current Stage 2	Proposed Stage 2
55% Remaining or 45% Depleted	50% Remaining or 50% Depleted
Target 15% reduction in total GPCD	Same
Mandatory Actions	Mandatory Actions
<ul style="list-style-type: none"> ❑1. Mandatory maximum 1 day a week landscape irrigation, customers may water on Wednesday or Thursday of Stage 1 schedule ❑2. Hosing off paved areas, buildings, windows or other surfaces prohibited ❑3. Restrict ornamental fountains to initial filling except to support aquatic life. 	<ul style="list-style-type: none"> ❑1. Same, but residential schedule based on trash pick-up days and commercial customers watering on Wednesdays. Drip irrigation, soaker hoses and hand watering would be allowed at anytime on any day. ❑2. <i>Moved to Stage 3</i> ❑3. <i>Moved to Stage 3</i> ❑4. 25% rate increase for high water demand users to discourage consumption and help offset enhanced enforcement costs. Rate applied only to residential customers using more than 15,000 gallons per month, per account; or commercial customers using more than 10,000 gallons and 1.4 times annual average monthly usage per month, per account.

Comparison of Current and Proposed Drought Triggers and Action Measures – Stage 3

Current Stage 3	Proposed Stage 3
45% Remaining or 55% Depleted	30% Remaining or 70% depleted
Target 20% reduction in total GPCD	Same
Mandatory Actions	Mandatory Actions
<ol style="list-style-type: none"> 1. Mandatory maximum 1 day a week landscape irrigation with soaker hoses, hand-held hoses or buckets only 2. Foundations may be watered twice weekly on Stage 1 schedule for 2 hours (off-peak) with soaker hose or hand-held hose with positive shut-off nozzle only 3. Car washing prohibited except for health and safety at a commercial car wash. Washing only between 6 am and 10 am or from 6 pm to 10 pm 4. Operation of ornamental fountains prohibited except where necessary to support aquatic life 5. No permitting of new pools, spas or fountains. No filling or refilling, existing pools may add water to replace evaporation. 6. No approval for new or increased water service 7. 10% rate increase for high water demand users (greater than 10,000 gallons per month per account.) 	<ol style="list-style-type: none"> 1. Landscape irrigation prohibited, except for trees with hand-held hoses, soaker hoses or drip irrigation only on the 1 day a week Stage 2 schedule 2. Foundations may be watered one day per week on Stage 2 schedule with drip irrigation, soaker hose or hand-held hose 3. Washing of vehicles restricted to commercial car washes, no prohibition on time or day 4. Same 5. Same, but draining and refilling of swimming pools allowed to maintain proper operation and water quality 6. Same 7. 50% rate increase for high water demand users. Rate applied only to residential customers using more than 15,000 gallons per month, per account; or commercial customers using more than 10,000 gallons and 1.4 times annual average monthly usage per month, per account. 8. Hosing off paved areas, buildings, windows or other surfaces prohibited. <i>Moved from Stage 2</i>

Comparison of Current and Proposed Drought Triggers and Action Measures – Stage 4

Current Stage 4	Proposed Stage 4
30% Remaining or 70% depleted	<p>Stage 4 to be eliminated</p>
Target 25% reduction in total GPCD	
Mandatory Actions	
<ul style="list-style-type: none"> ❑ 1. Irrigation of landscaped areas absolutely prohibited ❑ 2. Foundations may be watered once weekly on Stage 3 schedule for a 2 –hour period (off-peak) with soaker hose or hand-held hose with positive shut-off nozzle only ❑ 3. Use of water to wash any vehicle is absolutely prohibited 	



City of Dallas

Water Conservation Plan

City of Dallas Water Utilities
Conservation Division
1500 Marilla, Room 5AS
Dallas, Texas 75201

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CITY OF DALLAS WATER CONSERVATION ORDINANCE~~

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WATER SUPPLY SYSTEM DATA
CUSTOMER DATA
STANDARD RATE SCHEDULE
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COORDINATION WITH REGION C PLANNING GROUP-~~

~~APPENDIX D...DWU WATER CONSERVATION PROGRAM ANNUAL REPORT~~

Water Conservation Plan For the City of Dallas Water Utilities

1.0 Introduction

Dallas Water Utilities (DWU) is a major retail and wholesale provider of water in North Texas that currently serves over 2.4 million people within a 700 square mile service area. This includes all of the City of Dallas, ~~2223~~ major wholesale treated water customers, and 4 wholesale raw water customers located in the metropolitan area surrounding Dallas.

Dallas has actively procured water supplies, constructed reservoirs, and developed water treatment facilities which make it possible for DWU to provide water to its customers. In Fiscal Year (FY) ~~2008-09~~ 2012-2013, DWU delivered over 148.143 billion gallons of treated water. As the regional population grows, so grows water demand. To meet demand, DWU must plan for increasing the available water supply and expanding its transmission, treatment, and distribution facilities. DWU considers water conservation an integral part of this planning process.

The City of Dallas has had a water conservation program since the early 1980s. In 2001, Dallas increased its conservation efforts with the amendment of CHAPTER 49, "WATER AND WASTEWATER," of the Dallas City Code to include, CONSERVATION MEASURES RELATING TO LAWN AND LANDSCAPE IRRIGATION ~~(Appendix A)~~.

In ~~2005~~2010, DWU ~~adopted~~updated its Water Conservation Five-Year Strategic Plan (Strategic Plan) that included phased implementation of best management practices (BMPs) under the following major elements:¹

- City Leadership and Commitment
- Education and Outreach Initiatives
- Rebate and Incentive Programs

~~In 2010, DWU completed an update to the Strategic Plan (Updated Strategic Plan) that proposes implementation of additional BMPs through FY 2014-15.²~~

The Water Conservation Plan contained herein ~~will incorporate~~incorporates data obtained in the 2010 update of the Five-Year Strategic Plan.

¹ Alan Plummer Associates, Inc. in association with ~~Chris Brown Consulting, Baker Consulting~~Amy Vickers & Associates, Inc., CP&Y, Inc., Miya Water and ~~Enviromedia, BDS Technologies, Inc.,~~ Water Conservation Five-Year Strategic Plan Update, prepared for City of Dallas, ~~April 2005~~June 2010.

² ~~Alan Plummer Associates, Inc. in conjunction with CP&Y, Inc., Amy Vickers & Associates, Inc., and Miya. Updated Water Conservation Five-Year Strategic Plan, prepared for City of Dallas, June 2010.~~

1.1 State of Texas Requirements

The Texas Administrative Code Title 30, Chapter 288 (30 TAC § 288) requires holders of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 1,000 acre-feet a year or more for municipal, industrial, and other non-irrigation uses to develop, submit, and implement a water conservation plan and to update it according to a specified schedule. As such ~~a water right holder~~, DWU is subject to this requirement. Because DWU provides water as a municipal public and wholesale water supplier, DWU's Water Conservation Plan must include information necessary to comply with Texas Commission on Environmental Quality (TCEQ) requirements for each of these designations.³

~~Copies of 30 TAC § 288 Subchapters A and C are provided in Appendix A.~~ The requirements of Subchapter A that must be included in the City of Dallas Water Conservation Plan are summarized below.

➤ *Minimum Requirements for Municipal Public and Wholesale Water Suppliers*

- Utility Profile: Includes information regarding population and customer data, water use data, ~~(including total gallons per capita per day (GPCD) and residential GPCD)~~, water supply system data, and wastewater system data. ~~(Sections 3 and 4; Appendix AB)~~
- Description of the Wholesaler's Service Area: Includes population and customer data, water use data, water supply system data, and wastewater data. ~~(Figure 3-1 Appendix B)~~
- Goals: Specific quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal ~~and residential~~ use, in ~~gallons per capita per day (gpcd)~~ GPCD. The goals established by a public water supplier are not enforceable under this subparagraph. ~~(Sections 2.2 and 2.3)~~
- Accurate Metering Devices: The TCEQ requires metering devices with an accuracy of plus or minus 5 percent for measuring water diverted from source supply. ~~(Section 5.1)~~
- Universal Metering, Testing, Repair, and Replacement: The TCEQ requires that there be a program for universal metering of both customer and public uses of water for meter testing and repair, and for periodic meter replacement. ~~(Section 5.2)~~
- Leak Detection, Repair, and Control of Unaccounted for Water: The regulations require measures to determine and control unaccounted-for water. Measures may include periodic visual inspections along distribution lines and periodic audits of the water system for illegal connections or abandoned services. ~~(Sections 5.3 and 5.4)~~

³ DWU also holds water rights to provide water for industrial use. However, since DWU uses these rights to provide water to TXU Electric as a wholesale supplier, a water conservation plan for industrial or mining use is not required.

- Continuing Public Education Program: TCEQ requires a continuing public education and information program regarding water conservation. [\(Section 5.5\)](#)
- Non-Promotional Rate Structure: Chapter 288 requires a water rate structure that is cost-based and which does not encourage the excessive use of water. [\(Section 5.8 and Appendix BA\)](#)
- Reservoir Systems Operational Plan: This requirement is to provide a coordinated operational structure for operation of reservoirs owned by the water supply entity within a common watershed or river basin in order to optimize available water supplies. [\(Section 5.10\)](#)
- Wholesale Customer Requirements: The water conservation plan must include a requirement in every water supply contract entered into or renewed after official adoption of the Water Conservation Plan, and 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 Title 30 TAC Chapter 288. [\(Section 5.9\)](#)
- A Means of Implementation and Enforcement: The regulations require a means to implement and enforce the Water Conservation Plan, as evidenced by an ordinance, resolution, or tariff, and a description of the authority by which the conservation plan is enforced. [\(Sections 5.0 through 5.17\)](#)
- Coordination with Regional Water Planning Groups: The water conservation plan should document the coordination with the Regional Water Planning Group for the service area of the public water supplier to demonstrate consistency with the appropriate approved regional water plan. [\(Section 5.12\)](#)
-
- ***Additional Requirements for Cities of More than 5,000 People***
 - Program for Leak Detection, Repair, and Water Loss Accounting: The plan must include a description of the program of leak detection, repair, and water loss accounting for the water transmission, storage, delivery, and distribution system. [\(Sections 5.3 and 5.4\)](#)
 - Record Management System: The plan must include a record management system to record water pumped, water deliveries, water sales and water losses which allows for the desegregation of water sales and uses into the following user classes (residential; commercial; public and institutional and industrial). [\(Sections 5.4 and 5.14\)](#)
 - Requirements for Wholesale Customers: The plan must include a requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in 30 TAC § 288. If the

customer intends to resell the water, 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 the provisions of 30 TAC § 288. [\(Section 5.9\)](#)

- Additional Conservation Strategies: ~~The commission TCEQ Rules also list additional optional but not required conservation strategies which may require that any of the be adopted by suppliers. The following strategies be implemented by the water supplier if the commission determines that the strategy is necessary to achieve the goals of the water conservation optional strategies are included in this plan:-~~
 - ~~conservation-oriented water rates~~Conservation-Oriented Water Rates. (Section 5.8 and Appendix AB) and water rate structures such as uniform or increasing block rate schedules, and/or seasonal rates, but not flat rate or decreasing block rates;
 - ~~adoption of ordinances, plumbing codes or rules requiring water-conserving fixtures;~~
 - ~~a program for replacement or retrofit of water-conserving plumbing fixtures in existing structures;~~
 - ~~reuse and /or recycling of wastewater and/or gray water;~~
 - ~~a program for pressure control and/or reduction in distribution system and/or for customer connections;~~
 - ~~a program and/or ordinance(s) for landscape water management;~~
 - ~~a method for monitoring~~Ordinances, Plumbing Codes and/or Rules on Water Conservation Fixtures. (Section 5.14)
 - Fixture Replacement Incentive Programs. (Sections 5.7.1 through 5.7.3)
 - Reuse and/or Recycling of Wastewater and/or Gray Water. (Sections 5.16 through 5.16.3)
 - Ordinance and/or Programs for Landscape Water Management (Sections 5.5.4 and 5.14).
 - ~~Method for Monitoring the effectiveness and efficiency~~Effectiveness of the ~~water conservation plan.~~
 - ~~any other water conservation practice, method, or technique which the water supplier shows to be appropriate for achieving the stated goal or goals of the water conservation plan~~Plan.

This Water Conservation Plan sets forth a program of long-term measures under which the City of Dallas can improve the overall efficiency of water use and conserve its water resources. Short-term measures which respond to specific water management conditions (i.e., periods of drought, unusually high water demands, unforeseen equipment or system failure, or contamination of a water supply source) are described in the City of Dallas Drought Contingency Plan.

1.2 The Water Conservation Planning Process

Water conservation has increasingly been an important element of Dallas's long range water supply strategy. Since adoption of the water conservation ordinance relating to lawn and landscape irrigation in October of 2001, Dallas has dramatically increased its efforts to promote water conservation. In 2002, Dallas launched a two-year multi-media campaign to increase public awareness of the city's new ordinance prohibiting lawn and landscape water waste. The ongoing public awareness campaign has been broadened to further educate water customers about the importance of conservation. Since ~~adoption of the 2010 Strategic Plan in 2005~~Update, DWU has implemented ~~plumbing, landscape, and irrigation system retrofits at city facilities~~; additional educational and outreach programs; water audit programs; and rebate and incentive programs. This continues to be an ongoing, dynamic process whereby programs are measured and evaluated systematically for effectiveness and efficiency.

The Water Conservation Plan is heavily based on the data and information gathered in the ~~update of the Five-Year~~2010 Strategic Plan Update. This involved a multi-faceted approach that included review of numerous water conservation programs, initiatives, data and literature, as well as input from industry personnel and community stakeholders. The process for development of the Updated Strategic Plan can be outlined as follows:

- Analyzed Dallas Water Utilities data
- Reviewed water conservation programs in other large cities
- Reviewed Texas Regulations pertaining to Water Conservation
- Reviewed City of Dallas water system and associated master plans
- Developed candidate water conservation strategies
- Evaluated water conservation strategies
- Sought input from wholesale customer cities and stakeholder groups
- Developed Water Conservation Plan

1.3 Organization of the Water Conservation Plan

The following information and procedures are provided in this plan:

- **Section 2.0**, Water Conservation Planning Goals, describes the benefits of water conservation, DWU's water conservation planning goals, and the specific, water demand reduction goals established by DWU for this Water Conservation Plan, including quantified five- and ten-year water loss and GPCD reduction goals.

- **Section 3.0**, Population and Per Capita Water Demand Forecasts, identifies DWU's wholesale customers, provides populations and per capita water demand projections, and discusses the impact wholesale customers will have on future water demand.
- **Section 4.0**, Description of the DWU Water System, describes DWU's water supply sources, water treatment plants, treated water storage and distribution systems, and wastewater treatment plants.
- **Section 5.0**, DWU's Water Conservation Program, describes DWU's existing water conservation program and enhancements as well as new conservation measures that are likely to be implemented.
- ~~Appendix A provides a copy of 30 TAC § 288 Subchapter A, a copy of 30 TAC § 288 Subchapter C, and a copy of the City of Dallas water conservation ordinance.~~
- ~~Appendix B~~ provides the completed TCEQ Utility Profiles for Municipal Public Water Suppliers and Wholesale Public Water Suppliers, an implementation schedule, and a map of DWU's service area, a list of Water Supply System Sources, Wholesale Customers Data, Standard Rates Schedule for DWU, and a map of the water and wastewater treatment plants.
- ~~Appendix C provides documentation of the adoption of the Water Conservation Plan by the Dallas City Council and documentation of coordination with the Region C Planning Group, stakeholder groups, and wholesale customers.~~
- ~~Appendix D provides Dallas's Water Conservation Program Annual Report (dated April 26, 2010), which is required to be submitted to the Texas Water Development Board.~~

2.0 Water Conservation Planning Goals

The objective of this Water Conservation Plan is to achieve efficient use of water through practices and measures that reduce water consumption and water losses and increase water reuse. Meeting this objective will allow the use of available water supplies and existing infrastructure to be extended into the future.

2.1 Benefits of Water Conservation

A well-designed Water Conservation Plan will not deprive the community of essential water uses; rather, it will provide a blueprint for efficient water use. The benefits of water conservation not only include those derived from avoided costs, but also others that may not be as easily enumerated in terms of dollars yet hold significant importance to the City in terms of value. Benefits of water conservation include:

- Delays the need to develop expensive future water supplies. Costs associated with developing new water supplies (or purchasing new water) are numerous. These can include capital costs for construction of reservoirs, pumping facilities, pipelines,

treatment plants, water storage, and related facilities; costs of obtaining water rights and permits; and operational costs such as labor, energy, and chemicals.

- Extends the life of existing water supplies and infrastructure. Pressures within the water system will increase in localized areas in order to meet increasing customer demands. Increased pressures within an aging infrastructure will mean more leaks from the system. When water demands are maintained or reduced through conservation, higher system pressure is avoided.
- Reduces peak requirements. A water system is sized to meet its customers' peak demands. When these peak demands are reduced through water conservation, a portion of the system's capacity is freed-up for other water customers. This, in effect, increases the base capacity of the system.
- Lowers capital and operating costs of the existing system. The need for expanding the water treatment and distribution system is delayed or avoided. Operational costs, such as power and chemicals, are also reduced.
- ~~Positions the City to obtain future water rights. In its Long Range Water Supply Plan (LRWSP), Dallas has identified several future water sources located in East Texas that would involve inter-basin transfer of raw water.⁴ With Senate Bill 1, the 75th Texas Legislature required that an applicant for a water right involving an inter-basin transfer must develop and implement a water conservation plan that will result in the highest practicable levels of water conservation and efficiency achievable within the jurisdiction of the applicant.~~

Other benefits include the generation of positive environmental effects, improving customer good will and promoting a positive image for Dallas.

2.2 DWU's Water Conservation Planning Goals

Listed below are many of the planning goals considered important to DWU during the water conservation planning process:

- Reduce seasonal peak demands
- Reduce water loss and waste
- Decrease consumption measured as gallons per capita per day (~~gpcd~~GPCD)
- Maintain quality of life

~~⁴Chiang, Patel & Yerby, Inc. and Mehta West Brashear Group, 2005 Update Long Range Water Supply Plan: prepared for Dallas Water Utilities, December 31, 2005.~~

- Allow continued economic growth and development
- Maintain a heightened public awareness of water conservation in Dallas and the surrounding region
- Include broad-based public and private stakeholder groups in new program development and implementation processes
- “Lead by example” by upgrading city facilities with water efficient fixtures, landscapes, and irrigation systems wherever possible
- Facilitate regional conservation efforts among DWU wholesale customer cities and neighboring municipalities
- Establish the foundation for continuation of water savings targets for the following five-year period
- Remain consistent with the Region C Water Plan
- Incorporate, to the extent practicable, measures identified in the Texas Water Development Board’s (TWDB’s) best management practices (BMP) Guide.

2.3 Quantified Five- and Ten-Year ~~Reduction~~ Goals for Water Savings

Specific elements of the Water Conservation Plan, including planned initiatives, are described in Section 5.0. The development of the planned initiatives involved the identification and examination of numerous conservation strategies. These strategies were derived from several sources, including state agency directives, regional water planning groups, water conservation literature, stakeholder feedback, water conservation programs used by other municipalities, and the City’s existing Strategic Plan.

Targeted water savings are based on the planned BMPs, historical water use patterns, literature values, and experience with other utilities. Savings include the combined ~~effectsefforts~~ of all program elements and the components thereof. ~~The five year water savings target is a reduction in total water use (based on a five year rolling average) of 8.3 gpcd, and the ten year water savings target is a reduction in total water use of 9.1 gpcd (Table 2-1). The five and ten year goals for water loss are to maintain water losses of less than ten percent of total water use.~~

Table 2-1: City of Dallas Five- and Ten-Year Goals for Water Savings ~~Targets~~

Description	<u>Unit</u> <u>Historic 5-yr Average</u>	<u>2009 Baseline</u>	<u>2010 5-yr Goal for Year 2019</u>	<u>2015 10-yr Goal for Year 2024</u>
City of Dallas <u>Population Total</u>	capita <u>204</u>	1,306,350 <u>204</u>	1,312,324 <u>196</u>	1,382,101 <u>195</u>

<u>GPCD</u>				
Total Water Use^a <u>Residential GPCD</u>	gpcd^b 101	205 101	20397	19596
Total Water <u>Reduction-Target Loss GPCD</u>	% 29	- 29	-28	4.1%27
<u>System Losses Water Loss (Percentage)</u>	<u>10%</u>	<u><10%</u>	<u><10%</u>	<u><10%</u>

~~^a Total Water Use is the same as City of Dallas municipal use as defined in 30 TAC § 288.1(11). Indirect reuse volumes are credited against total diversion volumes. However, the reduction goals offered here do not include water saved from reuse.~~

~~^b Based on a five-year rolling average.~~

~~The ten-year goal of 4.5 percent is considered achievable based on sustaining measures implemented within the first five years. Additional plans for the sixth through tenth years will be developed as part of the next update to the Strategic Plan. After that update, the program for the sixth through tenth years can be better defined, and the ten-year goal can be reassessed.~~

The “Total ~~Water Use~~” GPCD five- and ten-year targets (Table 2-1) include water use by DWU industrial customers. However, Dallas also uses other metrics to track the effectiveness of its water conservation efforts, including:

- Non-industrial per capita water use. Exclusive of water use by industrial customers, the five-year rolling average per capita water use in fiscal year ~~2008-09~~2012-13 was ~~194 gpcd~~188 GPCD.
- Residential per capita water use. Including single-family and multi-family residential uses, the five-year rolling average per capita water use in fiscal year ~~2008-09~~2012-13 was ~~102 gpcd~~101 GPCD.

