

City of Plano
Water Management Plan

TABLE OF CONTENTS

1. INTRODUCTION AND OBJECTIVES	3
2. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES.....	8
2.1 Conservation Plans	8
2.2 Drought Contingency Plans	9
3. WATER CONSERVATION UTILITY PROFILE	11
4. SPECIFICATION OF WATER CONSERVATION GOALS.....	12
5. METERING, WATER USE RECORDS, CONTROL OF WATER LOSS, AND LEAK DETECTION AND REPAIR	13
5.1 Accurate Metering of Treated Water Deliveries from NTMWD	13
5.2 Metering of Customer and Public Uses and Meter Testing, Repair, and Replacement	13
5.3 Determination and Control of Water Loss.....	13
5.4 Leak Detection and Repair	14
5.5 Monitoring of Effectiveness and Efficiency – NTMWD Member City and Customer Annual Water Conservation Report.....	14
5.6 Water Conservation Implementation Report.....	14
6. CONTINUING PUBLIC EDUCATION AND INFORMATION CAMPAIGN	15
7. WATER RATE STRUCTURE.....	17
8. OTHER WATER CONSERVATION MEASURES	18
8.1 NTMWD System Operation Plan	18
8.2 Reuse and Recycling of Wastewater	18
8.3 Ordinances, Plumbing Codes, or Rules on Water-Conserving Fixtures	18
8.4 Landscape Water Management Measures	18
8.5 Additional Water Conservation Measures	20
8.6 Rebates and Free Distribution of Water Conserving Devices	20
8.7 Requirement for Water Conservation Plans by Wholesale Customers	20
9. IMPLEMENTATION OF THE DROUGHT CONTINGENCY & WATER EMERGENCY RESPONSE PLAN	22
10. COORDINATION WITH THE REGIONAL WATER PLANNING GROUP AND NTMWD	23
11. REVIEW AND UPDATE OF WATER MANAGEMENT PLAN	24
12. IMPLEMENTATION AND ENFORCEMENT OF THE WATER MANAGEMENT PLAN	25

APPENDICES

APPENDIX A	List of References
APPENDIX B	Water Conservation Utility Profile
APPENDIX C	Water Conservation Incentive Program
APPENDIX D	NTMWD Member City and Customer Annual Water Conservation Report

1. INTRODUCTION AND OBJECTIVES

Water supply has always been a key issue in the development of Texas. In recent years, the growing population and economic development of North Central Texas has led to increasing demands for water supplies. At the same time, local and less expensive sources of water supply are largely developed. Additional supplies to meet higher demands will be expensive and difficult to develop. It is therefore important that the North Texas Municipal Water District (NTMWD) and its Member Cities and Customers make the most efficient use of existing supplies. This will delay the need for new supplies, minimize the environmental impacts associated with developing new supplies, and delay the high cost of additional water supply development.

Recognizing the need for efficient use of existing water supplies, the Texas Commission on Environmental Quality (TCEQ) has developed guidelines and requirements governing the development of water conservation and drought contingency plans for public water suppliers. The TCEQ established guidelines and requirements are in Texas Administrative Code Title 30, Part 1, Chapter 288 Subchapter A, Rule §288.2 and Texas Administrative Code Title 30, Part 1, Chapter 288 Subchapter B, Rule §288.20. The best management practices established by the Water Conservation Implementation Task Force, established pursuant to SB1094 by the 78th Legislature, were also considered in the development of the water conservation measures. The Water Management Plan for the City of Plano was developed in concert with the NTMWD's water conservation and drought contingency and water emergency response plans.

The water conservation sections of this plan are intended as a year-round water efficiency plan and include measures that are designed to result in ongoing, long-term water savings. The objectives of this water conservation plan are as follows:

- To reduce water consumption from the levels that would prevail without conservation efforts.
- To reduce the loss and waste of water.
- To improve efficiency in the use of water.
- To document the level of recycling and reuse in the water supply.
- To extend the life of current water supplies by reducing the rate of growth in demand.

The drought contingency and water emergency response sections of this plan address strategies designed to temporarily reduce water use in response to specific conditions. The purpose of this drought contingency and water emergency response plan is as follows:

- To conserve the available water supply in times of drought and emergency
- To maintain supplies for domestic water use, sanitation, and fire protection
- To protect and preserve public health, welfare, and safety
- To minimize the adverse impacts of water supply shortages
- To minimize the adverse impacts of emergency water supply conditions.

The NTMWD supplies treated water to its Member Cities and Customers. The water conservation and drought contingency sections of this document were modeled after plans developed by NTMWD in consultation with its Member Cities. In concert with the adoption of this plan, the City of Plano is required to do the following:

- Complete the Water Conservation Utility Profile (TWDB Form - 1965R).
- Complete the Water Conservation Implementation Report (TWDB Form - 1969).
- Set five-year and ten-year goals for per capita water use (Section 4).
- Adopt a resolution approving the plan

This plan includes all elements required by TCEQ. The final adopted version of the Water Management Plan, including appendices will also be provided to NTMWD, as well as TCEQ and Region C Planning Group.