~~In the 2007 Texas Water Use Survey Summary Estimates, the most recent water use figures reported, the TWDB began tracking residential per capita water use.⁵ The most recent annual figure for Dallas was 92 gpcd. This figure is included in the five-year rolling average reported above.~~

3.0 Population Forecasts and Per Capita Water Use

3.1 DWU’s Customer and Population Forecast

DWU supplies retail treated municipal water to the City of Dallas. The ~~2009~~2013 estimated population of the City of Dallas was ~~1,306,350~~213,600, according to the North Central Texas

~~⁵ Texas Water Development Board, 2007 Texas Water Use Survey Summary Estimates. URL: <http://www.twdb.state.tx.us/wrpi/wus/2007est/2007wus.asp>.~~

Council of Governments (NCTCOG). DWU supplies wholesale treated municipal water to ~~2223~~ customer cities or entities, and serves four wholesale raw water customers (one customer receives both treated and raw water). These wholesale customers are primarily located in Dallas, Denton, and Tarrant counties; however, portions extend into Collin, Ellis, and Kaufman counties. A map of ~~the~~ DWU service area, along with a list of wholesale customers, is shown in Figure 3-1. The ~~2009~~2013 estimated total population of the wholesale customers was approximately ~~1,480,750~~213,410, according to NCTCOG.

The total treated water population served for the past five years, based on NCTCOG population estimates, is illustrated in Table 3-1.

3.2 Long-Range Water Planning Efforts

The City of Dallas conducts long-range water planning efforts on a regular basis in order to maintain a reliable supply that meets the demand of the service area. ~~The LRWSP included~~The Long Range Water Supply Plan (LRWSP), currently underway includes revised population, per capita consumption, and total demand projections for Dallas and its wholesale customers. The population projections are presented in Table 3-2.

Figure 3-1: Dallas Water Utilities Service Area

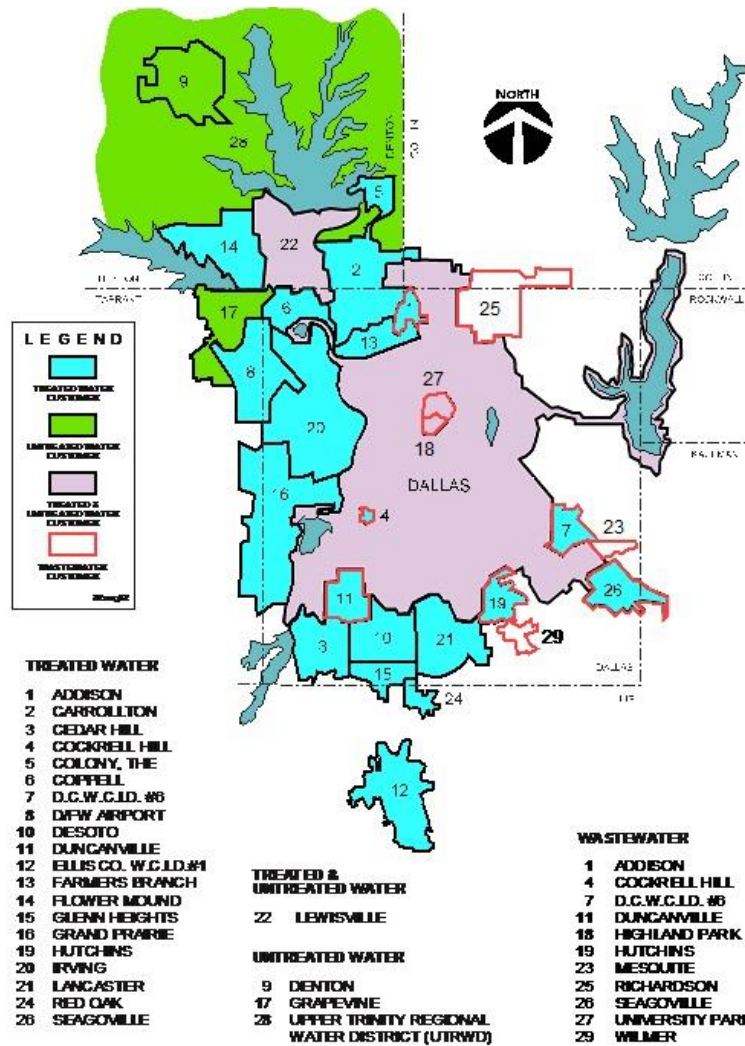


Table 3-1: Population Served (Retail and Wholesale Customers)

Year	<u>2005</u> <u>2009</u>	<u>2006</u> <u>2010</u>	<u>2007</u> <u>2011</u>	<u>2008</u> <u>2012</u>	<u>2009</u> <u>2013</u>
Total Population	2,261,200 <u>487,100</u>	2,334,000 <u>509,450</u>	2,371,396,50	2,454,550 <u>410,000</u>	2,487,100 <u>427,010</u>

Table 3-2: Population Projections for City of Dallas and Customer Cities

City/Region	2010 <u>2020</u>	2020 <u>2030</u>	2030 <u>2040</u>	2040 <u>2050</u>	2050 <u>2060</u>	2060 <u>2070</u>
City of Dallas	1,312,324 <u>2,136</u>	1,451,878 <u>34</u> <u>7,717</u>	1,525,450 <u>5</u> <u>31,680</u>	1,598,222 <u>7</u> <u>07,057</u>	1,650,000 <u>84</u> <u>1,064</u>	1,700,000 <u>90</u> <u>5,499</u>
Current Wholesale Customer Cities	1,452,177 <u>80</u> <u>3,326</u>	1,786,424 <u>2</u> <u>152,176</u>	2,093,651 <u>4</u> <u>41,578</u>	2,352,346 <u>7</u> <u>35,768</u>	2,589,734 <u>3</u> <u>020,130</u>	2,783,982 <u>3</u> <u>317,839</u>
Potential Wholesale Customer Cities	5,500	7,500	8,800	10,500	14,000	22,000
Total	2,770,001 <u>3</u> <u>045,462</u>	3,245,802 <u>49</u> <u>9,893</u>	3,627,901 <u>9</u> <u>73,258</u>	3,961,068 <u>4,442,825</u>	4,253,734 <u>86</u> <u>1,194</u>	4,505,982 <u>5,223,338</u>

3.3 Impact of Wholesale Water Customers on Water Demand

Wholesale water customers account for a significant portion of DWU's water demand. These customers currently use approximately ~~37~~39 percent of all water (treated and untreated) and 32 percent of treated water supplied by DWU. By year ~~2050~~2070, use by DWU's current wholesale water customers could increase to approximately 54 percent of all water and 49 percent of ~~all water and~~ ~~43 percent of~~ treated water. Therefore, water demand reductions by DWU's wholesale customers are considered essential if DWU is to achieve its long range water supply objectives.

Strategies to address this challenge are discussed in Section 5.5 (*Continuing Public Education Program*) and Section 5.9 (*Water Conservation Provisions in Wholesale Water Supply Contracts*).

4.0 Description of the DWU Water System

DWU has supplied water to meet the needs of the City of Dallas since 1881 and also currently supplies treated water to ~~22~~23 wholesale customers. DWU also supplies untreated water to an additional four wholesale customers. Dallas meets these needs through a system of surface water

reservoirs and through its transmission, treatment, and distribution facilities. Recycled water projects, existing and proposed, are also components of the DWU water system.

4.1 Water Supply Sources

DWU has seven geographically diverse surface water reservoirs, located in different watersheds, and can balance the level of use in each reservoir to ensure that the supply of any single reservoir will not be prematurely exhausted.

The reservoirs comprising DWU's system are subdivided into western and eastern systems.— This designation corresponds to DWU's overall water treatment system infrastructure, which includes the two western treatment plants, Bachman Water Treatment Plant (WTP) and Elm Fork WTP, and one eastern treatment plant, East Side WTP. A detailed list of City of Dallas Water Utilities Water Rights is included in Appendix [BA](#).

4.1.1- Western System

The reservoirs and watersheds in the western system in which DWU holds water rights include:

- Ray Roberts Lake
- Lewisville Lake
- Grapevine Lake
- Elm Fork Channel of the Trinity River (above Frazier Dam)

DWU also holds water rights for uncontrolled portions of the Elm Fork of the Trinity River watershed (i.e., areas located downstream of Lewisville Lake and Grapevine Lake which contribute streamflow to DWU's water supply diversion points on the Elm Fork).

4.1.2 Eastern System

The reservoirs and watersheds in the eastern system in which Dallas holds water rights include:

- Lake Ray Hubbard
- Lake Tawakoni
- Lake Fork
- Lake Palestine (unconnected)

DWU holds water rights in Lake Palestine, but this reservoir is not presently connected to the DWU water system. In addition, DWU treats raw water from Lake Chapman for the City of Irving and delivers treated water to the City of Irving.

4.1.3 Others

DWU holds storage and diversion rights for White Rock Lake, located on White Rock Creek, in northeastern Dallas. The City of Dallas also receives return flows into Lewisville Lake, Ray Roberts Lake, and Lake Ray Hubbard.

Table 4-1 presents a summary of the current water rights associated with each of the reservoirs comprising DWU’s raw water sources. A map of DWU reservoirs is located in Appendix ~~AB~~.

4.2 Water Treatment Plants

DWU maintains three water treatment plants (Elm Fork, Bachman, and East Side) serving both retail and wholesale customers. The treatment plants have a combined treatment capacity of 900 million gallons per day (MGD) and a current total firm pumping capacity of 905 MGD.

- The Elm Fork Water Treatment Plant (WTP)** is located in Carrollton near I-35 and Whitlock Lane. It has a current net treatment capacity of 310 MGD and a pumping capacity of 324 MGD. The Elm Fork WTP receives gravity flow through the Elm Fork of the Trinity River from Ray Roberts Lake, Lewisville Lake, and Grapevine Lake. The intake structure, located north of the Carrollton dam, diverts water by gravity flow to two low-service pump stations. One pump station is located at Broadway and Whitlock Lane and the other is on the plant site. ~~Recently two new high service pumps have been installed that increased the overall firm pumping capacity at the plant by 72 MGD.~~

Table 4-1: Summary of Available Water Supply Sources

	Source	Amount Authorized (MGD)	Firm Yield Available to DWU- for 2010 ^a (MGD)
Western System Surface Water	Lake Ray Hubbard	8.0	53.9
	<u>Lewisville Lake</u>	<u>490.0</u>	<u>171.1</u>
	Elm Fork Channel /Ray Roberts Lake/ Lewisville Lake System ^b	<u>1525.3</u>	
	<u>Elm Fork Run-of-River</u>	<u>17.3</u>	
	Grapevine	75.8	6.5

	Lake Reuse		
Elm Fork Channel (CF-75)	10.0	220.5	61.2 ^{a,b}
Elm Fork Channel (Permit 5414)Groundwater	8.9NA	--	--
Eastern System			
Contracts	Sabine River Authority – Lake Ray- HubbardTawakoni	53169.9	170
Lake Tawakoni			163.9
	Sabine River Authority – Lake Fork	407.0117.6	117.7 ^b
	Upper Neches River Municipal Water Authority – Lake Palestine- (Unconnected)	102.0	102 ^c
Others	NA	--	--
Return Flows^d			30.7
Total Connected			533.2
Total Available			635.2

^a – 2005 Update to the Long Range Water Supply Plan

^b – The firm yield of the Elm Fork Channel/Ray Roberts Lake/Lewisville Lake System is based on a system operations yield.

DWU’s share is 74.0% of Ray Roberts Lake firm yield and 95.1835% of Lewisville Lake firm yield.

^c – DWU’s share of Grapevine Lake firm yield is limited by the reservoir allocation plan.

^d – 2005 DWU Recycled Water Implementation Plan.

^aYield is based on 2012 annual wastewater discharges. This number will vary annually depending upon discharge.

^bNot fully connected

^cNot connected

- **The Bachman WTP** is located north of Love Field Airport and adjacent to Bachman Lake. Bachman is Dallas’ oldest WTP and has a current net treatment capacity of 150 MGD, current storage capacity of 12.6 million gallons (MG), and a high-service pumping capacity of 180 MGD. Raw water is diverted from the Elm Fork of the Trinity River through Fishing Hole Lake to the Raw Water Pump Station (PS) which is located off-site from the WTP. The raw water is then pumped to the Ozone Facility located at the plant. ~~Recent improvements increased the treatment and pumping capacities of the plant to their current levels.~~

- **The East Side WTP** is located in Sunnyvale. The East Side WTP is Dallas’ largest WTP and has a current treatment capacity of 440 MGD and a firm pumping capacity of 401 MGD. The East Side WTP receives raw water from three reservoirs (Lake Ray Hubbard, Lake Tawakoni and Lake Fork) via three raw water pump stations and one balancing reservoir. From the east, the Iron Bridge PS (at Lake Tawakoni) and the Lake Fork PS pump raw water to the Tawakoni Balancing Reservoir (TBR). From the TBR, raw water flows by gravity into the Ozone Facility located at the plant. The Forney Raw Water PS pumps raw water from Lake Ray Hubbard directly to the Ozone Facility.

Several improvements are currently in progress to increase the overall capacity of the eastern system. The Lake Fork PS has recently been completed along with a new raw water transmission line that connects it to the Iron Bridge PS. New raw water pipelines from Lake Tawakoni to the TBR and from TBR to the East Side WTP are currently in the planning phases. In addition, improvements are presently underway at the East Side WTP to increase the treatment capacity of the plant from 440 MGD to 540 MGD and to implement the new enhanced coagulation and biological filtration treatment scheme.

4.3 Treated Water Storage and Distribution Systems

The DWU ~~consists of 17~~distribution system is divided into nine major pressure zones, ~~25 (Central Low, North High, South High, East High, Pleasant Grove, Red Bird High, Renner High, Trinity Heights and Cedar dale)~~ with several intermediate areas of service supplied via inline boosters and pressure reducing valves. Each pressure zone includes one or more ground/elevated storage tank that is designed to act both as pressure equalizer and fire protection storage within the area.

Once the water has been treated at one of the three DWU treatment plants (Bachman; Elm Fork; East Side), the finished water is then pumped into the distribution system. Transfers from treatment plants are accomplished by means of “high service” pumps that are located at the plant sites and throughout the system. These “high service” stations are supplied directly from the plant clear wells. There are a combined total of 30 pump stations, 11 clear wells, 10 ground storage reservoirs, and 9 elevated storage tanks in the distribution system.

The treatment plant clearwells have a combined storage capacity of 90 MG; The ground storage reservoirs and elevated storage tanks have a total storage capacity of 20178.4 MG and 15.5 MG, respectively. The combined storage capacity of the system is approximately 260.4 MG.

DWU’s treated water distribution system ~~eontains~~consists of approximately 4,900922 linear miles of pipe, ~~which can deliver approximately 760 MGD.~~ The capacity of the treated water distribution system is constantly being upgraded and ~~reassessed~~re-assessed to improve the ability of the distribution system to meet customers’ needs and to replace aging infrastructure. ~~Currently several new pump stations have recently been completed or are under construction or in the design phase. These new pump stations will replace existing pump stations.~~

~~Currently the new Transfer Pump Station No. 3 (TPS3), which will ultimately house eight pumps is under construction at East Side WTP. Also, four new 15-MG ground storage reservoirs are~~

~~under construction at the East Side WTP. This pump station will increase the firm pumping capacity out of East Side WTP from 401 MGD to 701 MGD. Also, the new ground storage reservoirs will increase storage capacity from 6 MG to 60 MG.~~

~~To connect the new TPS3 at East Side WTP to the system and to fully realize a pumping capacity increase at the East Side WTP, a new 120-inch diameter water transmission pipeline is currently in the planning phases. This new pipeline will travel around the southeast side of the city from TPS3 at the East Side WTP to the proposed Wintergreen Pump Station and ground storage reservoir located on the southeast side of the city. From there the new pipeline will travel west and tie into the existing Sorcey Road Pump Station on the southwest side of the city.~~

~~The Wintergreen Pump Station and ground storage reservoir has been proposed but is not yet in the planning stages. The proposed facilities would supply treated water to the southeast service area and to customer cities, with remaining water pumped to the existing Sorcey Road Pump Station as described above.~~

4.4 Wastewater Treatment Plants

DWU operates two wastewater treatment plants (WWTPs) - Central and Southside - that serve the City of Dallas as well as eleven wholesale wastewater customer cities. The WWTPs have a combined annual average flow permitted capacity of ~~270260~~ MGD with 545 MGD 2-hour peak. A general description of the plants is as follows:

- **Central WWTP** is currently rated at 150 MGD and is located 4 miles south of downtown. The Central WWTP permit includes a future capacity of 200 MGD. The annual average flow for FY ~~2008-09~~2012-13 was ~~10173.2~~ MGD. The Central WWTP consists of two parallel treatment trains known as the Dallas Plant and White Rock Plant. Each has influent pump stations, preliminary treatment facilities, primary clarification, trickling filters, and secondary clarifiers. The combined flow from the Dallas and White Rock plants is then pumped to common aeration basins, final clarifiers, chlorination, filtration, and ~~dechlorination~~de-chlorination facilities. Sludge from the Central WWTP is pumped approximately 13 miles to the Southside WWTP.
- **Southside WWTP** is currently permitted at 110 MGD and is located 18 miles southeast of downtown. The annual average flow for FY ~~2008-09~~2012-13 was ~~5749~~ MGD. The Southside WWTP consists of an influent pump station, preliminary treatment facilities, primary clarification, aeration basins, secondary clarifiers, chlorination, filtration, and ~~dechlorination~~de-chlorination facilities. The sludge handling facilities at the Southside WWTP include solids thickening, anaerobic digestion, solids dewatering, and dedicated land disposal.

A small portion of the city's wastewater is transported to the Trinity River Authority (TRA) Central Regional Wastewater Treatment Facility and to the City of Garland Duck Creek WWTP. Additional DWU wastewater system data is presented in the TCEQ's Utility Profiles for Municipal and Wholesale Suppliers provided in Appendix ~~AB~~. Also included in Appendix ~~AB~~ is a map of DWU's water and wastewater treatment plants.

5.0 DWU's Water Conservation Program

DWU has a long history of providing leadership in the area of water conservation. This section provides a description of DWU's existing water conservation program and the enhancements or new conservation measures that are planned to achieve or exceed DWU's stated water conservation goal.

5.1 Accurate Supply Source Metering

DWU has a comprehensive program to meter water diverted from supply sources within the DWU water system. All untreated water diversions or conveyances to the City of Dallas's [Water Treatment Plants \(WTPs\)](#) are metered using ~~venturi~~[Venturi](#) meters located at the WTPs. DWU contracts require that wholesale customers (treated and untreated water) use a meter that conforms to American Water Works Association (AWWA) standards with review and approval by DWU. The meters are calibrated in accordance with those standards to an accuracy of plus or minus ~~21.5~~ percent. This is well within the TCEQ requirement of 5 percent accuracy. All untreated water diverted from supply sources is compiled in an annual Surface Water Report, which shows diversions on a monthly basis.

5.2 Universal Metering, Meter Testing and Repair, and Periodic Meter Replacement

Universal Metering - The current City of Dallas ordinance requires metering of all connections, except closed fire systems with alarms. Individual metering is required at all single-family residential locations. Most multifamily residential locations, such as apartments and condominiums, have individual metering for each building or designated water user. Some commercial businesses are combined through a single master meter as well. Dual metering is currently provided to some customers based on the individual needs of the user. All treated water pumped from the WTPs is compiled in an annual Pumped Water Report, which shows water pumped on a monthly basis.

Most of the treated water used by wholesale customers is metered by DWU using ~~venturi~~[Venturi](#) meters with rate-of-flow controllers (ROFCs). The remaining treated water usage by wholesale customers is metered by volumetric meters. All treated water pumped from the WTPs to treated water wholesale customers is included in the Annual Pumped Water Report.

Meter Testing and Repair —~~All~~ DWU meters are tested and calibrated in accordance with AWWA standards to accuracy within plus or minus ~~21.5~~ percent. The city maintains a program to pull, test, and replace any meters determined to be functioning outside of these parameters.

Periodic Meter Replacement – Most residential meters in the City of Dallas are replaced at 10-year or 15-year intervals depending on meter size, and accuracy life of the meter. Repair or replacement of larger general service meters is generally provided at five-year intervals. DWU will also repair or replace any meter reported as inaccurate by a water customer.

5.3 Leak Detection, Repair, and Control of Unaccounted-for Water

DWU has an extensive leak detection and repair program and is committed to maintaining a rate of less than 10 percent for unaccounted-for water losses in its water system. Annual unaccounted-for water, based on the difference between treated water pumped and sold, averaged 9.4474 percent in ~~2009~~2013. This is well below the national average of 12 percent and below the [American Water Works Association \(AWWA\)](#) goal of 10 percent.

Currently, DWU has an annual budget of \$~~16.525~~ million for maintenance and upkeep of the distribution system. The majority of the budget is used for personnel, equipment, and materials. DWU operates 23 four-person repair crews. Most leaks, illegal connections, or abandoned services are discovered through the visual observation of field crews or are reported by the public.

DWU also has fourteen staff members to detect hard-to-find leaks. The Leak Detection Program has the goal of surveying the entire water system and improving the integrity of the water system by identifying weaknesses in water pipelines before breaks develop. The goal is to survey all pipelines every 2.5 years. Leak detection staff members utilize state-of-the-art leak detection equipment, including leak listening devices, leak noise loggers, and a leak noise correlator. [DWU leak detection program continues to meet and exceed its annual goal: surveying an average of 4,000 miles during years 2012 and 2013.](#)

~~During implementation of its Updated Strategic Plan, beginning in FY 2010-11, DWU plans to enhance water loss reduction with additional leak detection, leak repair, and data analysis staff, equipment, and software. This enhancement is subject to annual appropriations.~~

5.4 Monitoring and Record Management of Water Deliveries, Sales and Losses

DWU regularly monitors all water deliveries and sales to both treated and untreated water customers. All critical data, such as raw water conveyances to WTPs or wholesale customers, treated water pumped, and unaccounted-for water losses are available on a regular basis, as needed. All water sources and service connection accounts are individually metered and read on a regular basis to facilitate accurate comparisons and analysis.

5.5 Continuing Public Education Program

The City of Dallas' public education program is considered one of the best information and education programs in the State of Texas. DWU's program has received recognition from the Texas Water Development Board, the Texas Section of the ~~AWWA, and the~~ [American Water Works Association \(TAWWA\)](#), the Texas Water Conservation Association, ~~the~~ [American Advertising Federation, the U.S. Environmental Protection Agency \(EPA\), and the Obama Administration's 2011 Clean Water Framework Report.](#) The school program has received awards from the ~~Texas Section of the AWWA~~ [TAWWA](#), Keep Texas Beautiful, and the Oak Cliff Chamber of Commerce.

DWU has implemented a number of public education and outreach strategies including an expanded Public Awareness Campaign, the Environmental Education Initiative for K-12 [students](#),

a water conservation mascot, free irrigation system inspections, free Industrial, Commercial and Institutional (ICI) Water Efficiency Assessments and Rebates, a Hospitality Industry Outreach Program, water-wise landscape events, and other public education.

5.5.1 *Expanded Public Awareness Campaign*

~~The ongoing~~ Launched in the summer of 2002, the city's Public Awareness Campaign, branded "Save Water, Nothing Can Replace It," promotes water conservation with television ads on major stations, radio ads during peak traffic periods, billboards on heavily traveled thoroughfares, and print ads in the *Dallas Morning News* and minority publications. ~~An updated~~ A web site featuring the "Save Water" logo contains information about water conservation programs, the water conservation ordinance restrictions, and various "green" events sponsored by the city. The website can be accessed by visiting www.savedallaswater.com.

Although the Dallas-Fort Worth metropolitan area receives water service from many different water providers, it is a single media market. As a result, the DWU Public Awareness Campaign delivers messages within other water service areas, and the DWU water service area receives water conservation messages from other water providers. In 2009, DWU partnered with the Tarrant Regional Water District (TRWD) to minimize the potential for customer confusion by providing uniform water conservation messages to the entire media market and to leverage its Public Awareness Campaign budget. The public awareness campaign annual budget has grown from \$1,150,000 in FY 2003-04 to \$1,~~380~~320,000 in FY ~~2009-10~~. ~~Through the partnership with TRWD, 2012-13.~~ Dallas ~~leveraged~~leverages an additional ~~\$650~~750,000 in media exposure ~~in 2009-annually through the TRWD partnership.~~ Since 2002, Dallas has spent ~~a total of \$9.25 over~~ \$14.4 million on its public awareness campaign thus demonstrating its continuing commitment to water conservation for the entire North Texas region.

5.5.2 *Environmental Education Initiative K-12*

In FY 2005/06, DWU augmented its existing school education programs with an Environmental Education Initiative (EEI) through a collaborative effort with the Department of Sanitation to provide programs for grades kindergarten through twelve in the Dallas ~~Independent School District~~ and ~~the Richardson Independent School District~~. Districts. The EEI web site⁶ is an online resource for teachers with links to videos on outdoor water use, indoor water use, watersheds, the power of many conserving, and surface-groundwater interactions. The web site also has a description of recycling lessons and water lessons for kindergarten through fifth grade children. Teachers can also register for a free in-class presentation through this web site. To date, the EEI has ~~held programs for~~ reached over ~~4+150,000 students, and over 900 teachers have participated in the staff development program.~~ The annual EEI budget has increased from \$171,000 in FY 2005-06 to \$274,000 in FY ~~2009-10~~2012-13.

5.5.3 *Water Conservation Mascot*

In 2006, DISD students elected Dallas' official water conservation mascot. ~~"DEW" debuted in July 2006, with a seven-day tour at seven recreation centers. Nearly 700 children participated. As~~

⁶ URL: dallaseei.org.

~~part of the mascot kick off, DWU water conservation staff'. Through frequent public appearances and local artists taught children community outreach, DEW helps to educate kids and adults alike about water conservation and provided comic strip drawing lessons, encouraging children to participate in the educational campaign by creating their own cartoons for a competition. The winner of the competition became a creative director for the animated DWU commercial based on her concept. The DEW commercial aired in 2007 in English and Spanish. The video "the importance of using water wisely. DEW Helps Kids Save Water" received the 2007 Watermark Award for Communications Excellence from the Texas Section of the AWWA and the Water Environment Association of Texas. DEW spots aired on Nickelodeon and the Cartoon Network in the summer of 2007, and DEW now has reached over 9,000 Dallas residents and businesses since his own MySpace and Facebook web pages. DEW 2006 debut. More information on DEW's efforts can also be accessed through the "Kids Corner" link on the city's water conservation webpage, www.savedallaswater.com.~~

~~DEW also introduces and narrates the Environmental Education Initiative videos. In summer 2009, the DWU held a "Create a Slogan for DEW" contest to augment its Public Awareness Campaign. Elementary and middle school students submitted 582 slogans to the contest, and the winning slogan was "You can't go green without going blue."~~

5.5.4 Free Irrigation System Inspections

DWU added two licensed irrigators to its water conservation division staff and began providing free irrigation system inspections in FY 2006-07. ~~The~~These inspectors serve residential and commercial customers and work with other city departments on proper maintenance and operation of city irrigation systems. The inspections include identification of potential system leaks, diagnosis of equipment malfunctions, and recommendations for equipment upgrades to enhance efficiency. As of ~~March 2010~~September 2013, over ~~14,000~~14,000 inspections have been performed. ~~At city facilities alone, these inspections are estimated to save more than thirty one~~ since the program was launched. Projected savings based on implemented recommendations for FY2013 is 101 MG annually/year.

5.5.5 Industrial, Commercial, and Institutional (ICI) Cooling Tower Audits

~~The ICI cooling tower audit program is an outreach effort by DWU to assist large users of cooling water in finding ways to operate more efficiently, save water and energy, and lower their costs. Water savings are realized as the ICI customers implement audit recommendations. The first ICI cooling tower audit was conducted in March 2007. To date, 60 audits have been performed. If all previous audit recommendations are implemented, the ICI cooling tower audit program is projected to save 242 MG per year.~~

5.5.6 Water Wise Landscape Events

~~DWU's water wise landscapes program~~FY 2014 will mark the 20th anniversary of the city's Water-wise Landscape Tour of Homes and Awards program. This initiative is designed to raise public awareness and save water by publicizing demonstration gardens, recognizing water-wise award winners, and promoting the replacement of water-thirsty yards with landscaping that requires minimal water and maintenance.

The city ~~has also maintains~~ “water-wise” landscapes and demonstration gardens at the historic White Rock Lake Pump Station and Fair Park. ~~DWU also promotes the~~ The use of water-wise landscaping ~~with annual water-wise awards, tours of homes, and is also promoted through~~ semi-annual water-wise seminars. ~~Water-wise landscaping is also presented on the DWU’s and the city’s~~ water conservation web site (www.savedallaswater.com) ~~including which includes~~ a list of water-wise landscape locations and virtual tours.

~~During~~ From FY ~~2003-04~~ 2008-09 through FY ~~2007-08, DWU held~~ 10 2012-13, the city hosted 20 water-wise events. It is difficult to quantify water savings achieved specifically from these events. However, this conservation measure heightens awareness of the need for water conservation and provides tools for landscape conversion and proper maintenance.

Water savings resulting from customer conversion to water-wise landscaping is not tracked by the city, but continued education events and potential water-wise landscape ordinances for future construction are expected to contribute to water use reduction over time.

5.5.76 Other Public Education

~~DWU~~ The City of Dallas also uses other approaches to public education, including water bill inserts, brochures, speaking engagements, special events and promotions, and conservation-oriented signs in city facilities.

5.5.8 ~~Planned~~ 7 New Public Education Measures

~~Voluntary Twice-Weekly Irrigation Schedule (FY~~ Implemented Since 2010-11) Plan Update

~~From FY 2003-04 through FY 2007-08, more than forty-two percent of total water use was for seasonal purposes, including irrigation and cooling. Dallas plans to encourage all customers to limit irrigation to a maximum of two days per week from April 1 through October 31. A twice-per-week irrigation limitation will reduce over irrigation but will allow customers to meet plant needs.~~

Industrial, Commercial, and Institutional (ICI) ~~Customer~~ Free Water ~~Audits (Efficiency Surveys~~

~~In FY 2011-(12), the Dallas City Council authorized an ICI Water Efficiency Survey Program to help commercial entities and small businesses save water and money by identifying opportunities to increase water use efficiency and to reduce water, wastewater and electricity costs.~~

~~At a customer’s request, a DWU auditor will visit an ICI establishment with the company’s engineers or other employees knowledgeable about company water use. The auditor will review all end-uses of water, identify potential water efficiency improvements and potential costs, directly install small, low cost devices as appropriate, document the findings, inform the company of applicable DWU water conservation programs, and follow up with the company to track implementation of the recommendations. The ICI customer water audit will be conducted at no cost to the customer. This program is an enhancement of the existing cooling tower water audit program (Section 5.5.5).~~

The city's free assessments include a full examination of:

- Cooling Towers, Boilers & Other Thermodynamic Operations
- Metering, Monitoring and Measurement
- Plumbing Fixtures, Fittings & Equipment
- Landscape Irrigation
- Food Service Operations
- Laundry Operations
- Laboratory & Medical Facilities
- Swimming Pools, Spas & Fountains
- Vehicle Washes
- Alternate Sources of Water

Over 69 water efficiency assessments have been performed since the program was launched with an estimated water savings of over 228 MGY if recommended process and equipment improvements are implemented.

ICI Hospitality Program

In FY 2010-11, the Dallas City Council authorized a program to encourage hotels/motels and restaurants to expand their efforts to save water by participating in the city's Water Conservation Hospitality Program. The initiative is voluntary. Participating hotels and motels urge guests to embrace fewer linen and towel changes as well as serve water on request only in their dining areas. The City provides free public service announcements to participating lodging facilities to educate their guests about the program. Dallas area restaurants are also encouraged to serve water on request only. This simple measure not only saves our water resources but also provides energy savings through less frequent dishwasher and heated water use. Free marketing and promotional materials are provided for participating establishments. Forty- six hotels and 33 restaurants currently participate in the program.

5.5.8 Planned Public Education Measures

ICI Training Programs (FY ~~2012-13~~2014-15)

DWU plans to develop, lead, and manage ongoing water efficiency training programs for:

- ICI facility managers for premise types that use the most water, and
- Irrigators, with a focus on EPA WaterSense programs.

Topics will include industrial cooling and process, food processing, irrigation management, and leakage control. Bi-monthly or quarterly training programs will be conducted. As facility managers and irrigators become more aware of available water-efficient technologies and methods, they will begin to implement these measures. DWU will work with local businesses, green building organizations, and energy utilities to seek their input on the curriculum development and certification process.

ICI Business Partnership Program (FY ~~2011-12~~2014-15)

DWU plans to establish an ongoing Business Partnership Task Force or work group for the purpose of engaging the ICI community in DWU's water conservation program, particularly business leaders who represent companies that are top water users. The Task Force will meet four to six times per year for discussion of water conservation practices, sharing of conservation success stories, and discussion of DWU ICI water conservation programs.

~~ICI Hospitality Program (FY 2011-12)~~

~~DWU will engage hotels, motels, and restaurants in the city's water conservation program and train hospitality staff on methods to reduce water use and waste. Measures will include water on request, reuse of towels and linens, and others. To encourage guest participation, DWU will provide printed materials such as table cards, door hangers and pillow cards. This program is scheduled for implementation in FY 2011-12.~~

5.6 City Leadership and Commitment Measures

City leadership and commitment strategies are intended to demonstrate a strong commitment to water conservation, with the city "leading by example." Within this element of the Strategic Plan, the city has expanded its water conservation staff, expanded its leak detection program, revised its water conservation ordinance, and conducted retrofits at city-owned facilities. In addition, the city uses its web site to publicize its leadership, commitment, and conservation practices. Moreover, Dallas was the first municipality in the North Texas area to adopt an ordinance prohibiting limiting outdoor landscape water wastewatering to a maximum of twice weekly. The ordinance now serves as a model for many cities across the region.

5.6.1 Water Conservation Division Staff

DWU currently maintains ~~40.813~~ staff positions in the Water Conservation Division, up from 7 full-time employees in 2005. New staff members included a water conservation analyst and two licensed irrigators. Staff members were added to analyze and track BMP programs, provide customer water audits, administer education programs, and facilitate retrofit programs. Significant expansion of water conservation programs with the implementation of the Strategic Plan required more water conservation staff to coordinate and support the enhanced program.

5.6.2 Retrofit of City Owned Facilities

Retrofits of city facilities have included replacement of plumbing fixtures and irrigation audits and corresponding improvements. The city has also increased its employee and public awareness with campaigns publicizing improvements or retrofits at city-owned facilities. In FY ~~2004-05~~2012-13, a total of ~~152446~~ indoor plumbing fixtures were installed as retrofits in ~~25 city facilities~~Dallas City Hall, with an estimated annual water savings of ~~2.71.5~~ MG. These improvements were made possible through the City Leadership Grant Program which provides funding to city departments for water conservation activities. Grants are awarded on a competitive basis annually.

DWU licensed irrigators also work with city departments on proper maintenance and operation of city irrigation systems. ~~Three detailed~~Over 160 irrigation ~~audits~~system evaluations were performed at city parks facilities in bothduring FY ~~2005-06 and FY 2006-07. In FY 2007-08, the Park and Recreation Department replaced 825 pop-up spray heads at the main entrance and adjacent north parking lot of the Dallas Zoo with new heads that provide more efficient and~~

~~effective water usage. These improvements are expected to reduce irrigation water use at these locations by 25 percent annually. Pop-up spray heads in medians at Dallas City Hall were also replaced with more efficient heads. These improvements are expected to reduce irrigation water use by 30 to 40 percent annually~~2012/13.

~~Finally, the DWU City Leadership Grant Program makes funding for water conservation activities available to other city departments on a competitive basis. Dallas has made the following improvements through this initiative:~~

- ~~▪ Installed water wise landscaping and redesigned the irrigation system at Kiest Park, (estimated savings of more than 431,000 gallons per year)~~
- ~~▪ Installed an “earth kind” rose garden at the Samuel Grand Recreation Center, and~~
- ~~▪ Replaced eighty urinals at forty fire stations.~~

5.6.3 ~~Planned~~ **New City Leadership and Commitment Measures**

Water-Wise Landscape Design Requirements (FY ~~2013-14~~2014-15)

~~Upon~~DWU is collaborating with the city’s Building Inspection Office to revise, upon City Council approval and adoption, ~~Dallas plans to revise~~ its landscape ordinance to limit turf areas in all new landscapes and require low-water-use landscaping in other areas. Other requirements could include minimum soil depths, soil amendments, and turf grass dormancy capability. Turf grass requires more water than native grasses and low-water-use plants. Reducing the turf grass area in new landscapes will reduce irrigation water use.

ICI Commercial Equipment Rule (FY 2013-14)

~~Upon City Council approval and With the~~ adoption, ~~Dallas plans to adopt an ordinance requiring of the International Green Building Construction Code (Section 5.14), the city has put into place requirements for~~ certain water efficiency standards for new and newly-occupied ICI establishments. ~~Example requirements could include repairing all leaks, retrofitting high flow plumbing fixtures, and other equipment and service requirements, depending on the nature of the business. DWU plans to collaborate with the city’s Building Inspection Office to verify and enforce inspections and installation of water efficiency measures prior to occupancy.~~

5.7 Rebate and Incentive Programs

DWU has implemented the following rebate and incentive programs: residential and multi-family toilet vouchers (*New Throne for Your Home*); Minor Plumbing Repair program; and the ICI ~~pre-rinse spray nozzle replacement~~rebate program (~~*Spray to Save*~~). Each of these programs is described below.

5.7.1 Toilet Voucher Program

The *New Throne for Your Home* program, initiated in July 2007, offers vouchers of up to \$90 for replacement of older, inefficient toilets with more efficient models. ~~Voucher applicants~~Applicants must be DWU customers ~~who own or rent a single or multi-family residence built~~whose toilets were installed prior to ~~1992~~January 1, 1994 and who do not already have water-efficient toilets. ~~Residential~~Single-family vouchers are limited to two per household. Multi-family requests are

handled on a first-come, first-served basis, as funding is limited. The program ~~has been~~ promoted in print and on the DWU water conservation web site.

To date, more than ~~20,400~~65,000 toilets have been replaced through the *New Throne for Your Home* program. These efficient toilets are projected to save ~~93.2~~over 293 MG annually.

5.7.2 Minor Plumbing Repair Program

The Minor Plumbing Repair (MPR) program ~~replaces~~was initiated in FY 2005-06 with the goal of assisting low-to-moderate income water customers reduce water waste and increase water use efficiency. The program is designed to replace inefficient water use fixtures such as toilets (up to 2 per household), faucet aerators, and showerheads with efficient water use fixtures. The program also includes minor repairs to leaking faucets, hose bib leaks, easily accessible pipe joint leaks, and water heaters. ~~The MPR program assists low income DWU customers at no cost to the customer. To date, over 3,200 families have participated. Measures implemented through the MPR program are projected to save over 21 MG annually.~~

~~The MPR program was initiated in FY 2005-06. To date, over 1,700 families have participated. Currently, measures implemented through the MPR program are projected to save 16.5 MG annually.~~

5.7.3 ICI Pre-Rinse Spray Nozzle Replacement Program

~~The *Spray to Save* program is a pre-rinse spray nozzle replacement program that provides efficient pre-rinse spray nozzles free to restaurants, cafeterias, and other commercial food service providers. With the efficient nozzles, food service businesses may save up to \$1,000 per year in energy, water, and wastewater costs. Eligible businesses are DWU customers with an existing, inefficient pre-rinse spray nozzle assembly.~~

~~The *Spray to Save* program was initiated in September 2007. Since inception, more than 8,500 fixtures have been replaced at more than 3,100 food service facilities, providing estimated annual savings of 475 MG per year.~~

5.7.3 *New Rebate and Incentive Measures Implemented Since 2010 Five-year Strategic Plan Update*

Industrial, Commercial and Institutional Rebate Program

In FY 2011-12, the Dallas City Council authorized funding for ICI rebates in an effort to help corporations and small businesses defray the costs for large water conservation projects. Up to \$100,000 (per project) in site-specific rebates are available to ICI customers towards the cost of new equipment and processes that conserve water at existing facilities. All ICI water users served by the City of Dallas Water Utilities are eligible to apply. A free City of Dallas water efficiency facility assessment is required for eligibility. Two customers have been identified for potential rebates to date.

5.7.4 *Planned ~~New~~ Rebate and Incentive Measures*

Residential Irrigation System Incentive (FY ~~2012-13~~2013-14)

DWU plans to offer a rebate or other incentive to all single- and multi-family residential customers that retrofit their existing irrigation systems with water-conserving equipment. Qualifying equipment may include:

- Drip irrigation equipment
- Spray heads with greater distribution uniformity
- Smart irrigation controllers
- Other devices

~~ICI Financial Incentives (FY 2011-12)~~

~~DWU plans to implement a site specific rebate program for ICI customers to promote water-efficient equipment installation and upgrades. Examples could include cooling processes, plumbing fixtures, laundry processing, medical/dental devices, landscape irrigation, etc. Candidates could include office buildings, hotels/motels, restaurants, grocery stores, Laundromats, schools, manufacturers, food processing, and parks/golf courses.~~

~~Customers would propose water efficiency improvements and project the associated water savings and costs. After review of the proposal, DWU could agree to fund a portion of the cost (up to a maximum amount per customer) for water efficiency measures that meet certain water savings performance standards. The customer would install the approved water efficiency measures. Upon confirmation of installation, DWU would rebate a portion of the measure costs.~~

~~Enhanced Residential Toilet Incentive (FY 2011-12)~~

~~DWU plans to expand the *New Throne for Your Home* program to replace additional existing single and multi-family residential toilets that use 3.5 gallons per flush or more with high-efficiency toilets (1.28 gallons per flush or less).~~

Residential Clothes Washer Incentive (FY ~~2011-12~~)2014/15)

DWU plans to offer a rebate to single- and multi-family residential customers for replacing older, inefficient clothes washers with water-efficient models (modified energy factor of at least 1.8 and water factor of no more than 7.5). Efficient clothes washers use up to sixty percent less energy and up to forty percent less water than conventional machines.

~~All new and existing rebate and incentive programs are available subject to annual appropriations.~~

5.8 Nonpromotional Water Rate Structure

DWU has a conservation-oriented rate structure for customers within the City of Dallas. Under the increasing block rate structure, customers are billed a water meter service charge which increases with the size of their meters. Customers are also billed for water usage, and increasing usage results in a higher unit cost for water. Connecting higher rates to increased consumption discourages customers from wasting water. A copy of DWU's ~~standard~~ rates is provided in Appendix ~~B~~A.

Wholesale Customer Water Rates – The rate structure for 97 percent of wholesale treated water customers is two-part, based on demand and volume. The remaining three percent is charged at a flat volume rate. Current wholesale customer contracts include a clause that promotes water conservation by discouraging high one-year water use and then returning to lower demand levels. Under this provision, wholesale customers pay annual demand charges based on the current water year demand or the highest demand established during the five preceding water years, whichever is greater. Wholesale untreated water customers are charged either a non-interruptible rate or an interruptible rate.