This Water Management Plan applies to all users of the City of Plano water supply.

Definitions:

Athletic Field means a public sports competition field, the essential feature of which is turf grass, used primarily for organized sports practice, competition or exhibition events for schools, professional sports, or sanctioned league play.

Central Controlled Irrigation Systems means large scale, technically advanced systems used to water large or multiple sites from a central location. This advanced technology can monitor and adapt system operation and irrigation run times in response to conditions in the system or surrounding areas (weather conditions, pipe breaks, etc.). These systems may also be easily programmed (individually or globally) to reduce flow rates or the amount of water applied to meet conservation needs; required reduction percentages; and provide historical data or reports. The City central irrigation system uses multiple weather stations throughout the city to collect real-time climatological data. This data is then available to the computer to automatically shut down the system when weather conditions warrant.

Cool Season Grasses refers to the varieties of turf grass that grow best in cool climates primarily in northern and central regions of the U.S. Cool season grasses include perennial and annual rye grass, Kentucky blue grass and fescues.

Customer means a person, company or other entity connected to the City's water system and contracting with the City of Plano to receive potable water service.

Drip Irrigation means micro-irrigation with low volume (measured in gallons per hour) and low-pressure release of water to a specific root zone through point source emitters or pressure compensating in-line drippers. This does not include micro-sprayers or misters.

Foundation means area that includes first 24" of soil from foundation slab.

Fugitive water means the pumping, flow, release, escape, or leakage of any water from any pipe, valve, faucet, connection, diversion, well, from any water supply, transport, storage disposal or delivery system of a facility onto adjacent property or the public right-of-way.

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.

Landscape means natural plant materials around buildings or on grounds (i.e., trees, shrubbery, grasses and flowers) but excludes athletic fields and high use areas.

Potable water means any public water supply that has been investigated and approved by the TCEQ as satisfactory for drinking, culinary and domestic purposes.

Public Health and Safety means such amount of water as necessary to sustain human life, reasonable standards of hygiene and sanitation, and fire suppression.

Soaker Hose means a perforated or permeable garden-type hose that is laid above ground and provides irrigation at a slow and constant rate.

Sprinkler means an above ground irrigation device that may be attached to a garden hose or in-ground irrigation system. This includes spray heads, rotor heads, and oscillating devices.

Wholesale customers purchase water at a discounted rate either directly from NTMWD or from a NTMWD water system Member City. Plano is a wholesale customer of NTMWD.

Responsibilities:

(a) The Director of Public Works is responsible for:

- ❖ Advising the City Manager in issues related to water conservation and drought and water emergency issues.
- ❖ Developing and maintaining the Water Management Plan and Drought and Emergency Response Plan in conformance with the most current NTMWD Model Plan and TCEQ guidelines and policies.
- ❖ Implementing programs to reduce and control water loss, calculating and reporting unaccounted for water, and keeping water loss under 12%. When water loss exceeds state standards, the City will intensify water loss control programs.
- ❖ Assuring that City ordinances are maintained to continue to support future revisions to the NTMWD Model Plan, City Plan, TCEQ guidelines, and legislative mandate.
- ❖ Preparing and submitting all required reports, water utility profiles, and tabular materials related to water conservation in the formats and media required by the City Plan and/or NTMWD, TCEQ, and/or the Texas Water Development Board (TWDB).
- ❖ Continuing the City's Water and Sewer Fund financial programming to support a residential meter replacement cycle of no more than 10 years and conducting a regular large meter testing program on no less than a 5-year cycle.

- ❖ Supporting the City's goal of reducing municipal gallons per capita per day (gpcd) to 190 gpcd within a 10-year period.
- ❖ Providing NTMWD and the Chair of the Region C water planning group the City's adopted resolution and drought contingency ordinance.
- ❖ Managing the administrative processing and follow-up associated with City customer variance requests.
- ❖ Managing the administrative processing and follow-up associated with enforcement of all water conservation and drought contingency and water emergency response provisions of the drought contingency ordinance.
- ❖ Managing the program that allows the pursuit of administrative remedies for violations of water conservation and drought water use restrictions by non-single family water account holders.

(b) The Director of Environmental Health and Sustainability is responsible for:

- ❖ Developing and presenting water conservation educational and informational programs.
- ❖ Developing water conservation promotional activities including a water conservation incentive program.
- ❖ Developing and distributing the Consumer Confidence Report (CCR) to meet federal and state requirements.
- ❖ Notifying the public of the initiation of any drought and emergency response stage.
- ❖ Assuring that education materials are maintained to continue to support future revisions to the NTMWD Model Plan, City Plan, TCEQ guidelines, and legislative mandate.