5.9 Water Conservation Provisions in Wholesale Water Supply Contracts

Current contracts between the City of Dallas and wholesale customers contain the following typical provisions related to water conservation: (1) the customer agrees to develop a water conservation plan which incorporates loss-reduction measures and demand management practices designed to ensure that the available supply is used in an economically efficient and environmentally sensitive manner, and (2) if Dallas grants authorization for the customer to sell water purchased from Dallas, then Dallas may establish the terms and conditions of the conveyance.

In accordance with 30 TAC § 288, the City of Dallas will include a requirement in every wholesale water supply contract entered into, 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 Chapter 288. If the 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.

5.10 Reservoir Systems Operations Plan

DWU operates the water supply system to achieve the most economical operation consistent with assuring adequate supply for future years, maintenance of water rights, and maintenance requirements of the supply and transmission facilities. To balance these factors, a revised reservoir operating procedure has been developed. This procedure is revised periodically as conditions change.

The operation procedures are tested using computer simulations ~~developed~~maintained and operated by DWU staff. The modeling considers projected water demands, power costs, chemical costs, treatment and distribution constraints, and hydrological data. Program utilization normally involves the trial operation of a set of lake operations, assuming that the critical drought of record begins at the time the simulations are made.

DWU's computer program chooses monthly drafts from each lake based primarily on lake levels. When lakes are near full, less expensive western sources are drafted heavily. When these lakes drop to defined levels, their drafts are reduced and drafts are switched to more remote sources. Each potential operating rule is tested over the hydrological period of record to ensure the

operation would not cause the supply in any reservoir to be exhausted should a drought equal in severity to the worst drought of record recur. The potential operating rules are compared, and from the results a set of operating guidelines for the upcoming year is developed. These guidelines are then modified if conditions warrant.

5.11 Means to Implement and Enforce the Water Conservation Plan

DWU administers and implements various components of the Water Conservation Program within the City of Dallas as authorized by the Dallas City Code, Chapter 49, Water and Wastewater. The enforcement of the water rate structure and metering is automatic. Water conservation lawn and landscape restrictions are enforced by the Department of Code Compliance. The DWU budget includes funding for enforcement activities by the Department of Code Compliance equivalent to two full-time personnel. For wholesale customers, clauses within their water supply contracts require development of water conservation plans to ensure that available supplies are used efficiently.

5.12 Coordination with Regional Water Planning Groups

DWU will provide a copy of this Water Conservation Plan to the Region C Water Planning Group, ~~which is currently updating the Regional Water Plan.~~ As the largest water supplier in the region, DWU will provide leadership and work with the Regional Water Planning Group to improve efficient utilization of existing water resources and/or develop new resources which meet the needs of the entire region.

5.13 Desegregation of Water Sales by Customer Class

DWU separates City of Dallas water customers into four general account classes:

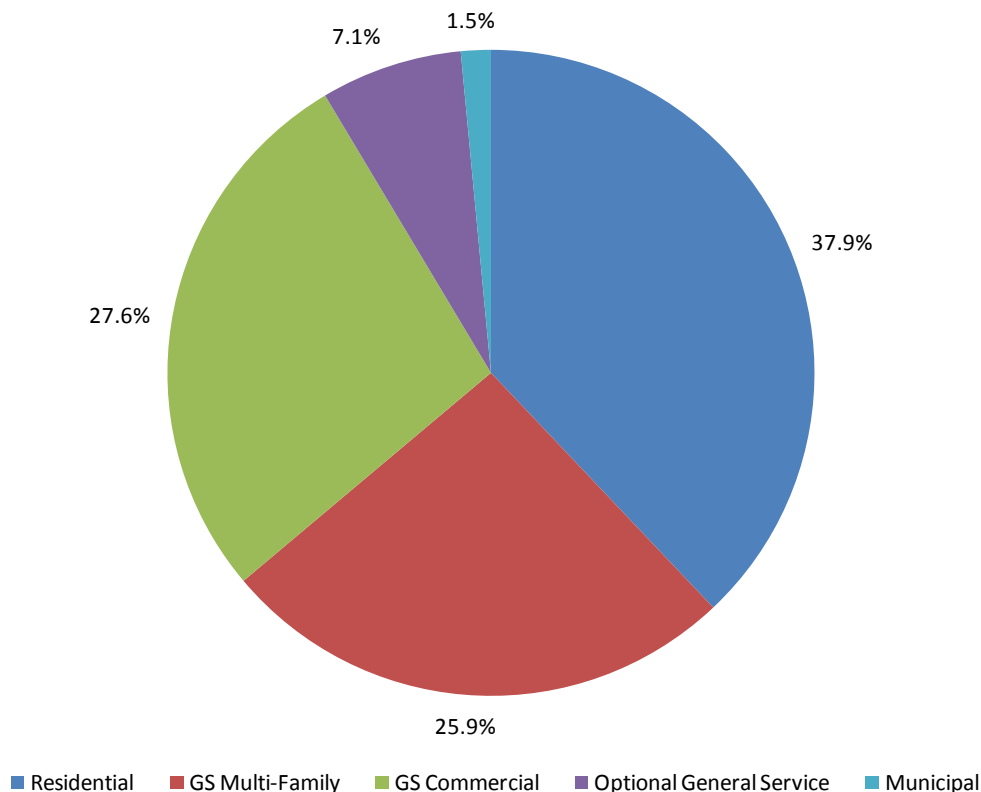
- Residential – The Residential class includes single-family residences, individually and master metered duplexes, individually metered apartments, and individually metered mobile homes.
- General Services – The General Service class includes master metered multi-family housing, master metered apartments, and master metered mobile homes, office buildings, restaurants, hotels, churches, and other commercial and light industrial customers.
- Optional General Service – The Optional General Service class mainly consists of large industrial customers, but the data shown also include some master metered apartment complexes.
- Municipal – The Municipal class consists of city buildings, parks, fire stations, libraries, and some hospitals.

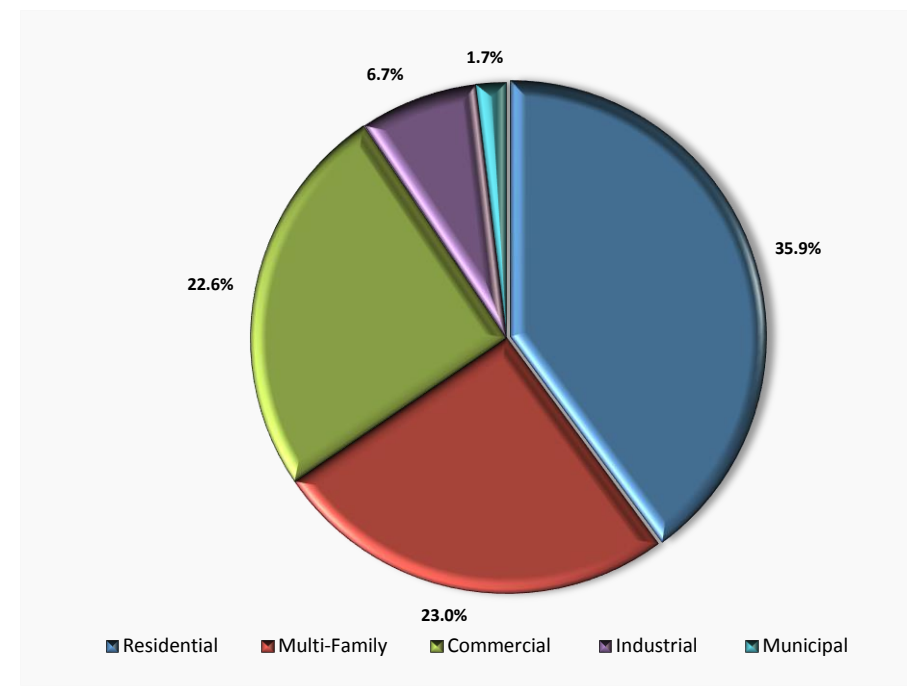
Based on the average retail water sold within the City of Dallas from FY ~~2003-04~~2008-09 through FY ~~2007-08~~2012-13, General Service and Residential customers account for most of the

City’s treated water consumption (Figure 5-1). To better illustrate actual water use in Figure 5-1, consumption within the General Service account class has been divided into two categories:

- GS Multi-Family, consisting of master metered multi-family housing, master metered apartments, and master metered mobile homes, and
- GS Commercial, consisting of the remainder of General Service accounts.

Figure 5-1: Average Water Consumption by Account Class, FY ~~2003-04~~2008-09 to FY ~~2007-08~~2012-13





5.14 Plumbing Code Ordinances

The State of Texas has placed maximum flowrate requirements on plumbing fixtures. ~~Examples include maximum flowrates of 2.2 gallons per minute (gpm) for faucets and 2.5 gpm for showerheads. Current law allows maximum flowrates of 1.6 gallons per flush (gpf) for new toilets and 1.0 gpf for new urinals.~~ As of January 1, 2014, the law requires maximum average flowrates of 1.28 gallons per flush (gpf) for toilets and 0.5 gpf for urinals. Effective ~~March 26, 2008~~ October 12, 2013, the City of Dallas ~~adopted~~ amended the plumbing code ~~based on by adopting~~ the 2006~~2012~~ Edition of the International Plumbing Green Construction Code of the International Code Council, Inc. (~~Ordinance No. 27111~~) with specified exceptions. Dallas's code at a minimum complies with State of Texas requirements.

5.15 Water Waste Prohibition

Dallas’s water and wastewater ordinance prohibits the following wasteful practices:

- Runoff from irrigation onto a street or other drainage area
- Irrigation of impervious areas
- Operation of an irrigation system with broken or missing sprinkler heads
- Irrigation during a precipitation event
- Irrigation between the hours of 10:00 a.m. and 6:00 p.m. from April 1 through October 31 of any year (except irrigation by hand and the use of soaker hoses)

~~Finally~~In addition, the water and wastewater ordinance requires all irrigation systems to be equipped with rain-sensing devices and freeze sensors.

Beginning in April of 2012, additional changes were made to the ordinance allowing a maximum of twice-weekly lawn and landscape watering based on property street address. Provisions were included to allow temporary variances for specific situations that may require more than twice-weekly watering.

5.16 Wastewater Reuse and Recycling

DWU has developed water recycling projects and plans for additional projects, as described in the following sections. ~~Projects and plans:~~ direct reuse projects, indirect reuse projects, and contracts for return flows into Dallas reservoirs. Table 5-1 presents a summary of direct and indirect recycled water projects for DWU along with the projected water supply.

Table 5-1: Summary of DWU Recycled Water Projects

Project	Projected 2020 Average Supply (MGD)
Direct Recycle Projects	
Cedar Crest/ Stevens Park Pipeline	1.0 5
White Rock Pipeline Alternate/Cedar Crest Pipeline Extension	18.3 5.0
Indirect Recycle Augmentation	
Return Flows to Dallas Reservoirs	37.5 40.0
NTMWD/DWU Exchange	28.2 30.0
Total	84.5 76.0

5.16.1 Direct Reuse Projects

DWU provides recycled water from the Central WWTP to the Cedar Crest ~~Golf Course and Stevens Park golf courses~~ for irrigation. The golf ~~course~~ ~~courses~~ currently uses up to ~~1.0~~ 5 MGD. DWU plans to ~~extend the Cedar Crest Pipeline to provide~~ ~~add~~ additional ~~recycled water~~ ~~customers on this line in the future~~ for non-potable applications, such as irrigation and industrial uses.

DWU also plans to develop the White Rock Pipeline Alternative to provide recycled water for non-potable applications, such as irrigation and industrial uses.

5.16.2 Indirect Reuse Projects

DWU has agreed in principle with the North Texas Municipal Water District (NTMWD) to an exchange of recycled water. This planned exchange includes the following elements:

- DWU will use a portion of the recycled water discharged to Lewisville Lake from NTMWD-operated WWTPs in Frisco.
- Upon completion of a Main Stem Pump Station in approximately ~~2013~~2018, recycled water that originates from DWU WWTPs will be diverted from the main stem of the Trinity River to the NTMWD's East Fork Wetlands.
- Upon completion of the Main Stem Pump Station, DWU will use all recycled water discharged to Lake Ray Hubbard from NTMWD-operated WWTPs.

5.16.13 Return Flow ~~Contracts~~Permits

Dallas has ~~contracted~~received a State water right permit for the ~~with multiple entities to continue to receive their~~ return flows from its wastewater treatment plants as well as the treatment plants of other entities.~~(discharges of highly treated wastewater) in its reservoirs.~~

5.17 Method to Monitor the Effectiveness of the Plan

The effectiveness and efficiency of the water conservation program will be monitored on an ongoing basis by DWU staff. DWU determines the extent of water conservation by compiling implementation data, monitoring water consumption, modeling water demand, and tracking water conservation costs.

Annual Report on Water Conservation Activities – 30 TAC § 288 requires that each entity that is required to submit a water conservation plan to the TWDB or the TCEQ shall file an annual report to the TWDB on the entity's progress in implementing each of the minimum requirements in their water conservation plan. DWU submitted the first of these yearly reports on April 26, 2010. This report will be submitted in accordance with the requirements~~is presented in Appendix D.~~

Quantified Marketing Analysis – DWU conducts surveys at the conclusion of each year's public awareness campaign to evaluate and improve the effectiveness of the campaign. Results are analyzed and used in planning for the subsequent year.

APPENDIX **AB**

- Utility Profile for Municipal Water Suppliers
- Utility Profile for Wholesale Water Suppliers
- ~~Map of the Service Area~~
- Water Supply System Data
- ~~Customer Data~~
- Standard Rate Schedule
- ~~Map of Treatment Plants~~



Texas Commission on Environmental Quality

UTILITY PROFILE AND WATER CONSERVATION PLAN REQUIREMENTS FOR MUNICIPAL WATER USE BY RETAIL PUBLIC WATER SUPPLIERS

This form is provided to assist retail public water suppliers in water conservation plan development. If you need assistance in completing this form or in developing your plan, please contact the conservation staff of the Resource Protection Team in the Water Availability Division at (512) 239-4691.

Name: City of Dallas Water utilities

Address: 1500 Marilla St., Room 5AS, Dallas, TX 75201

Telephone Number: (214) 2431175 Fax: (214) 6705244

Water Right No.(s): _____

Regional Water Planning Group: Region C

Form Completed by: Carole R. Davis

Title: Water Conservation Division Manager

Person responsible for implementing conservation program: Carole R. Davis on behalf of City of Dallas Water Utilities Phone: (214) 2431175

Signature: _____ Date: / /

NOTE: If the plan does not provide information for each requirement, include an explanation of why the requirement is not applicable.

UTILITY PROFILE

I. POPULATION AND CUSTOMER DATA

A. Population and Service Area Data

1. Attach a copy of your service-area map and, if applicable, a copy of your Certificate of Convenience and Necessity (CCN).
2. Service area size (in square miles): 699
(Please attach a copy of service-area map)
3. Current population of service area: 2,427,010
4. Current population served for:
 - a. Water 2,427,010
 - b. Wastewater 1,276,491

5. Population served for previous five years:
6. Projected population for service area in the following decades:

<i>Year</i>	<i>Population</i>	<i>Year</i>	<i>Population</i>
2013	2,427,010	2020	3,045,462
2012	2,410,000	2030	3,499,893
2011	2,396,550	2040	3,973,258
2010	2,509,450	2050	4,442,825
2009	2,487,100	2060	4,861,194

7. List source or method for the calculation of current and projected population size.
 - Current and previous population - NTCOG – North Central Texas Council of Governments
 - Projected Population – 2016 draft Region C Population Projections
 - Note: the Current and Previous Five Years numbers do not include Upper Trinity Regional Water District (UTRWD); whereas, the Projected Population numbers do include UTRWD

B. Customers Data

Senate Bill 181 requires that uniform consistent methodologies for calculating water use and conservation be developed and available to retail water providers and certain other water use sectors as a guide for preparation of water use reports, water conservation plans, and reports on water conservation efforts. A water system must provide the most detailed level of customer and water use data available to it, however, any new billing system purchased must be capable of reporting data for each of the sectors listed below. http://www.tceq.texas.gov/assets/public/permitting/watersupply/water_rights/sb181_guidance.pdf

1. Current number of active connections. Check whether multi-family service is counted as Residential or Commercial?

<i>Treated Water Users</i>	<i>Metered</i>	<i>Non-Metered</i>	Totals
Residential			
Single-Family	248,445		248,445
Multi-Family	11,500		11,500
Commercial	30,362		30,362
Industrial/Mining	86		86
Institutional			
Agriculture			
Other/Wholesale	1,209 (Municipal)		1,209

2. List the number of new connections per year for most recent three years.

<i>Year</i>	2011	2012	2013
<i>Treated Water Users</i>			
Residential			
Single-Family	111	509	532
Multi-Family			
Commercial	0	163	413
Industrial/Mining	1	0	0
Institutional			
Agriculture			
Other/Wholesale	3	34	48

3. List of annual water use for the five highest volume customers.

	<i>Customer</i>	<i>Use (1,000 gal/year)</i>	<i>Treated or Raw Water</i>
1.	Texas Instruments	1,933,000	Treated
2.	UT Southwestern	586,000	Treated
3.	Niagara Bottling	327,000	Treated
4.	Nestle Water	260,000	Treated
5.	Vought Aircraft	224,000	Treated

II. WATER USE DATA FOR SERVICE AREA Ask Erica

A. Water Accounting Data

- List the amount of water use for the previous five years (in 1,000 gallons). Indicate whether this is diverted or treated water.

<i>Year</i>	2013	2012	2011	2010	2009
<i>Month</i>					
January	5,082,758	4,554,793	4,824,815	3,946,164	4,081,784
February	4,013,230	4,110,826	3,753,033	3,639,064	4,251,163
March	4,334,933	4,462,889	5,089,431	4,694,840	5,136,226
April	4,400,027	3,732,838	5,113,208	4,603,155	5,157,608
May	5,745,108	6,140,341	4,929,780	4,673,003	4,749,781
June	5,331,751	6,196,726	6,642,327	7,102,792	6,371,365
July	6,446,383	7,370,287	7,298,633	6,582,287	7,577,119
August	7,498,577	8,113,194	10,040,312	8,047,553	7,628,673
September	6,794,831	6,549,065	8,553,738	7,523,327	6,650,098
October	7,067,603	6,945,880	6,857,735	6,108,072	5,762,958
November	4,517,115	5,431,200	5,333,917	5,304,345	4,061,081
December	4,915,347	4,982,363	4,725,807	4,980,798	4,680,928
Totals	66,167,689	68,590,402	73,192,736	67,205,400	66,108,784

Describe how the above figures were determined (e.g., from a master meter located at the point of a diversion from the source, or located at a point where raw water enters the treatment plant, or from water sales).

Primary pumpage less net reservoir draw equals daily consumption.

2. Amount of water (in 1,000 gallons) delivered/sold as recorded by the following account types for the past five years.

<i>Year</i>	2013	2012	2011	2010	2009
<i>Account Types</i>					
Residential					
Single-Family	25,528,479	27,758,611	30,055,106	26,631,280	25,530,429
Multi-Family	16,521,958	17,344,016	18,741,451	17,461,064	18,569,695
Commercial	17,473,850	17,591,228	17,509,170	16,590,089	16,029,471
Industrial/Mining	5,302,885	4,611,773	5,473,089	5,415,149	4,763,135
Institutional					
Agriculture					
Other/Wholesale	54,452,327	55,307,849	59,965,290	54,742,371	56,915,818

3. List the previous records for water loss for the past five years (the difference between water diverted or treated and water delivered or sold).

<i>Year</i>	<i>Amount (gallons)</i>	<i>Percent %</i>
2013	20,011.2	14%
2012	22,017.2	15%
2011	24,761.1	16%
2010	21,740.0	15%
2009	21,292.0	14%

B. Projected Water Demands

If applicable, attach or cite projected water supply demands from the applicable Regional Water Planning Group for the next ten years using information such as population trends, historical water use, and economic growth in the service area over the next ten years and any additional water supply requirements from such growth.

III. WATER SUPPLY SYSTEM DATA

A. Water Supply Sources

List all current water supply sources and the amounts authorized (in acre feet) with each.

	Source	Amount Authorized (acre-feet/year)	Firm Yield (acre-feet/year)
Surface Water	Lake Ray Hubbard	89,700.0	60,375.8
	Lewisville Lake	549,976.0	191,768.6
	Ray Roberts Lake	591,704.0	
	Elm Fork Run-of-River	19,381.4	
	Grapevine Lake	85,000.0	7,280.9
	Reuse	247,200.0	68,631.5 ^{a,b}
Groundwater	NA	--	--
Contracts	Sabine River Authority – Lake Tawakokni	190,480.0	190,480.0
	Sabine River Authority – Lake Fork	131,860.0	131,860.0 ^b
	Upper Neches River Municipal Water Authority – Lake Palestine	114,337.0	114,337.0 ^c
	Other	NA	--

^aYield is based on 2012 annual wastewater discharges. This number will vary annually depending upon discharge.

^bNot fully connected

^cNot connected

B. Treatment and Distribution System

1. Design daily capacity of system (MGD): 900
2. Storage capacity (MGD):
 - a. Elevated 14.5 MG
 - b. Ground 231 MG
3. If surface water, do you recycle filter backwash to the head of the plant?

Yes No If yes, approximate amount (MGD): 20

IV. WASTEWATER SYSTEM DATA

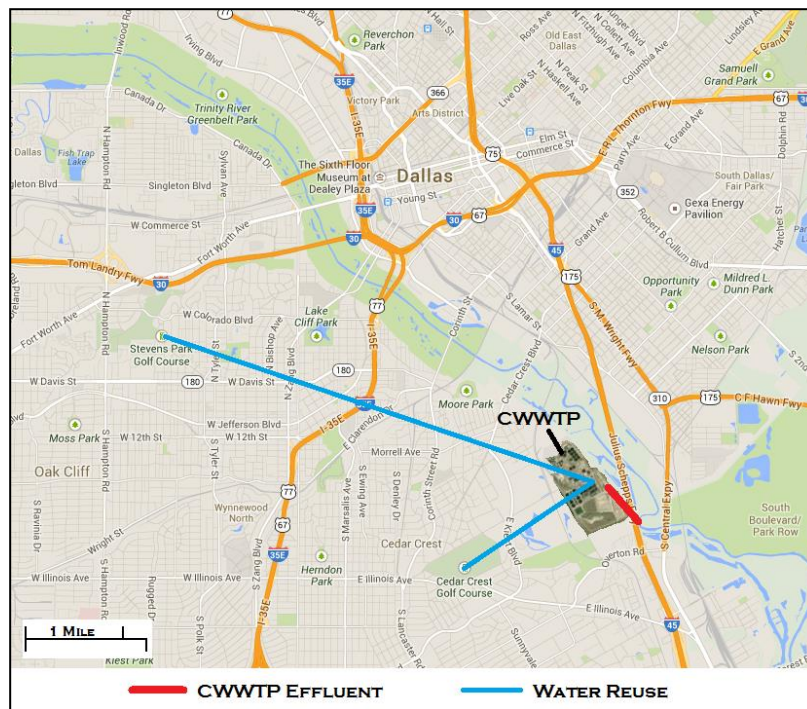
A. Wastewater System Data (if applicable)

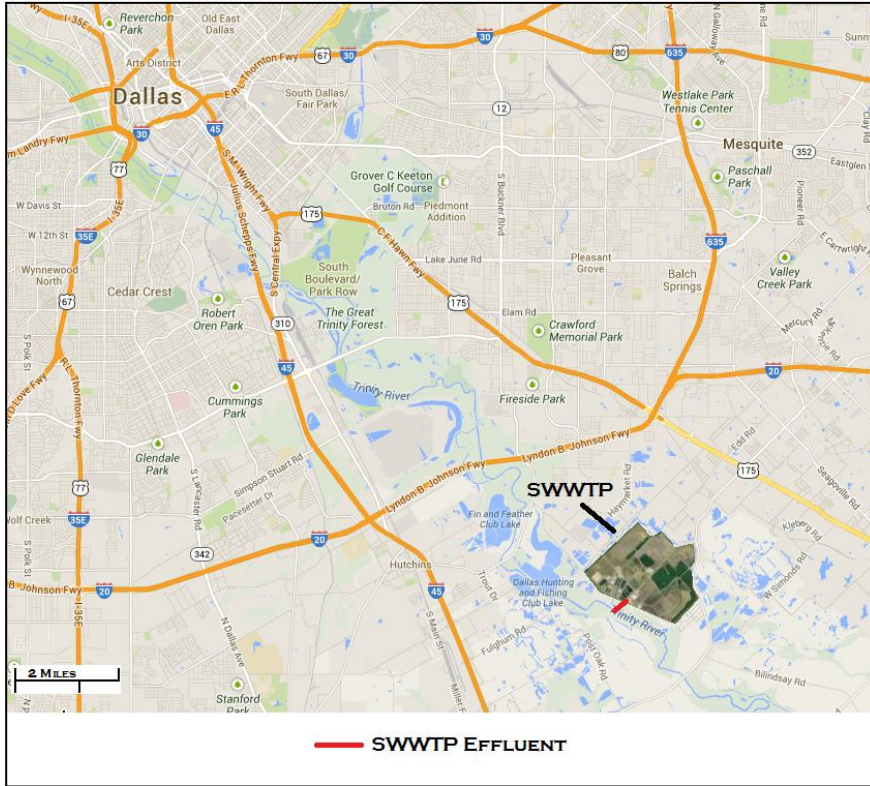
1. Design capacity of wastewater treatment plant(s) (MGD): 260 MGD with 545 MGD 2-hr Peak
2. Treated effluent is used for on-site irrigation, off-site irrigation, for plant wash-down, and/or for chlorination/dechlorination.

If yes, approximate amount (in gallons per month): 105,000,000

3. Briefly describe the wastewater system(s) of the area serviced by the water utility. Describe how treated wastewater is disposed. Where applicable, identify treatment plant(s) with the TCEQ name and number, the operator, owner, and the receiving stream if wastewater is discharged.

There are (2)-two facilities that are owned and operated by the City of Dallas. The Southside Waste Water Treatment Plant (SWWTP) (TPDES Permit # WQ0010060006) which is a conventional activated sludge plant with a permit of 110 MGD and a 195 MGD 2-hr peak and the Central Wastewater Treatment Plant (CWWTP) (TPDES Permit # WQ0010060001) which is a trickling filter plant in line with a conventional activated sludge plant with a permit of 150 MGD and a 350 MGD 2-hr peak limit. Both facilities are permitted to discharge their total flows into the Upper Trinity River. In addition, the CWWTP has a reuse permit (See maps). All organic solids removed from both facilities are digested then land applied at the SWWTP facility.





B. Wastewater Data for Service Area (if applicable)

1. Percent of water service area served by wastewater system: 699 %
2. Monthly volume treated for previous five years (in 1,000 gallons):

Year	2013	2012	2011	2010	2009
Month					
January	4,582,200	5,691,600	4,509,100	5,314,600	4,242,700
February	3,874,000	4,928,200	4,060,900	7,110,200	3,937,900
March	4,048,500	6,215,600	4,021,400	6,187,700	4,933,500
April	4,733,400	4,773,400	4,177,500	4,795,600	4,696,300
May	4,699,200	4,465,700	4,607,400	4,468,800	5,677,100
June	4,612,600	4,419,200	4,062,700	4,270,100	5,639,900
July	4,521,900	4,283,300	3,827,400	4,570,800	4,859,200
August	4,475,100	4,447,100	3,384,700	4,297,800	4,863,900
September	4,448,800	4,114,000	3,657,700	5,478,800	5,975,900
October	4,756,400	4,298,300	4,250,700	4,289,200	8,144,800
November	4,438,200	3,880,700	3,811,000	4,336,900	5,813,800
December	4,852,600	4,142,500	4,706,100	4,174,100	5,554,700
Totals	54,042,900	55,659,600	49,076,600	59,294,600	64,339,700

Texas Commission on Environmental Quality



PROFILE & WATER CONSERVATION PLAN
REQUIREMENTS FOR WHOLESALE PUBLIC
WATER SUPPLIERS

This form is provided to assist wholesale public water suppliers in water conservation plan development. Information from this form should be included within a wholesale public water supplier water conservation plan. If you need assistance in completing this form or in developing your plan, please contact the conservation staff of the Resource Protection Team in the Water Supply Division at (512) 239-4691.

Name of Entity: City of Dallas Water Utilities

Address & Zip: 1500 Marilla St., Room 5AS, Dallas, TX 75201

Telephone Number: (214) 243-1175 **Fax:** (214) 670-5244

Form Completed by: Carole R. Davis

Title: Water Conservation
Division Manager

Signature: _____ **Date:** _____

Name and Phone Number of Person/Department responsible for implementing a water conservation program: Carole R. Davis 214/243-1175

PROFILE

I. WHOLESALE SERVICE AREA POPULATION AND CUSTOMER DATA

A. Population and Service Area Data

1. Service area size in square miles: 699
(attach a copy of service-area map)
2. Current population of service area: 2,427,010
3. Current population served for:
 - a. water 2,427,010
 - b. wastewater 1,276,491

4. Population served for previous five years: 5. Projected population for service area in the following decades:

<u>Year</u>	<u>Population</u>	<u>Year</u>	<u>Population</u>
<u>2013</u>	<u>2,427,010</u>	<u>2020</u>	<u>3,045,462</u>
<u>2012</u>	<u>2,410,000</u>	<u>2030</u>	<u>3,499,893</u>
<u>2011</u>	<u>2,395,550</u>	<u>2040</u>	<u>3,973,258</u>
<u>2010</u>	<u>2,509,450</u>	<u>2050</u>	<u>4,442,825</u>
<u>2009</u>	<u>2,487,100</u>	<u>2060</u>	<u>4,861,194</u>

6. List source or method for the calculation of current and projected population:
- Current and previous population - NTCOG – North Central Texas Council of Governments
 - Projected Population – 2016 draft Region C Population Projections
 - Note: the Current and Previous Five Years numbers do not include Upper Trinity Regional water District (UTRWD); whereas, the Projected Population numbers do include UTRWD

B. Customers Data

List (or attach) the names of all wholesale customers, amount of annual contract, and amount of the annual use for each for the previous year: **(See List - Attachment A)**

	Wholesale Customer	Contracted Amount (acre-feet)	Previous Year Amount of Water Delivered (acre-feet)
(1)	_____	_____	_____
(2)	_____	_____	_____
(3)	_____	_____	_____
(4)	_____	_____	_____
(5)	_____	_____	_____

II. WATER USE DATA FOR SERVICE AREA

A. Water Delivery

Indicated if the water provided under wholesale contracts is treated or raw water and the annual amount for each for previous year:

	Total amount delivered or sold for previous year (acre-feet)
Treated	144,727
Raw	<u>12,123</u>
Total	156,850

B. Water Accounting Data

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

Year	2013	2012	2011	2010	2009
January	28,793.42	29,124.68	28,738.72	29,949.85	30,342.16
February	25,366.29	26,079.49	27,905.83	22,759.54	29,353.47
March	28,185.18	28,860.63	33,876.50	26,253.83	29,226.15
April	25,749.08	27,949.46	33,219.21	34,008.74	28,551.37
May	34,112.60	39,817.74	33,347.18	41,215.14	35,008.93
June	36,704.45	38,197.18	32,289.46	45,579.25	44,328.06
July	43,286.76	48,453.43	54,433.67	41,639.69	48,254.33
August	46,279.14	46,263.77	54,900.18	53,103.58	45,799.24
September	42,497.75	42,590.64	45,708.61	41,367.96	34,647.62
October	35,223.80	38,511.44	35,911.98	38,964.41	33,194.45
November	44,893.96	36,355.07	31,036.57	29,123.27	32,077.24
December	33,317.62	30,808.88	26,856.43	26,308.88	28,798.75
TOTAL	424,410.05	433,011.41	438,224.34	430,274.14	419,581.77

2. Wholesale population served and total amount of water diverted for **municipal use** for previous five years:

Year	Total Population Served	Total Annual Water Diverted for Municipal Use (acre feet)
2013	1,002,543	424,410
2012	994,882	433,011
2011	988,773	438,224
2010	992,366	430,274
2009	980,130	419,581

C. Projected Water Demands

If applicable, project and attach water supply demands for the next ten years using information such as population trends, historical water use, and economic growth in the service area over the next ten years and any additional water supply requirement from such growth.

III. WATER SUPPLY SYSTEM DATA

A. Water Supply Sources

List all current water supply sources and the amounts authorized with each:

	Source	Amount Authorized (acre-feet/year)	Firm Yield (acre-feet/year)
Surface Water	Lake Ray Hubbard	89,700.0	60,375.8
	Lewisville Lake	549,976.0	191,768.6
	Ray Roberts Lake	591,704.0	
	Elm Fork Run-of-River	19,381.4	
	Grapevine Lake	85,000.0	7,280.9
	Reuse	247,200.0	68,631.5 ^{a,b}
Groundwater	NA	--	--
Contracts	Sabine River Authority – Lake Tawakokni	190,480.0	190,480.0
	Sabine River Authority – Lake Fork	131,860.0	131,860.0 ^b
	Upper Neches River Municipal Water Authority – Lake Palestine	114,337.0	114,337.0 ^c
Other	NA	--	--

^aYield is based on 2012 annual wastewater discharges. This number will vary annually depending upon discharge.

^bNot fully connected

^cNot connected

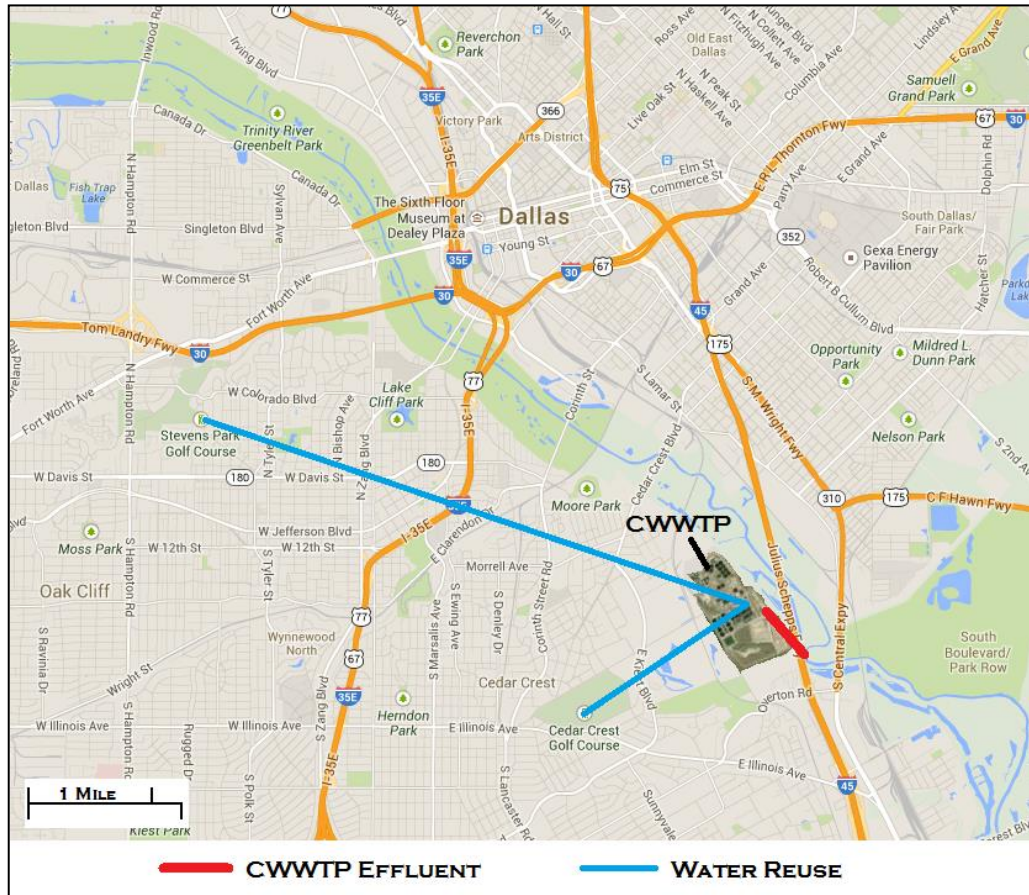
B. Treatment and Distribution System (if provide treated water)

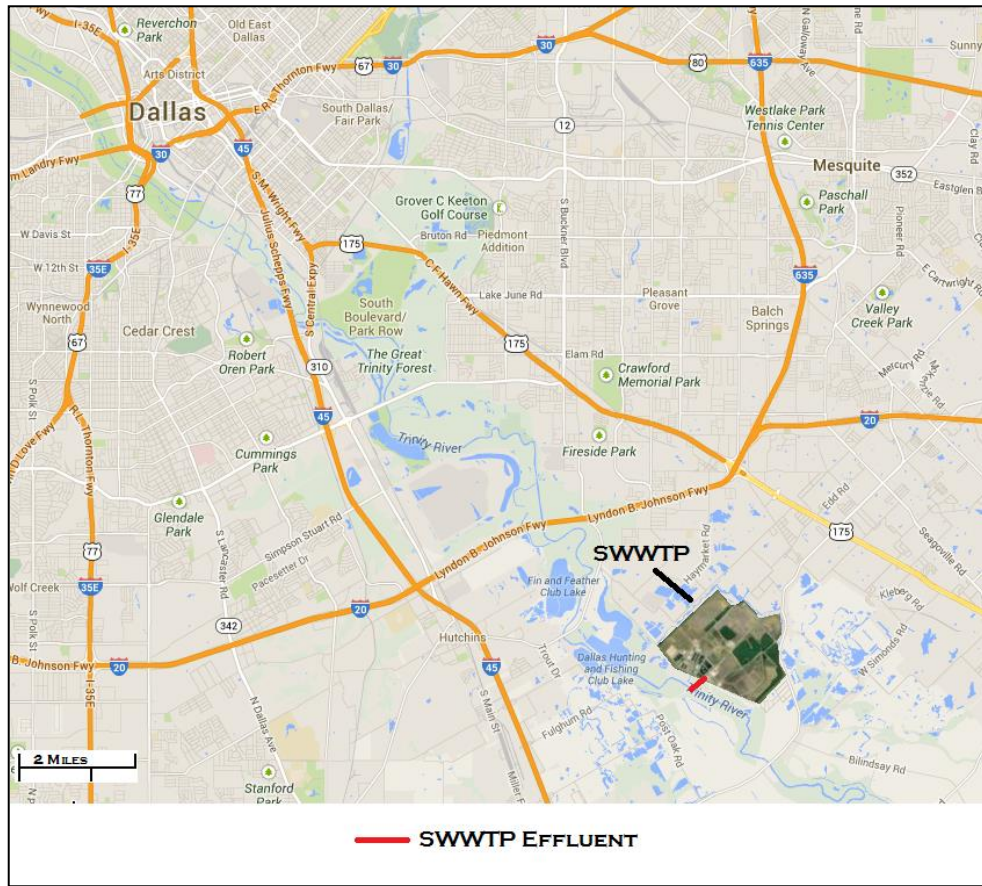
1. Design daily capacity of system: 900 MGD
2. Storage Capacity: Elevated 14.1 MGD, Ground 231 MGD
3. Please describe the water system and attach. Include the number of treatment plants, wells, and storage tanks. If possible, attach a sketch of the system layout.

IV. WASTEWATER SYSTEM DATA

A. Wastewater System Data (if applicable)

1. Design capacity of wastewater treatment plant(s): 260 MGD with 545 MGD 2-hr Peak
2. Briefly describe the wastewater system(s) of the area serviced by the wholesale public water supplier. Describe how treated wastewater is disposed of. Where applicable, identify treatment plant(s) with the TCEQ name and number, the operator, owner, and, if wastewater is discharged, the receiving stream. If possible, attach a sketch or map which locates the plant(s) and discharge points or disposal sites.
There are (2)-two facilities that are owned and operated by the City of Dallas. The Southside Waste Water Treatment Plant (SWWTP) (TPDES Permit # WQ0010060006) which is a conventional activated sludge plant with a permit of 110 MGD and a 195 MGD 2-hr peak and the Central Wastewater Treatment Plant (CWWTP) (TPDES Permit # WQ0010060001) which is a trickling filter plant in line with a conventional activated sludge plant with a permit of 150 MGD and a 350 MGD 2-hr peak limit. Both facilities are permitted to discharge their total flows into the Upper Trinity River. In addition, the CWWTP has a reuse permit (See maps). All organic solids removed from both facilities are digested then land applied at the SWWTP facility.





B. Wastewater Data for Service Area (if applicable)

1. Percent of water service area served by wastewater system: 100 %
2. Monthly volume treated for previous three years (in 1,000 gallons):

Year	2013	2012	2011
January	4,582,200	5,691,600	4,509,100
February	3,874,000	4,928,200	4,060,900
March	4,048,500	6,215,600	4,021,400
April	4,733,400	4,773,400	4,177,500
May	4,699,200	4,465,700	4,607,400
June	4,612,600	4,419,200	4,062,700
July	4,521,900	4,283,300	3,827,400
August	4,475,100	4,447,100	3,384,700
September	4,448,800	4,114,000	3,657,700
October	4,756,400	4,298,300	4,250,700
November	4,438,200	3,880,700	3,811,000
December	4,852,600	4,142,500	4,706,100
TOTAL	54,042,900	55,659,600	49,076,600

WHOLESALE WATER CUSTOMERS DEMANDS AND USAGE

Wholesale Customer	Contracted Amount (Ac-Ft/Yr)	Type of Contract	Calendar Year 2012 Usage (Ac-Ft/Yr)
Addison	12,321.6	Treated Water	5,666
Carrollton	45,925.9	Treated Water	23,353
Cedar Hill	12,993.7	Treated Water	10,027
Cockrell Hill	Flat Rate - Unspecified	Treated Water	466
Combine Water Supply Corporation	Flat Rate - Unspecified	Treated Water	314
Coppell	20,162.6	Treated Water	10,730
Dallas County Water Control Improvement District #6 (Balch Springs)	3,920.5	Treated Water	2,019
D/FW Airport	3,920.5	Treated Water	2,302
Denton	1,097.8	Raw Water	0
DeSoto	16,242.1	Treated Water	8,500
Duncanville	12,321.6	Treated Water	5,992
Farmers Branch	19,042.4	Treated Water	9,577
Flower Mound	12,321.6	Treated Water	8,026
Glenn Heights	2,576.3	Treated Water	1,367
Grand Prairie	37,860.9	Treated Water	20,815
Grapevine	2,016.3	Raw Water	714
Hutchins	Flat Rate - Unspecified	Treated Water	1,134
Irving	78,074.0	Treated Water	12,971
Lancaster	8,961.2	Treated Water	4,804
Lewisville (Treated Water)	10,081.3	Treated Water	9,784
Lewisville (Raw Water)	8,961.2	Raw Water	9,031
Ovilla	Flat Rate - Unspecified	Treated Water	650
Red Oak	1,120.1	Treated Water	756
Seagoville	3,696.5	Treated Water	1,651
The Colony	6,720.9	Treated Water	3,821
UTRWD	12,164.8	Raw Water	2,378

Total Amount of Treated Water Sold to Wholesale Customers During Calendar Year 2012:	144,727
Total Amount of Untreated Water Sold to Wholesale Customers During Calendar Year 2012:	12,123
Grand Total	156,850

Prepared by: 10-28-2013 Wholesale Services

Water Supply Sources	Right/Permit	Total (ac-ft/yr)	Non- Consumptive Hydroelectric (ac-ft/vr)
1 Ray Roberts	08-2455B	591,704.00	115,100.00
2 Lewisville	08-2456F	549,976.00	451,030.00
3 Grapevine	08-2458C	84,500.00	
4 Elm Fork Trinity River	08-2457D	21,678.20	
5 Elm Fork Trinity River	Aug-59	50.00	
6 White Rock	08-2461B	8,703.15	
7 Ray Hubbard	08-2462H	89,700.00	
8 Ray Hubbard	12110	49,500.00	
9 Elm Fork Trinity River	5414	40,000.00	

Total of Dallas's Water Rights and Permits 1,435,811.35

Water Supply Sources	Contract	Total (ac-ft/yr)	Non- Consumptive Hydroelectric (ac-ft/vr)
10 Tawakoni	1583	184,600.00	
11 Lake Fork	450	120,000.00	
12 Palestine	173A	114,337.00	
13 Lewisville	1415	125.00	

Total of Dallas's Contracted Water Rights 419,062.00

Total Surface Water Rights 1,854,873.35

Groundwater Rights 0.00

City of Dallas

DALLAS WATER UTILITIES

RETAIL WATER and SEWER MONTHLY RATES

Effective October 1, 2013

CUSTOMER CHARGE	WATER	SEWER	COMBINED
5/8 Inch Meter	\$4.65	\$4.40	\$9.05
3/4 Inch Meter	\$6.45	\$5.90	\$12.35
1 Inch Meter	\$9.38	\$8.53	\$17.91
1 1/2 Inch Meter	\$17.47	\$16.01	\$33.48
2 Inch Meter	\$27.26	\$25.82	\$53.08
3 Inch Meter	\$66.56	\$61.45	\$128.01
4 Inch Meter	\$110.59	\$100.10	\$210.69
6 Inch Meter	\$219.60	\$201.31	\$420.91
8 Inch Meter	\$364.98	\$332.91	\$697.89
10 Inch Meter or larger	\$561.26	\$507.07	\$1,068.33

USAGE CHARGE per 1,000 gallons*

RESIDENTIAL

Up to 4,000 gallons	\$1.80	\$4.90
4,001 to 10,000 gallons	3.77	4.90
10,001 to 15,000 gallons	5.20	4.90
Above 15,000 gallons	7.09	4.90

GENERAL SERVICES

Up to 10,000 gallons	\$2.70	\$3.47
Above 10,000 gallons	3.30	3.47
Above 10,000 gallons & 1.4 times annual average monthly usage	4.65	3.47

OPTIONAL GENERAL SERVICES

1st million gallons or less (minimum)	\$1,945.98	\$3.22
Above 1 million gallons (per 1,000 gallons)	2.55	3.22
Sewer Metered Separately		3.40

UNTREATED WATER

Uninterruptible	\$0.5355
Interruptible	0.2430

The above rates apply if payment is received on or before the due date shown on the bill.