(c) The Director of Finance is responsible for:

- ❖ Assuring the City continues its program of universal metering and billing.
- ❖ Assuring that the City water billing/records management system includes water usage classes and capabilities to sort/separate differing classes and categories of water usage as required by the NTMWD Model Plan and Texas Administrative Code (TAC) Title 30, Part I, Chapter 288, Subchapter A, Rule 288.2(a)(2)(b).

(d) The Chief Building Official is responsible for:

- ❖ Enforcing the requirements of the International Plumbing Code (IPC) in residential and commercial facilities.
- ❖ As part of the building permit and building inspection programs, enforcing requirements for landscape irrigation system design in accordance with state design and installation standards and the inclusion of freeze and rain sensors on all new irrigation systems (City of Plano Code of Ordinances §6-561). This requires irrigation system design submission by builders for review by the building official staff and inspection of the irrigation systems as part of the building inspection program.

(e) Planning Department is responsible for:

- ❖ Maintaining and enforcing the Zoning Ordinance's landscape and irrigation plan requirements through the development review process.
- ❖ Implementing procedures to allow developers to delay the installation of landscaping during drought contingency watering restrictions.

(f) Parks and Recreation Department is responsible for:

- ❖ Operating and maintaining a central controlled irrigation system, other city irrigation systems to ensure conservation of water, and efficient use of irrigation to meet the needs of city site users. Safety and usability for recreational users of irrigated city sites shall be considered a priority.
- ❖ Installing and maintaining landscapes and managing natural and man-made park resources in a sustainable manner suitable for the scope and scale of the assets. Demonstration of conservation measures meaningful to residential scale shall be incorporated into sites and practices when feasible.

2. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES

2.1 Conservation Plans

The TCEQ rules governing development of water conservation plans for public water suppliers are contained in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 of the Texas Administrative Code. For the purpose of these rules, a water conservation plan is defined as “a strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water.” The elements in the TCEQ water conservation rules covered in this conservation plan are listed below.

Minimum Conservation Plan Requirements

The minimum requirements in the Texas Administrative Code for Water Conservation Plans for Public Water Suppliers are covered in this report as follows:

- 288.2(a)(1)(A) – Utility Profile – Section 3
- 288.2(a)(1)(B) – Specification of Goals – Section 4
- 288.2(a)(1)(C) – Specific, Quantified Goals – Section 4
- 288.2(a)(1)(D) – Accurate Metering – Sections 5.1 and 5.2
- 288.2(a)(1)(E) – Universal Metering – Section 5.2
- 288.2(a)(1)(F) – Determination and Control of Unaccounted Water – Section 5.4
- 288.2(a)(1)(G) – Public Education and Information Program – Section 6
- 288.2(a)(1)(H) – Non-Promotional Water Rate Structure – Section 7
- 288.2(a)(1)(I) – Reservoir System Operation Plan – Section 8.1
- 288.2(a)(1)(J) – Means of Implementation and Enforcement – Section 12
- 288.2(a)(1)(K) – Coordination with Regional Water Planning Group – Section 10
- 288.2(c) – Review and Update of Plan – Section 11

Conservation Additional Requirements (Population over 5,000)

The Texas Administrative Code includes additional requirements for water conservation plans for drinking water supplies serving a population over 5,000:

- 288.2(a)(2)(A) – Leak Detection, Repair, and Water Loss Accounting – Sections 5.1 through 5.4
- 288.2(a)(2)(B) – Record Management System – Section 5.2
- 288.2(a)(2)(C) – Requirement for Water Conservation Plans by Wholesale Customers – Section 8.7

Additional Conservation Strategies

The TCEQ requires that a water conservation implementation report be completed and submitted on an annual basis.

In addition to the TCEQ required water conservation strategies, the NTMWD also requires the following strategy be included in the Member City and Customer plans:

- 288.2(a)(3)(F) – Considerations for Landscape Water Management Regulations – Section 8.4 and

TCEQ rules also include optional, but not required, conservation strategies, which may be adopted by suppliers. The NTMWD recommends that the following strategies be included in the Member City and Customer water conservation plans:

- 288.2(a)(3)(A) – Conservation Oriented Water Rates – Section 7
- 288.2(a)(3)(B) – Ordinances, Plumbing Codes or Rules on Water-Conserving Fixtures – Section 8.3
- 288.2(a)(3)(C) – Replacement or Retrofit of Water-Conserving Plumbing Fixtures – Section 8.6
- 288.2(a)(3)(D) – Reuse and Recycling of Wastewater – Section 8.2
- 288.2(a)(3)(F) – Considerations for Landscape Water Management Regulations – Section 8.5 and enacting a resolution
- 288.2(a)(3)(G) – Monitoring Method – Section 5.5
- 288.2(a)(3)(H) – Additional Conservation Ordinance Provisions – Section 8.5 and 8.6

2.2 Drought Contingency Plans

The TCEQ rules governing development of drought contingency plans for public water suppliers are contained in Title 30, Part 1, Chapter 288, Subchapter B, Rule 288.20 of the Texas Administrative Code. For the purpose of these rules, a drought contingency and water emergency response plan is defined as “a strategy or combination of strategies for temporary supply and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies.” The elements in the TCEQ drought contingency rules covered in this conservation plan are listed below.