Payments received after the due date will incur a 5% late fee.

* Sewer Charges for residential accounts are calculated on an average of the water billed in December, January, February and March (40,000 gallons maximum) or the actual month's water consumption, whichever is less. Sewer charges for general services and optional general services accounts are based on the month's water consumption unless sewer is metered separately.

Industrial wastewater discharges containing concentrations of BOD and/or Suspended Solids greater than 250 milligrams per liter are assessed sewer surcharges. Certain commercial users such as restaurants, bars/lounges, small food processors and equipment service facilities are assessed standard surcharges. These surcharges are included as part of the monthly bill.

APPENDIX CB

- **Implementation Schedule City Council Resolution**
- **Coordination with Region C Planning Group**

Dallas Water Utilities Conservation Strategies

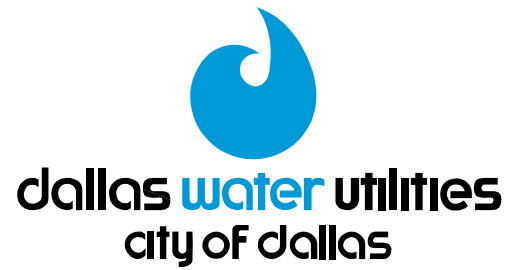
Implementation Schedule - Subject to annual appropriations approved by Dallas City Council

Strategy	Description	Implementation Date	Status
Metering			
Accurate Supply Source Metering	Comprehensive program to meter water diverted from supply sources within DWU system. Meters calibrated to accuracy of $\pm 1.5\%$ to AWWA standards.	Historically a DWU best management practice.	
Universal Metering, meter testing repair and periodic replacement	Metering of all connections. Testing meters to maintain specified accuracy. Periodic 10- or 12-year replacement schedule depending on type of meter and accuracy.	Historically a DWU best management practice.	
Leak Detection			
Leak Detection, Repair & Control of Unaccounted for Water	Program to methodically seek out leaks, illegal connections and abandoned services. DWU maintains an annual budget of \$25M for this purpose.	Historically a DWU best management practice.	
Monitoring & Record Management			
Monitoring & Record Management of Water Deliveries, Sales and Losses	Process in place to routinely monitor all water deliveries and sales to both treated and untreated water customers.	Historically a DWU best management practice.	
Continuing Public Education			
Public Awareness Campaign	DWU conservation program branding "Save Water, Nothing Can Replace it" is used to promote water conservation with various media including television, radio, newspaper, website and social media. DWU has spent a total of \$14.4 million on the public awareness campaign since 2002.	FY2002	Continuing Program
Environmental Education Initiative K-12	Collaborative effort with the Department of Sanitation to provide in-school programs in the Dallas and Richardson Independent School Districts.	FY2006	Continuing Program
Water Conservation Mascot	Water "Dew" drop mascot used to promote conservation at frequent public appearances. Mascot was "elected" over other concepts by Dallas Independent School District students.	FY2006	Continuing Program
Free Irrigation System Inspections	Through the use of two licensed irrigators on staff, DWU provides free automatic irrigation system inspections to customers and makes recommendations for improvements in efficiency. The process serves to educate the customer about the effective use of their system.	FY2007	Continuing Program
WaterWise Landscape Events	WaterWise Landscape Tours and Seminars provided to teach residents about the use of native and adapted plants to reduce outdoor water use.	FY1994	Continuing Program
Other Public Education	DWU promotes water conservation through other outreach events including special events and promotions, speaking engagements, water bill inserts, brochures and signage encouraging conservation at city facilities.	Historically a DWU best management practice.	

New Public Education Measures			
Industrial Commercial and Institutional (ICI) Free Water Efficiency Surveys	Free water efficiency surveys offered to commercial customers to help them find ways to increase water use efficiency.	FY2012	Continuing Program
ICI Hospitality Program	A program to encourage hotels/motels and restaurants to expand their efforts to save water. Participating customers encourage their guests to embrace fewer linen and towel changes and to serve water only upon request in their dining areas.	FY2011	Continuing Program
Planned Public Education Measures			
ICI Training Programs	DWU plans to develop, lead and manage ongoing water efficiency training programs for ICI facility managers and irrigators.	FY2015	Pending
ICI Business Partnership Program	DWU plans to establish an ongoing Business Partnership Task Force or work group for the purpose of engaging the ICI community in DWU's water conservation program.	FY2015	Pending
City Leadership and Commitment Measures			
City's Strategies to "Lead by Example"	Included as a major focus in the strategic plan, a commitment to water conservation is demonstrated through structured programs including but not limited to an expanded leak detection program, revised ordinances to promote conservation, and ongoing and continually updated web site and multimedia efforts to promote conservation practices.	FY2006	Continuing Program
Water Conservation Staff	DWU currently maintains 13 staff positions, an increase from seven in 2005. Additional staff has helped with implementation of new conservation strategies as well as routinely measuring the effectiveness of implemented programs.	FY2006	Continuing Program
Retrofit of City-owned Facilities	Beginning with an audit of fixtures at City-owned facilities in 2006, DWU provides funds on an annual basis for upgrades of plumbing fixtures, conversion of landscapes to water-wise landscapes and maintenance and upgrades of automatic irrigation systems.	FY2007	Continuing Program
Planned City Leadership and Commitment Measures			
Water-Wise Landscape Design Requirements	DWU staff is working with the city's Building Inspection Office to revise, upon City Council approval and adoption, its landscape ordinance to limit turf areas in all new landscapes and to require low-water-use landscaping in other areas.	FY2015	Continuing Program
ICI Commercial Equipment Rule	Effective October 12, 2013, the city amended its construction code to require certain water efficiency standards for new and newly-occupied ICI establishments.	FY2014	Continuing Program
Rebate and Incentive Programs			
Toilet Voucher Program	The <i>New Throne for Your Home</i> program offers vouchers and rebates to DWU residential customers for replacement of older, water-wasting toilets with more efficient models. To date, more than 65,000 toilets have been replaced through this program at a projected annual water savings of over 293 MG.	FY2007	Continuing Program
Minor Plumbing Repair Program (MPR)	The MPR program serves low-to-moderate income water customers by assisting them with minor plumbing repairs and replacement of water-wasting fixtures. To date, over 3,200 families have participated with a projected annual water savings of over 21 MG.	FY2006	Continuing Program

New Rebate and Incentive Measures Since 2010 Plan Update			
ICI Rebate Program	Rebates available to ICI customers for conservation projects. Two customers have been identified as potential recipients to date. Others continue through the required preliminary free audit process.	FY2010	Continuing Program
Planned Rebate and Incentive Measures			
Residential Irrigation System Incentives	DWU is currently developing a program to offer rebates for residential irrigations system upgrades, subject to City Council approval.	FY2014	Pending
Residential Clothes Washer Incentive	DWU is currently developing a program to offer rebates to residential customers for replacement of old inefficient clothes washers, subject to City Council approval.	FY2015	Pending
Non-promotional Water Rate Structure			
Increase Block Rate Structure	DWU has a conservation-oriented rate structure for customers whereby rates increase as consumption increases by classified increments.	FY2001	Continuing Process
Wholesale Customer Water Rates	The rate structure for 97 percent of wholesale treated water customers based on demand and volume. The remaining three percent is charged at a flat volume rate.	Historically a DWU best management practice.	
Water Conservation Wholesale Water Supply Contracts			
Conservation Requirement	Current contracts between the City of Dallas and wholesale customers require the customer to develop a water conservation plan that incorporates loss-reduction measures and demand management practices.	FY2014	Continuing Practice
Conservation Requirement for Resell of Water purchased from DWU	In accordance with 30 TAC Chapter 288, new and/or renewed contracts require that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements of Chapter 288.	FY2001	Continuing Practice
Reservoir Systems Operation Plan			
Economical and Efficient Operation of Distribution System.	DWU operates the water supply system to achieve the most economical operation consistent with assuring adequate supply for future years, maintenance of water rights, and maintenance requirements of the supply and transmission facilities. Reservoir operating procedures are periodically updated in order to balance these factors as conditions change.	Historically a DWU best management practice.	
Means to Implement and Enforce the Water Conservation Plan			
Measures to Implement the Plan	City of Dallas has a water conservation ordinance enforced by the Department of Code Compliance. Clauses within the all wholesale water supply contracts require development of water conservation plans to ensure that available supplies are used efficiently.	Historically a DWU best management practice.	
Coordination with Regional Water Planning Group			
DWU will provide a copy of this Plan to the Region C Water Planning Group.	DWU not only provides leadership within the Regional Water Planning Group (RWPG), it also works with the RWPG to improve efficient utilization of existing water supplies and/or develop new resources to help meet the needs of the entire region.	FY2002	Continuing Practice

Desegregation of Water Sales Customer Class			
DWU Customer Classes	DWU segregates customers into the following user classes: Residential, General Services, Optional Services and Municipal.	Historically a DWU best management practice.	
Plumbing Code Ordinances			
Amendment of City Plumbing Code	Effective October 12, 2013, the city amended its construction code by adopting the 2012 Edition of the International Green Building Construction Code of the International Code Council which requires water efficiency standards for new residential and commercial properties.	FY2014	Continuing Practice
Water Waste Prohibition			
DWU Water and Wastewater Ordinances	The city amended its ordinances in 2001 to prohibit water waste from lawn and landscape irrigation and to require all automatic irrigation systems have a rain and freeze sensor installed. In April of 2012, a maximum of twice-weekly watering schedule for lawns and landscapes was added to the city's ordinances.	FY2002	Continuing Practice
Waste Water Reuse and Recycling			
Direct Reuse	DWU provides recycled water from the Central WWTP to the Dallas Zoo, Cedar Crest and Stevens Park golf courses for irrigation. DWU plans to add additional customers on this line the future for non-potable applications. DWU also plans to develop the White Rock Pipeline Alternative to provide recycled water for non-potable applications.	FY2000	Continuing Practice
Indirect Reuse	DWU and North Texas Municipal Water District (NTMWD) have mutually agreed to an exchange of recycled water.	Work In Progress	
Return Flow Permit			
Permit	Dallas has received a State water right permit for the return flows from its wastewater treatment plants as well as the treatment plants of other entities.	Work In Progress	
Method to Monitor the Effectiveness of the Plan			
Annual Report on Water Conservation Activities	DWU staff measures the effectiveness of its water conservation programs on an ongoing basis. DWU will submit an Annual Report to the TCEQ as required by 30 TAC Chapter 288.	FY2010	Continuing Practice
Quantified Marketing Analysis	DWU conducts surveys at the conclusion of each year's public awareness campaign to evaluate and improve the effectiveness of the campaign. Results are analyzed and used in planning for subsequent years.	FY2002	Continuing Practice



City of Dallas

Drought Contingency Plan

Dallas Water Utilities
1500 Marilla, Room 4AN
Dallas, Texas 75201

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DROUGHT CONTINGENCY PLAN FOR THE CITY OF DALLAS WATER UTILITIES

SECTION I

Declaration of Policy, Purpose, and Intent

This Drought Contingency Plan describes the conditions that require short-term water demand management in the City of Dallas and establishes policies and procedures that offer strategies for a timely and effective response. In general, such a response would be needed when water use in the area served by Dallas Water Utilities (DWU) approaches the system's supply, treatment, or delivery capacity. Examples include drought conditions, unusually high water demands, unforeseen equipment or system failure, or contamination of a water supply source.

In order to conserve the available water supply and protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the Dallas City Council adopted the following Drought Contingency Plan (the Plan). The City Council resolution adopting the plan is presented in Appendix A.

The strategies offered in the Plan are based on current projected water availability. It should be noted that the effectiveness of the Plan is impacted by the availability and allocation of the raw water supply during drought conditions and the level of customer compliance with the strategies offered in the Plan. The raw water supply availability is dependent upon the draw by current and future users of the raw water in the reservoirs. These factors are dynamic and, if circumstances warrant, modifications to the strategies offered in the Plan may be necessary. Therefore, this plan (as approved by the City Council) gives the Director the authority to modify the strategies in the Plan as conditions warrant.

Water uses regulated or prohibited under this Drought Contingency Plan are considered to be non-essential and continuation of such uses during times of water shortage or other emergency water supply conditions is deemed to constitute a waste of water which subjects the offender(s) to penalties as defined in Section X of this Plan.

This Drought Contingency Plan meets Texas Commission on Environmental Quality (TCEQ) rules of development and minimum requirements for the drought contingency plans for municipal water suppliers and wholesale water suppliers contained in Texas Administrative Code (TAC) Title 30, Part 1, Chapter 288, Subchapter B, Rules 288.20 and 288.22, respectively. Refer to Appendix B for the TAC, Title 30, Chapter 288, Subchapter B.

SECTION II

Public Involvement

Opportunity for the public and the wholesale water customers to provide input into the preparation of the Plan was provided by the City of Dallas by means of:

- Providing written public notice that a drought contingency plan is being prepared.

- Notifying all wholesale customers of the proposed plan.
- Providing a copy of the draft version of this plan to any person who requested it.
- Convening a public meeting to accept input on the Plan.

The valuable contributions of the participants helped to create a Drought Contingency Plan that is fair and equitable to all of the ~~citizens~~ residents of Dallas and its wholesale customer cities.

SECTION III

Public Education

The City of Dallas will periodically provide the public ~~and wholesale water customers~~ with bilingual information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of, but not limited to, an appropriate combination of the following items:

- ~~Radio and television p~~Public service announcements on Dallas cable access, radio and television
- Newspaper and magazine articles and announcements
- Interviews on radio and television programs
- Press releases, ~~and~~ media alerts and social media
- Billboards
- Water Conservation/Drought Contingency hotline
- Water Conservation/Drought Contingency Website
- Email and telephone notifications to customers
- Mailed water bill inserts
- Distribution of fact sheets, brochures, and pamphlets
- Mass mailings of notification letters
- DWU customer service representatives
- Public meetings and hearings
- Public education seminars
- Stakeholder Advisory Committee meetings
- Commercial, industrial and institutional employee education seminars

~~Organized contests (e.g., poster or T-shirt design, essay writing contests, scholarship programs)~~

~~Education and outreach from community volunteers~~

~~Wholesale water customer education~~

Effective communication will be maintained with all wholesale water customers or entities through semi-annual wholesale water customer meetings and mailings.

SECTION IV

Coordination with Regional Water Planning Groups

The service area of Dallas Water Utilities is located within Region C Regional Water Planning Area, and the City of Dallas will provide a copy of this Plan to the Region C Water Planning Group. Refer to Appendix C for a copy of the transmittal letter to the Regional Planning Group.

SECTION V

Authorization

The City Manager, or his/her designee, is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The City Manager, or his/her designee, shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan. The authority to implement and enforce the Drought Contingency Plan is established in the Dallas City Code, Chapter 49, Water and Wastewater, Section 49-20, EMERGENCY AUTHORITY available in Appendix D.

SECTION VI

Application

The provisions of this Plan shall apply to all persons, customers, and property utilizing water provided by the City of Dallas. The terms “person” and “customer” as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

SECTION VII

Definitions

For the purposes of this Plan, the following definitions shall apply:

- (1) *Aesthetic water use*: water use for ornamental or decorative purposes, including but not limited to such as fountains, reflecting pools, and water gardens.
- (2) *Allowed watering hours*: ~~the hours between 12:00 midnight and 10:00 a.m. and between 6:00 p.m. and 12:00 midnight. No watering is allowed between 10:00 a.m. and 6:00 p.m.~~ As established in the Dallas City Code, Chapter 49, Water and Wastewater, Section 49-21
- (3) *Automatic Irrigation System*: means a site-specific system of delivering water, generally for landscape irrigation, via a system of pipes or other conduits installed below ground that

will automatically cycle water using landscape sprinklers according to a preset program, whether on a designated timer or through manual operation.

~~(4)~~ Aquatic Life: a vertebrate organism dependent upon an aquatic environment to sustain its life.

~~(3)-(5)~~ City Manager: The City Manager for the City of Dallas.

~~(6)~~ Commercial ~~and institutional~~ water use: the use of water use which is integral to the operations of governmental and non-profit establishments and commercial entities by a place of business such as retail establishments, hotels and motels, restaurants, and office buildings.

~~(7)~~ Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve efficiency in the use of water, or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

~~(4)-(8)~~ Contamination: a naturally occurring or man-made element which compromises the safety of the water supply.

~~(5)-(9)~~ Customer: any person, company, entity or organization using water supplied by the City of Dallas.

~~(10)~~ Delivery capacity: refers to the maximum amount of water that can be delivered to customers when considering the limitation of the system components such as sources, treatment, storage, transmission, or distribution, individually and in combination with each other when operating at their designed capacity.

~~(6)-(11)~~ The Director: Department Director for City of Dallas Water Utilities.

~~(12)~~ Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

~~(7)-(13)~~ Drip Irrigation: micro irrigation with low volume and low pressure release of water through point source emitters or pressure compensating in-line drip emitters.

~~(8)-(14)~~ Drought Contingency Plan: a strategy or combination of strategies for temporary supply ~~management~~ and demand management responses to temporary ~~or~~ and potentially recurring water supply shortages and other water supply emergencies. This document is the Drought Contingency Plan for the City of Dallas.

~~(15)~~ Even number address: street addresses (e.g. 120 Magnolia St.), box numbers, or rural postal route numbers (e.g. RR 2 Box 9802) ending in 0, 2, 4, 6, or 8 and locations without addresses.

~~(16)~~ Foundation Watering: the application of water using a hand-held hose, soaker hose or drip irrigation system placed within 24 inches of the foundation, which does not produce a

spray above ground or result in water run-off.

(17) Golf Course: a commercial or governmental property made up of greens, tees, fairways and related areas which are irrigated and landscaped for the purposes of playing golf

(18) Hand watering – The application of water for irrigation purposes through a hand-held water hose, watering can or bucket.

(19) Hose-end Sprinkler: a device through which water flows from a hose to a sprinkler to water any lawn or landscape.

(20) Industrial water use: the use of water in processes designed to convert materials of a lower order of value into forms having greater usability and commercial value.

(21) Institutional use: the use of water by an establishment dedicated to public service, such as a school, university, church, hospital, nursing home or government facility. All facilities dedicated to public service are considered institutional regardless of ownership.

~~(9)~~(22) Interruptible Customer: a customer with an interruptible service contract, as established in the Dallas City Code, Chapter 49, Water and Wastewater, Section 49-1.

~~(10)~~(23) Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, and rights-of-way and medians.

~~(11)~~(24) Non-essential water use: water uses that are not essential or required for the protection of public, health, safety, and welfare, including:

- a. irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;
- b. use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
- c. use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
- d. use of water to wash down buildings or structures for purposes other than immediate fire protection;
- e. flushing street gutters or permitting water to run or accumulate in any gutter or street;
- f. use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, hot tubs or Jacuzzi-type pools;
- g. use of water in a human made water feature, including but not limited to a fountain or pond for aesthetic or scenic purposes except as necessary to support aquatic life;
- h. failure to repair a controllable leak(s) within a reasonable period after having been

given notice directing the repair of such leak(s); and

- i. use of water from hydrants for construction purposes or any other purposes other than fire fighting and flushing of lines to maintain a potable water supply.

~~(12)–(25)~~ *Non-Potable Water*: water that is not intended or suitable for drinking and has not been approved for human consumption.

~~(26)~~ *Ornamental Fountain*: an artificially created structure from which a jet, stream, valves and emission devices or flow of water emanates and is not typically utilized for the preservation of aquatic life.

~~(13)–(27)~~ *Odd Numbered Address*: street addresses (e.g. 121 Magnolia St.), box numbers, or rural postal route numbers (e.g. RR 2 Box 9803) ending in 1, 3, 5, 7, or 9.

~~(14)–(28)~~ *Potable Water*: water that is suitable for drinking by the public.

~~(15)–(29)~~ *Recreational Water Use*: water used for leisure and entertainment purposes. Examples include but are not limited to swimming pools, Jacuzzi-type pools, water theme parks, wading pools and water toys.

~~(16)–(30)~~ *Reduced Delivery Capacity*: refers to the maximum amount of water that can be delivered to customers when considering reductions of delivery capacity based on scheduled shutdowns of infrastructure and/or unforeseen shutdowns of infrastructure, such as line breaks, equipment failure, etc.

~~(31)~~ *Retail Customers*: non-wholesale customers.

~~(32)~~ *Run-off*: a stream of water which overflows from a lawn or landscape onto a street, sidewalk, parking lot or other impervious area for a distance of more than 50 feet; or forms a puddle or pond to a depth greater than one-quarter of an inch.

~~(33)~~ *Soaker Hose*: a permeable garden-type hose that is laid above ground that provides irrigation at a slow and constant rate.

~~(34)~~ *Swimming Pool*: a structure that is used for swimming, bathing, or water play, including all equipment and appurtenant facilities.

~~(35)~~ *TCEQ*: The Texas Commission of Environmental Quality

~~(17)–(36)~~ *Vehicle Wash Facility*: a permanently-located business that washes vehicles or other mobile equipment with water or water-based products, including but not limited to self-service car washes, full service car washes, roll-over/in-bay style car washes, and facilities managing vehicle fleets or vehicle inventory.

~~(18)–(37)~~ *Wholesale Treated Water Customer*: any water supplier that receives all or a portion of its treated water supply from another water supplier directly or indirectly from DWU.

~~(38)~~ *Wholesale Untreated water customer*: any person, company, organization or water

supplier buying non-potable water from DWU.

SECTION VIII

Triggering Criteria and Rationale for Initiation & Termination of Drought Response Stages

The Director or his/her designee shall monitor water supply and/or demand conditions, at a minimum, on a weekly basis and shall determine when conditions warrant initiation or termination of each stage of the Plan, that is, when the specified “triggers” are reached. The Director reserves the authority to recommend that a Stage be or not be initiated based on ~~time of year~~:

- ~~-weather conditions;~~
- ~~total water supply availability;~~
- ~~anticipation of replenished water supplies~~
- ~~rate of water supply decline or replenishment;~~-or
- anticipation of change in that facilities will soon come on line to increase water supply/treatment/distribution capacity.

Upon recommendation of the Director, the City Manager may upgrade or downgrade a stage when the conditions triggering that stage occur. Retail customer notification of the initiation or termination of drought response stages will be made by the Director or his/her designee, ~~by~~:

~~Press releases~~

~~Public service announcements~~

~~Publication in a newspaper of general circulation to the city within 24 hours after the public announcement, as established in the Dallas City Code, Chapter 49, Water and Wastewater, Section 49-20, EMERGENCY AUTHORITY available in Appendix D.~~

Wholesale water customer notification of the initiation or termination of drought response stages will be made by the Director or his/her designee directly by fax, mail, email or telephone, followed up by certified mail.

- Additional Notification:

The Director or his/ her designee shall notify directly, or cause to be notified directly by fax, mail, email or telephone, the following individuals and entities as appropriate to the respective drought stages:

- A. Mayor and members of the City Council
- B. City and/or County Emergency Management Coordinator(s)
- C. County Judge & Commissioner(s)

- D. State Disaster District / Department of Public Safety
- E. Executive Director of the TCEQ (required within five (5) business days of the implementation of any mandatory restrictions)
- F. Critical water users (e.g., hospitals)
- G. Parks/street superintendents & public facilities managers

~~A stage can be made effective for up to, but not more than, 60 days from the date of publication/notification.~~

~~The City Council may, upon the recommendation of the City Manager and the Director, extend the duration of the stage for additional time periods, not to exceed 120 days each.~~

The triggering criteria described below are based on the ability of the City to deliver treated water to the customers. Modeling of the reservoir system shows how supplies would be diminished during a drought equal to the drought of record. To set trigger conditions, DWU also examined water demand and the system's delivery capacity. The trigger levels were selected to provide a sufficient time delay between each stage to implement measures that correspond with the severity of the capacity shortfall. The trigger conditions for short-term deficiencies limiting water supply capability are based on how much water supply or delivery capacity remains available relative to water demand, for all or part of the system.

➤ Stage 1 Triggers

- A. Requirements for Initiation:

Customers shall be requested to adhere to voluntary measures and shall be required to comply with the requirements and mandatory restrictions on certain non-essential water uses provided in Section IX of this Plan when:

- Either: (1) the total raw water supply in connected lakes (east and west); or, (2) the western lakes; or, (3) the eastern lakes has dropped below 65% (35% depleted) of DWU's share of the total conservation storage of the lakes; or
- Water demand has reached or exceeded 85% of delivery capacity for 4 consecutive days; or
- Water demand **approaches** a reduced delivery capacity for all or part of the system, as determined by DWU; or
- Major water line breaks; or pump or system failures occur, which cause impacts the significant loss of capability of DWU to provide treated water service; or
- Natural or man-made contamination of the water supply source(s) occurs.

B. Requirements for Termination:

- Stage 1 may be terminated when Stage 1 conditions no longer exist and would be unlikely to recur upon termination.

➤ **Stage 2 Triggers**

B. Requirements for Initiation:

Customers shall be requested to adhere to voluntary measures and shall be required to comply with the requirements and mandatory restrictions on certain non-essential water uses provided in Section IX of this Plan when:

- Either: (1) the total raw water supply in connected lakes (east and west); or, (2) the western lakes; or, (3) the eastern lakes has dropped below ~~55~~50% (~~45~~50% depleted) of DWU's share of the total conservation storage of the lakes; or
- Water demand has reached or exceeded 90% of delivery capacity for 3 consecutive days; or
- Water demand **equals** a reduced delivery capacity for all or part of the system, as determined by DWU; or
- ~~Major w~~Water line breaks; or pump or system failures occur, which cause significant loss of capability impacts the ability of DWU to provide treated water service; or
- Natural or man-made contamination of the water supply source(s) occurs.

C. Requirements for Termination

- Stage 2 may be terminated when Stage 2 conditions no longer exist and would be unlikely to recur upon termination.

➤ **Stage 3 Triggers**

A. Requirements for Initiation

Customers shall be required to comply with the requirements and mandatory restrictions on certain non-essential water uses provided in Section IX of this Plan when:

- Either (1) the total raw water supply in connected lakes (east and west) or (2) the western lakes or (3) the eastern lakes has dropped below ~~45~~30% (~~55~~70% depleted) of DWU's share of the total conservation storage; or
- Water demand has reached or exceeded 95% of delivery capacity for 2 consecutive days; or

- Water demand **exceeds** a reduced delivery capacity for all or part of the system, as determined by DWU; or
- ~~Major w~~Water line breaks; or pump or system failures occur, which ~~cause significant loss of capability~~impacts the ability of DWU to provide treated water service; or
- Natural or man-made contamination of the water supply source(s) occurs.

D. Requirements for Termination

- Stage 3 of the Plan may be terminated when the Stage 3 conditions no longer exist and would be unlikely to recur upon termination.

➤ ~~Stage 4 Triggers~~

~~A. Requirements for Initiation~~

~~Customers shall be required to comply with the requirements and mandatory restrictions on certain non-essential water uses provided in Section IX of this Plan when:~~

- ~~Either (1) the total raw water supply in connected lakes (east and west) or (2) the western lakes or (3) eastern reservoirs has dropped below 30% (70% depleted) of DWU's share of the total conservation storage; or~~
- ~~Water demand has reached or exceeded 98% of delivery capacity for 1 day; or~~
- ~~Water demand **seriously exceeds** a reduced delivery capacity for all or part of the system, as determined by DWU; or~~
- ~~Major water line breaks, or pump or system failures occur, which cause significant loss of capability to provide treated water service; or~~
- ~~Natural or man-made contamination of the water supply source(s) occurs.~~

~~B. Requirements for Termination~~

- ~~Stage 4 of the Plan may be terminated when the Stage 4 conditions no longer exist and would be unlikely to recur upon termination.~~

SECTION IX

Drought Response Stages

The Director, or his/her designee, shall monitor water supply and/or demand conditions on a weekly basis and, in accordance with the triggering criteria set forth in Section VIII of this Plan, shall determine if conditions exist that would trigger any of the designated drought stages, and if so, shall implement the following actions:

➤ **Stage 1 Response**

Target: Achieve a 5 percent reduction in total gallons per capita per day (GPCD).

Water Use Restrictions for Demand Reduction:

Following is a menu of possible actions. Specific actions taken during any drought situation will be determined by the Director of DWU. The Director may also take other actions not listed, if deemed necessary.

➤ **All Water Users**

Landscape Uses:

- A. All water customers are reminded to observe all requirements of the Water Conservation Ordinance, as established in the Dallas City Code, Chapter 49, Water and Wastewater, Section 49-21, which includes a ~~Require reduction of water use through~~ **mandatory** maximum 2-days-per-week landscape watering schedule and require watering only during allowed watering hours as defined in Section VII. Irrigation of landscaped areas with hose-end sprinklers and, automatic irrigation systems, ~~soaker hoses, drip irrigation systems, hand held hoses and faucet-filled buckets should be~~ is limited to Sundays and Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8) and for locations without addresses and limited to Saturdays and Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9). Apartments, office building complexes or other properties containing multiple addresses may be identified by the lowest address number.
- B. Encourage reduction of water use through **voluntary** maximum 1-day-per-week landscape watering schedule.
- C. Discourage planting of new landscapes, including lawns, hydro-seeding and sod.
- ~~B. Encourage reduction in frequency of watering new and first year landscaping.~~
- ~~D. Encourage only initial filling of ornamental fountains.~~

Swimming Pools and Other Recreational Uses:

- A. Encourage reduction in frequency in draining and refilling of swimming pools.
- B. Prohibit recreational water usage, including the use of faucets, hoses or hydrants, which results in water run-off or other prohibited waste of water.~~Encourage reduction in frequency of recreational use including use of faucets, hoses, or hydrants.~~

Foundations:

Foundations may be watered on any day of the week and at any time. during the allowed watering hours as defined in Section VII. Foundations may be watered with a drip irrigation system, soaker hose or a hand-held hose equipped with a positive shutoff nozzle only.

Vehicle Washing:

Restrict washing of any motor vehicle, motorbike, boat, trailer, airplane or other vehicle to the use of a hand-held bucket or a hand-held hose equipped with a positive shut-off nozzle for quick rinses. Vehicle washing may be done at any time on the immediate premises of a commercial vehicle wash facility or commercial service station. Companies with an automated on-site vehicle washing facility may wash vehicles at any time.

➤ City Government:

- A. Initiate public education campaign teaching and encouraging reduced water use practices.
- B. Intensify normal leak detection and repair activities on water pipes and mains.
- C. Require reduction of water use through day-of-week-mandatory maximum twice weekly landscape watering schedule for city parks and golf courses.
- ~~C.D.~~ Encourage reduction of water use in city-owned ornamental fountains.
- ~~D.E.~~ Encourage additional reduction in landscape uses for parks.
- ~~E.F.~~ Encourage 25 percent reduction in frequency of wet street sweeping and city vehicle washing and rinsing.
- G. Increase enforcement efforts through proactive code enforcement.

➤ Commercial Customers:

- A. Identify and encourage voluntary reduction measures by high-volume water users through water use audits.
- B. Require reduction of water use through day-of-week-mandatory maximum twice weekly landscape watering schedule for private parks and golf courses.
- C. Encourage additional reduction in landscape uses for parks.
- D. Encourage reduction in water use for landscape nursery stock.
- E. Encourage area restaurants to serve customers water by request only.
- F. Encourage hotel/motels to request multiple day patrons to reuse linens instead of

changing every day.

➤ Wholesale Untreated Water Customers:

~~Reduce usage for wholesale untreated water customers per contract terms.~~

Require implementation of like procedures by wholesale water customers in accordance with their water contracts, state mandated drought and conservation plans, State law and TCEQ regulations.

➤ Wholesale Water Customer:

~~Require Encourage~~ implementation of like procedures by wholesale water customers in accordance with their water contracts, state mandated drought and conservation plans, state law and TCEQ regulations.

➤ Interruptible Water Customers:

Reduce usage for interruptible customers per contract terms.

➤ **Stage 2 Response**

Target: Achieve a 15 percent reduction in total gallons per capita per day (GPCD).

Water Use Restrictions for Demand Reduction:

Following is a menu of possible actions. Specific actions taken during any drought situation will be determined by the Director of DWU. The Director may also take other actions not listed, if deemed necessary. All requirements of Stage 1 shall remain in effect during Stage 2, and the following additional measures will be required:

➤ **All Water Users:**

Landscape Uses:

~~A. All water customers are reminded to observe all requirements of the Water Conservation Ordinance, as established in the Dallas City Code, Chapter 49, Water and Wastewater, Section 49-21. Additionally, require reduction of water use through **mandatory** maximum 1-day-per-week landscape watering schedule and require watering only during allowed watering hours as defined in Section VII. Irrigation of landscaped areas with hose-end sprinklers, and automatic irrigation systems; ~~soaker hoses, drip irrigation systems, hand held hoses and faucet filled buckets~~ will be limited to ~~Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8) and for locations without addresses and limited to Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9). Apartments, office building complexes or other property containing multiple addresses may be identified by the lowest address number. trash pick-up days for residential customers and Wednesdays for commercial customers.~~~~

A. Strongly discourage planting of new landscapes, including lawns, hydro-seeding and sod.

~~A. Restrict operation of ornamental fountains or ponds to initial filling except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.~~

Swimming Pools and Other Recreational Uses:

A. Encourage further reduction in frequency in draining and refilling of swimming pools.

B. Continue to prohibit recreational water usage, including the use of faucets, hoses or hydrants, which results in water run-off or other prohibited waste of water.

~~Restrict washing of any motor vehicle, motorbike, boat, trailer, airplane or other vehicle to the use of a hand held bucket or a hand held hose equipped with a positive shutoff nozzle for quick rinses. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station. Further, such washing may be exempted from these regulations if the health, safety, and welfare of the public is contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.~~

~~A. Prohibit hosing off paved areas, buildings, windows or other surfaces.~~

Foundations:

Foundations may be watered on any day of the week and at any time. Foundations may be watered with a drip irrigation system, soaker hose or a hand-held hose equipped with a positive shutoff nozzle.

Vehicle Washing:

Restrict washing of any motor vehicle, motorbike, boat, trailer, airplane or other vehicle to the use of a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rinses. Vehicle washing may be done at any time on the immediate premises of a commercial vehicle wash facility or commercial service station. Companies with an automated on-site vehicle washing facility may wash vehicles at any time.

High Demand Surcharge:

Residential Customers

A 25 percent rate increase for high water demand users (greater than 15,000 gallons per month per account) shall be initiated to discourage non-essential use.

Commercial Customers

A 25 percent rate increase for high water demand users (greater than 10,000 gallons and 1.4 times annual average monthly usage per account) shall be initiated to discourage non-essential use.

➤ City Government:

- A. Initiate engineering studies to evaluate alternatives to mitigate drought conditions should conditions worsen.
- B. Accelerate public education campaign teaching and encouraging reduced water use practices.
- C. Continue intensified leak detection and repair activities on water pipes and mains.
- D. Prohibit flushing of new mains not immediately required to provide service.
- E. City government restricted to ~~day-of-week-mandatory maximum once weekly~~ landscape watering schedule.
- F. Require reduction of water use through ~~day-of-week-mandatory once weekly~~ landscape watering schedule for city parks and golf courses.
- ~~F.G.~~ Prohibit operation of city-owned ornamental fountains ~~and water features by city government~~.
- ~~G.H.~~ Reduce frequency of wet street sweeping and city vehicle washing or rinsing by 50 percent.
- H.I. Increase enforcement efforts through proactive code enforcement.

➤ Commercial Customers:

- A. ~~Require reduction of water use through mandatory maximum once weekly landscape watering schedule for private parks and golf courses.~~
- ~~A.~~ ~~Encourage further reduction in landscape uses for nursery stock.~~

➤ Wholesale Water Customer

Require water demand reductions in accordance with contract obligations for wholesale water customers.

➤ Wholesale Water Contracts:

Every offer for a new wholesale contract shall be reviewed. An assessment of the current and future water delivery capacity of DWU for the contract terms will be performed to ensure the sustainability of DWU's commitments to current customers.

➤ **Stage 3 Response**

Target: Achieve a 20 percent reduction in total gallons per capita per day (GPCD).

Water Use Restrictions for Reducing Demand:

Following is a menu of possible actions. Specific actions taken during any drought situation will be determined by the Director of DWU. The Director may also take other actions not listed, if deemed necessary. All requirements of Stages 1 and 2 shall remain in effect during Stage 3, and the following additional measures will be required:

All Water Users

Landscape Uses:

~~Require reduction of water use through **mandatory** maximum 1-day-per-week landscape watering schedule by means of hand-held hoses soaker hoses and hand-held buckets only. Watering shall only occur during allowed watering hours as defined in Section VII. **The use of hose-end sprinklers or permanently installed automatic sprinkler systems are prohibited at all times.** Irrigation of landscaped areas shall be limited to Thursdays for customers with street address ending in an even number (0, 2, 4, 6 or 8) and for locations without addresses, and limited to Wednesdays for water customers with a street addresses ending in an odd number (1, 3, 5, 7 or 9).~~

~~A. Irrigation of turf, shrubs, perennials, annuals, ground covers and any other landscaped area by any method is absolutely prohibited. Trees may be irrigated with drip irrigation system, soaker hoses or with a hand-held hose one day per week on the Stage 2 watering schedule and within the permitted watering hours.~~

~~B. Installation of new landscapes or turf areas is prohibited.~~

~~A.C. Operation of any water feature, ornamental fountain or pond that uses potable water is prohibited for aesthetic or scenic purposes is prohibited except where necessary to supporting aquatic life or water quality. where such fountains or ponds are equipped with a recirculation system.~~

Swimming Pools and Other Recreational Uses:

~~A. Prohibit the filling, draining and refilling of existing swimming pools, wading pools, Jacuzzi and hot tubs except to maintain structural integrity, proper operation and maintenance or alleviate a public safety risk. Existing pools may add water to replace losses from normal use and evaporation.~~

- B. Permitting of new swimming pools, wading pools, water features, Jacuzzi and hot tubs, spas, ornamental ponds and fountain construction is prohibited.
- C. Continue to prohibit recreational water usage, including the use of faucets, hoses or hydrants, which results in water run-off or other prohibited waste of water.

Foundations:

Foundations may be watered one day per week on the Stage 2 watering schedule within the permitted watering hours. Foundations may be watered with a drip irrigation system, soaker hose or a hand-held hose equipped with a positive shutoff nozzle. Water run-off is absolutely prohibited.

Vehicle washing:

Use of water to wash any motor vehicle, motorbike, boat, trailer or other vehicle not occurring on the premises of a commercial vehicle wash facility or commercial service stations is prohibited. Companies with an automated on-site vehicle washing facility may wash its vehicles at any time. Further, such washing may be exempt from these requirements if the health, safety and welfare of the public are contingent upon frequent vehicle cleansing, such as garbage trucks and commercial vehicles used to transport food and perishables.

Impervious surface cleaning:

Hosing and washing of paved areas, buildings, structures, windows or other surfaces is prohibited except by variance and performed by a professional service using high efficiency equipment.

A 10 percent rate increase for high water demand users (greater than 10,000 gallons per month per account) shall be initiated.

High Demand Surcharge:

Residential Customers

A 50 percent rate increase for high water demand users (greater than 15,000 gallons per month per account) shall be initiated to discourage non-essential use.

Commercial Customers

A 50 percent rate increase for high water demand users (greater than 10,000 gallons and 1.4 times annual average monthly usage per account) shall be initiated to discourage non-essential use.

New Service:

No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities

of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage or a higher-numbered stage shall be in effect.

➤ City Government:

- A. Wet street sweeping and city vehicle washing or rinsing is prohibited except for reasons of public health, safety and welfare.
- B. Municipal landscape watering prohibited except golf courses (see below).
- C. Watering of golf course greens and tee boxes are restricted to the allowed watering hours as defined in Section VII; watering of other golf course areas and parks is prohibited.

➤ Commercial Customers:

- A. Watering of golf course greens and tee boxes are restricted to the allowed watering hours as defined in Section VII; watering of other golf course areas or parks is prohibited unless the golf course uses a water source other than that provided by the City of Dallas.

~~B. Watering of nursery plant stock restricted to the allowed watering hours as defined in Section VII and the designated watering day for Stage 3.~~

➤ Wholesale Water Contracts:

No new wholesale contracts shall be entertained unless there is an emergency situation. Every offer for a new wholesale contract shall be reviewed. An assessment of the current and future water delivery capacity of DWU for the contract terms will be performed to ensure the sustainability of DWU's commitments to current customers.

~~➤ Stage 4 Response~~

~~Target: Achieve a 25 percent reduction in total gallons per capita per day (GPCD).~~

~~A. Water Use Restrictions for Reducing Demand:~~

~~Specific actions taken during any drought situation, including water allocation will be determined by the Director of DWU. All requirements of Stages 1, 2 and 3 shall remain in effect during Stage 4, and the following additional measures will be required:~~

- ~~• Irrigation of landscaped areas is absolutely prohibited.~~
- ~~• Foundations may be watered for a two hour period during the allowed watering hours as defined in Section VII on the designated watering~~

~~day for Stage 3. Foundations may be watered with soaker or hand-held hose equipped with a positive shutoff nozzle only.~~

- ~~• Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is absolutely prohibited.~~

➤ **Water Allocation**

~~Retail Customers- During Stages 2, 3 and 4 of the Drought Contingency Plan, DWU may impose a retail water rate increase to discourage water use. All rates for usage in excess of 10,000 gallons per month (per single-family residential account), or any other usage amount above 10,000 gallons per month, as deemed appropriate by the Director, may be increased by an additional 10 percent or any other percentage deemed appropriate by the Director.~~

Wholesale Water Customers- In the event that the triggering criteria specified in Section VIII of the Plan for Stage 34 have been met, the Director is hereby authorized to initiate allocation of water supplies on a pro rata basis in accordance with the latest revision of Texas Water Code Section 11.039, which states:

§11.039. Distribution of Water During Shortage:

- (a) If a shortage of water in a water supply not covered by a water conservation plan prepared in compliance with Texas Commission on Environmental Quality or Texas Water Development Board rules results from drought, accident, or other cause, the water to be distributed shall be divided among all customers pro rata, according to the amount each may be entitled to, so that preference is given to no one and everyone suffers alike.
- (b) If a shortage of water in a water supply covered by a water conservation plan prepared in compliance with Texas Commission on Environmental Quality or Texas Water Development Board rules results from drought, accident, or other cause, the person, association of persons, or corporation owning or controlling the water shall divide the water to be distributed among all customers pro rata, according to:
 - the amount of water to which each customer may be entitled; or
 - the amount of water to which each customer may be entitled, less the amount of water the customer would have saved if the customer had operated its water system in compliance with the water conservation plan.
- (c) Nothing in Subsection (a) or (b) precludes the person, association of persons, or corporation owning or controlling the water from supplying water to a person who has a prior vested right to the water under the laws of this state.

DWU may curtail water deliveries or reduce diversions in accordance with the terms and conditions of its wholesale water supply contracts. If necessary, or if specific contract provisions are not provided for, DWU may curtail water deliveries or reduce diversions in accordance with

Texas Water Code Section 11.039. DWU will have authority to restrict flow to its wholesale water customers through the rate-of-flow controllers.

Pro rata water allocations, determined as a percentage reduction of the wholesale customer's water usage, will be established by the Director at the time of implementation. The total volume reduction for each wholesale customer will be calculated on a monthly basis, based on average water usage for the previous three years. The Director will establish the percentage reduction based on an assessment of the severity of the water shortage condition and the need to curtail water diversions and/or deliveries, and the percentage reduction may be adjusted periodically by the Director. Once pro rata allocation is in effect, water diversions by or deliveries to each wholesale water customer will be limited to the allocation established for each month.

SECTION X

Enforcement

No person shall knowingly or intentionally allow the use of water from the City of Dallas for residential, commercial, industrial, agricultural, governmental, or any other purposes in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time pursuant to action taken by the Director, or his/her designee, in accordance with provisions of this Plan.

Fines and Fees

Any person who violates this Plan is guilty of a misdemeanor and, upon conviction, shall be punished by a fine of not less than \$250 and not more than \$2,000. Violations of this Plan may also be enforced as an administrative offense using the alternative administrative adjudication procedure set forth in the City of Dallas Code of Ordinances, as amended. Each day that one or more of the provisions in this Plan is violated shall constitute a separate offense. If a person is convicted of two or more distinct violations of this Plan, upon due notice to the customer, DWU may: (1) install a flow restrictor in the line to limit the amount of water that will pass through the meter in a 24-hour period; or (2) discontinue water served to the premises. Services discontinued under such circumstances shall be restored only upon payment of a re-connection charge, hereby established at an amount not to exceed \$135.00 (or as adjusted by City ordinance), and any other costs incurred by the Dallas Water Utilities in discontinuing service. In addition, suitable assurance must be given to the Director that the same action will not be repeated while the Plan is in effect. Compliance with this Plan may also be sought through injunctive relief in the district court.

Violators

Any person, including a person classified as a water customer of the Dallas Water Utilities, in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person's property shall constitute a rebuttable presumption that the person in apparent control of the property committed the violation, but any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children and proof that a violation, committed by a child, occurred on property within the parents' control shall constitute a rebuttable presumption that the parent committed the violation, but any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation

of this Plan and that the parent could not have reasonably known of the violation.

Enforcement Officers

Any employee of the Dallas Water Utilities, police officer, or other employee designated by the City Manager, may issue a citation to a person he/she reasonably believes to be in violation of this Ordinance. The citation shall be prepared in duplicate and shall contain the name and address of the alleged violator, if known, the offense charged, and shall direct him/her to appear in the municipal court on the date shown on the citation for which the date shall not be less than 3 days nor more than 15 days from the date the citation was issued. The alleged violator shall be served a copy of the citation. Service of the citation shall be complete upon delivery of the citation to the alleged violator, to an agent or employee of a violator, or to a person over 14 years of age who is a member of the violator's immediate family or is a resident of the violator's residence. The alleged violator shall appear in municipal court to enter a plea of guilty or not guilty for the violation of this Plan. If the alleged violator fails to appear in municipal court, a warrant for his/her arrest may be issued. A summons to appear may be issued in lieu of an arrest warrant. These cases shall be expedited and given preferential setting in municipal court before all other cases.

SECTION XI

Variances

The Director, or his/her designee, may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, safety or welfare for the public or the person requesting such variance and if all of the following conditions are met:

- Granting of a variance must not cause an immediate significant reduction in the city's water supply.
- The health, safety, or welfare of other persons will not be adversely affected by granting of the variance.
- The applicant must demonstrate that the extreme hardship or need is related to the health, safety, or welfare of the person requesting it.
- Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.
- Alternative methods can be implemented which will achieve the same level of reduction in water use.
- All variances are only in effect during the Drought Plan Stage for which the variance was issued.

Persons requesting an exemption from the provisions of this Plan shall file a petition for variance with the Director of Dallas Water Utilities, ~~within 5 days after the Plan or a particular drought response stage has been invoked.~~ All petitions for variances shall be reviewed by the Director, or his/her designee, and shall include the following:

- Name and address of the petitioner(s).
- Purpose of water use.
- Specific provision(s) of the Plan from which the petitioner is requesting relief.
- Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Plan.
- Description of the relief requested.
- Period of time for which the variance is sought.
- Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
- Other pertinent information.

Variations granted by the City of Dallas shall be subject to the following conditions, unless waived or modified by the City of Dallas or its designee:

- Variations granted shall include a timetable for compliance.
- Variations granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

- The Director may revoke a variance granted when the Director determines that the conditions are not being met or are no longer applicable.

SECTION XII

Wholesale Water Contracts

Every wholesale water contract, (treated and untreated water) entered into or renewed after the adoption of this Plan, including any contract extensions, will contain language notifying parties to the contract, that in a case of shortage of water resulting from a drought, the water to be distributed shall be divided in accordance with Texas Water Code Section 11.039.

SECTION XIII

Severability

It is hereby declared to be the intention of the City of Dallas that the sections, paragraphs, sentences, clauses, and phrases of this Plan are severable and, if any phrase, clause, sentence, paragraph, or section of this Plan shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Plan, since the same would have been enacted by the City of Dallas without the incorporation into this Plan of any such

unconstitutional phrase, clause, sentence, paragraph, or section.

SECTION XIV

Review and Update of the Drought Contingency Plan

DWU will review and update the Plan consistent with State law requirements. If the plan is implemented during a water shortage, data obtained during the plan implementation will be used to make any necessary modifications to the plan. Additionally, the plan will be updated as appropriate based on new or updated information regarding the system's delivery capacity.

APPENDIX A

Documentation of Adoption of the Drought Contingency Plan
by the Dallas City Council

To be added

APPENDIX B

**Title 30 Chapter 288, Subchapter B
of Texas Administrative Code**

SUBCHAPTER B: DROUGHT CONTINGENCY PLANS
§§288.20 - 288.22
Effective October 7, 2004

§288.20. Drought Contingency Plans for Municipal Uses by Public Water Suppliers.

(a) A drought contingency plan for a retail public water supplier, where applicable, must include the following minimum elements.

(1) Minimum requirements. Drought contingency plans must include the following minimum elements.

(A) Preparation of the plan shall include provisions to actively inform the public and affirmatively provide opportunity for public input. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting.

(B) Provisions shall be made for a program of continuing public education and information regarding the drought contingency plan.

(C) The drought contingency plan must document coordination with the regional water planning groups for the service area of the retail public water supplier to ensure consistency with the appropriate approved regional water plans.

(D) The drought contingency plan must include a description of the information to be monitored by the water supplier, and specific criteria for the initiation and termination of drought response stages, accompanied by an explanation of the rationale or basis for such triggering criteria.

(E) The drought contingency plan must include drought or emergency response stages providing for the implementation of measures in response to at least the following situations:

(i) reduction in available water supply up to a repeat of the drought of record;

(ii) water production or distribution system limitations;

(iii) supply source contamination; or

(iv) system outage due to the failure or damage of major water system components (e.g., pumps).

(F) The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph are not enforceable.

(G) The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following:

(i) curtailment of non-essential water uses; and

(ii) utilization of alternative water sources and/or alternative delivery mechanisms with the prior approval of the executive director as appropriate (e.g., interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.).

(H) The drought contingency plan must include the procedures to be followed for the initiation or termination of each drought response stage, including procedures for notification of the public.

(I) The drought contingency plan must include procedures for granting variances to the plan.

(J) The drought contingency plan must include procedures for the enforcement of mandatory water use restrictions, including specification of penalties (e.g., fines, water rate surcharges, discontinuation of service) for violations of such restrictions.

(2) Privately-owned water utilities. Privately-owned water utilities shall prepare a drought contingency plan in accordance with this section and incorporate such plan into their tariff.

(3) Wholesale water customers. Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply.

(b) A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan.

(c) The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan.

§288.21. Drought Contingency Plans for Irrigation Use.

(a) A drought contingency plan for an irrigation use, where applicable, must include the following minimum elements.

(1) Minimum requirements. Drought contingency plans for irrigation water suppliers must include policies and procedures for the equitable and efficient allocation of water on a pro rata basis during times of shortage in accordance with Texas Water Code, §11.039. Such plans shall include the following elements as a minimum.

(A) Preparation of the plan shall include provisions to actively inform and to affirmatively provide opportunity for users of water from the irrigation system to provide input into the preparation of the plan and to remain informed of the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the water users and providing written notice to the water users concerning the proposed plan and meeting.

(B) The drought contingency plan must document coordination with the regional water planning groups to ensure consistency with the appropriate approved regional water plans.

(C) The drought contingency plan must include water supply criteria and other considerations for determining when to initiate or terminate water allocation procedures, accompanied by an explanation of the rationale or basis for such triggering criteria.

(D) The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph are not enforceable.

(E) The drought contingency plan must include methods for determining the allocation of irrigation supplies to individual users.

(F) The drought contingency plan must include a description of the information to be monitored by the water supplier and the procedures to be followed for the initiation or termination of water allocation policies.

(G) The drought contingency plan must include procedures for use accounting during the implementation of water allocation policies.

(H) The drought contingency plan must include policies and procedures, if any, for the transfer of water allocations among individual users within the water supply system or to users outside the water supply system.

(1) The drought contingency plan must include procedures for the enforcement of water allocation policies, including specification of penalties for violations of such policies and for wasteful or excessive use of water.

(2) Wholesale water customers. Any irrigation water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan, appropriate provisions for responding to reductions in that water supply.

(3) Protection of public water supplies. Any irrigation water supplier that also provides or delivers water to a public water supplier(s) shall consult with that public water supplier(s) and shall include in the plan, mutually agreeable and appropriate provisions to ensure an uninterrupted supply of water necessary for essential uses relating to public health and safety. Nothing in this provision shall be construed as requiring the irrigation water supplier to transfer irrigation water supplies to non-irrigation use on a compulsory basis or without just compensation.

(b) Irrigation water users shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as adoption or revision of the regional water plan.

Adopted September 15, 2004

Effective October 7, 2004

§288.22. Drought Contingency Plans for Wholesale Water Suppliers.

(a) A drought contingency plan for a wholesale water supplier must include the following minimum elements.

(1) Preparation of the plan shall include provisions to actively inform the public and to affirmatively provide opportunity for user input in the preparation of the plan and for informing wholesale customers about the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting.

(2) The drought contingency plan must document coordination with the regional water planning groups for the service area of the wholesale public water supplier to ensure consistency with the appropriate approved regional water plans.

(3) The drought contingency plan must include a description of the information to be monitored by the water supplier and specific criteria for the initiation and termination of drought response stages, accompanied by an explanation of the rationale or basis for such triggering criteria.

(4) The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record.

(5) The drought contingency plan must include the procedures to be followed for the initiation or termination of drought response stages, including procedures for notification of wholesale customers regarding the initiation or termination of drought response stages.

(6) The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable.

(7) The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following:

(A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and

(B) utilization of alternative water sources with the prior approval of the executive director as appropriate (e.g., interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.).

(8) The drought contingency plan must include a provision in every wholesale water contract entered into or renewed after adoption of the plan, including contract extensions, that in case of a shortage of water resulting from drought, the water to be distributed shall be divided in accordance with Texas Water Code, §11.039.

(9) The drought contingency plan must include procedures for granting variances to the plan.

(10) The drought contingency plan must include procedures for the enforcement of any mandatory water use restrictions including specification of penalties (e.g., liquidated damages, water rate surcharges, discontinuation of service) for violations of such restrictions.

(b) The wholesale public water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan.

(c) The wholesale public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as adoption or revision of the regional water plan.

Texas Commission on Environmental Quality
Chapter 288 - Water Conservation Plans,
Drought Contingency Plans, Guidelines and Requirements

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APPENDIX C

Transmittal Letter to the Regional Planning Group

To be added

APPENDIX D

Dallas City Code, Chapter 49, Water and Wastewater
Section 49-20, Emergency Authority

SEC. 49-20. EMERGENCY AUTHORITY.

(a) Purpose and scope. The purpose of this section is to establish the city's policy in the event of shortages or delivery limitations in the city's water supply. This section applies to:

(1) all persons and premises within the city using water from the water system;

(2) all retail customers who live in unincorporated areas within the city's extraterritorial jurisdiction and are served by the water system; and

(3) all wholesale service customers outside the city to the extent provided in Subsection (i).

(b) Emergency water management plan. The director shall promulgate and submit an emergency water management plan to the city council for approval, the guidelines of which should include:

(1) the conditions under which a particular stage of emergency will be implemented or terminated; and

(2) provisions defining specific events that will trigger an emergency.

(c) Authority. The city manager is authorized to implement measures prescribed when required by this section and by the emergency water management plan approved by the city council. The director is authorized to enforce the measures implemented and to promulgate regulations, not in conflict with this section or state and federal laws, in aid of enforcement.

(d) Implementation of emergency order. The director, upon determination that the conditions of a water emergency exist, shall advise the city manager. The city manager may order that the appropriate stage of emergency response, as detailed in the emergency water management plan, be implemented. To be effective, the order must be:

(1) made by public announcement; and

(2) published in a newspaper of general circulation in the city within 24 hours after the public announcement, which order becomes immediately effective upon publication.

(e) Duration of order; change; extension. The order can be made effective for up to, but not more than, 60 days from the date of publication. Upon recommendation of the director, the city manager may upgrade or downgrade the stage of emergency when the conditions triggering that stage occur. Any change in the order must be made in the same manner prescribed in Subsection (d) for implementing an emergency order. The city council may, upon the recommendation of the city manager and the director, extend the duration of the emergency order for additional time periods, not to exceed 120 days each. The city manager shall terminate

the order in the manner prescribed in Subsection (d) for implementing an emergency order when the director determines that the conditions creating the emergency no longer exist.

(f) Violation of section. A person commits an offense if he knowingly makes, causes or permits a use of water contrary to the measures implemented by the city manager as prescribed in the emergency water management plan. For purposes of this subsection, it is presumed that a person has knowingly made, caused or permitted a use of water contrary to the measures implemented if the mandatory measures have been formally ordered consistent with the terms of Subsection (d) and:

(1) the manner of use has been prohibited by the emergency water management plan;

(2) the amount of water used exceeds that allowed by the emergency water management plan; or

(3) the manner or amount used violates the terms and conditions of a compliance agreement made pursuant to a variance granted by the director under Subsection (g).

(g) Variations. During the times the emergency order is operative, the director may grant variances in special cases to persons demonstrating extreme hardship and need. The director may grant variances only under the following circumstances and conditions:

(1) the applicant must sign a compliance agreement on forms provided by the director, and approved by the city attorney, agreeing to use the water only in the amount and manner permitted by the variance;

(2) granting of a variance must not cause an immediate significant reduction in the city's water supply;

(3) the extreme hardship or need requiring the variance must relate to the health, safety or welfare of the person requesting it; and

(4) the health, safety and welfare of other persons must not be adversely affected by granting of the variance.

(h) Revocation of variances. The director may revoke a variance granted when he determines that:

(1) the conditions of Subsection (g) are not being met or are no longer applicable;

(2) the terms of the compliance agreement are being violated; or

(3) the health, safety or welfare of other persons requires revocation.

(i) Wholesale service to customers outside the city. The director shall advise customers receiving wholesale water service from the city of actions taken under the emergency water management plan. The director may restrict service to customers outside the city as permitted under the contract and state law.

(j) Authority under other laws. Nothing in this section shall be construed to limit the authority of the mayor, the city council or the city manager to seek emergency relief under the provisions of any state or federal disaster relief act. (Ord. 19201)

APPENDIX E

Dallas City Code, Chapter 49, Water and Wastewater
Section 49-21.1 Lawn & Landscape Irrigation

SEC. 49-21.1. CONSERVATION MEASURES RELATING TO LAWN AND LANDSCAPE IRRIGATION.

- (a) Purpose. Lawn and landscape irrigation practices within the city, especially during the summer months, can cause a waste of valuable water resources. The purpose of this section is to mandate that water be used for lawn and landscape irrigation in a manner that prevents waste, conserves water resources for their most beneficial and vital uses, and protects the public health.
- (b) Lawn and landscape irrigation restrictions.
- (1) A person commits an offense if, during the period from April 1 through October 31 of any year and between the hours of 10:00 a.m. and 6:00 p.m. on any day during that period, the person irrigates, waters, or causes or permits the irrigation or watering of any lawn or landscape located on premises owned, leased, or managed by the person. It is a defense to prosecution under this paragraph that the person was only using water from a source other than the city's water or wastewater system.
 - (2) A person commits an offense if, at any time during the year, the person irrigates, waters, or causes or permits the irrigation or watering of any lawn or landscape located on premises owned, leased, or managed by the person with a hose-end sprinkler or automatic irrigation system on a day other than a designated outdoor water use day for the property address. It is a defense to prosecution under this paragraph that the person was:
 - (A) using a hand-held hose, drip irrigation device, soaker hose, or hand-held bucket;
 - (B) irrigating during the repair or testing of a new or existing automatic irrigation system;
 - (C) irrigating nursery stock at a commercial plant nursery; or
 - (D) only using water from a source other than the city's water or wastewater system.
 - (3) A person commits an offense if the person knowingly or recklessly irrigates, waters, or causes or permits the irrigation or watering of a lawn or landscape located on premises owned, leased, or managed by the person in a manner that causes:
 - (A) a substantial amount of water to fall upon impervious areas instead of upon the lawn or landscape, such that a constant stream of water overflows from the lawn or landscape onto a street or other drainage area; or
 - (B) an automatic irrigation system or other lawn or landscape watering device to operate during any form of precipitation.
 - (4) A person commits an offense if, on premises owned, leased, or managed by the person, the person operates a lawn or landscape automatic irrigation system or device that:
 - (A) has any broken or missing sprinkler head; or
 - (B) has not been properly maintained in a manner that prevents the waste of water.

(c) Rain and freeze sensing devices.

- (1) Any automatic irrigation system installed or operated within the city must be equipped with a working rain and freeze sensing device.
- (2) A person commits an offense if, on premises owned, leased, or managed by the person, the person:
 - (A) installs, or causes or permits the installation of, an automatic irrigation system in violation of Subsection (c)(1); or
 - (B) operates, or causes or permits the operation of, an automatic irrigation system that does not comply with Subsection (c)(1).

(d) Variances. The director may, in special cases, grant variances from the provisions of Subsections (b)(1), (b)(2), or (c) to persons demonstrating extreme hardship and need. The director may grant variances only under all of the following circumstances and conditions:

- (1) The applicant must sign a compliance agreement on forms provided by the director, and approved by the city attorney, agreeing to irrigate or water a lawn or landscape only in the amount and manner permitted by the variance.
- (2) Granting of a variance must not cause an immediate significant reduction in the city's water supply.
- (3) The extreme hardship or need requiring the variance must relate to the health, safety, or welfare of the person requesting it.
- (4) The health, safety, and welfare of other persons must not be adversely affected by granting the variance.

(e) Revocation of variances. The director may revoke a variance granted when the director determines that:

- (1) the conditions of Subsection (d) are not being met or are no longer applicable;
- (2) the terms of the compliance agreement are being violated; or
- (3) the health, safety, or welfare of other persons requires revocation. (Ord. Nos. 24745; 26518; 28622)