Minimum Requirements

TCEQ’s minimum requirements for drought contingency plans are addressed in the adopted Drought and Emergency Response Plan in the City of Plano Municipal Code §21-53 through §21-60.2:

- 288.20(a)(1)(A) – Provisions to Inform the Public and Provide Opportunity for Public Input
- 288.20(a)(1)(B) – Provisions for Continuing Public Education and Information
- 288.20(a)(1)(C) – Coordination with the Regional Water Planning Group – Section 10

- 288.20(a)(1)(D) – Criteria for Initiation and Termination of Drought Stages
- 288.20(a)(1)(E) – Drought and Emergency Response Stages
- 288.20(a)(1)(F) – Specific, Quantified Targets for Water Use Reductions
- 288.20(a)(1)(G) – Water Supply and Demand Management Measures for Each Stage
- 288.20(a)(1)(H) – Procedures for Initiation and Termination of Drought Stages
- 288.20(a)(1)(I) - Procedures for Granting Variances
- 288.20(a)(1)(J) - Procedures for Enforcement of Mandatory Restrictions
- 288.20(a)(3) – Consultation with Wholesale Supplier
- 288.20(b) – Notification of Implementation of Mandatory Measures
- 288.20(c) – Review and Update of Plan – Section 11

3. WATER CONSERVATION UTILITY PROFILE

The Water Conservation Utility Profile must be completed as a requirement of the Water Management Plan. The completed Utility Profile for Retail Water Supplier (TWDB Form No.1965-R) is included in **Appendix B**.

4. SPECIFICATION OF WATER CONSERVATION GOALS

TCEQ rules require the adoption of specific water conservation goals for a water conservation plan. As part of plan adoption, the City of Plano must develop 5-year and 10-year goals for per capita municipal use. These goals should be submitted to NTMWD. The goals for this water management plan include the following:

- Maintain the per capita municipal water use below the specified amount in gallons per capita per day in a dry year, as shown in the completed Table 4.1.
- Maintain the level of unaccounted water in the system below 12%, as discussed in Section 5.4.
- Implement and maintain a program of universal metering and meter replacement and repair, as discussed in Section 5.2.
- Decrease waste in lawn irrigation by implementation and enforcement of landscape water management regulations, as discussed in Section 8.4 and City of Plano Zoning Ordinance Article 3.1200: Landscaping Requirements.
- Increase efficient water usage as discussed in Sections 8.5 and 8.6.
- Raise public awareness of water conservation and encourage responsible public behavior by a public education and information program, as discussed in Section 6.
- Develop a system specific strategy to conserve water during peak demands, thereby reducing the peak use.

Table 4.1
Five-Year and Ten-Year Municipal Per Capita Water Use Goals (gpcd)

Description	Historic 5-Year Average ¹	Baseline ²	5-Year Goal for year 2024	10-Year Goal for year 2029
Total GPCD ³	197	200	195	190
Residential GPCD ⁴	95	92	90	88
Water Loss (GPCD) ⁵	30	33	24	21
Water Loss (Percentage) ⁶	15%	16%	12%	11%

1. The Historic 5-yr Average includes 485 days of mandatory water restrictions due to drought stages and is unrealistically low to base future water use goals.
2. The Baseline is calculated from 2018 water use numbers when weather patterns and outdoor water use were more typical of total and residential water use.
3. Total GPCD = (Total Gallons in System ÷ Permanent Population) ÷ 365
4. Residential GPCD = (Gallons Used for Residential Use ÷ Residential Population) ÷ 365
5. Water Loss GPCD = (Total Water Loss ÷ Permanent Population) ÷ 365
6. Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) x 100; or (Water Loss GPCD ÷ Total GPCD) x 100

5. METERING, WATER USE RECORDS, CONTROL OF WATER LOSS, AND LEAK DETECTION AND REPAIR

One of the key elements of water conservation is tracking water use and controlling losses through illegal diversions and leaks. It is important to carefully meter water use, detect and repair leaks in the distribution system and provide regular monitoring of unaccounted water.

5.1 Accurate Metering of Treated Water Deliveries from NTMWD

Water deliveries from NTMWD are metered by NTMWD using meters with an accuracy of $\pm 2\%$. These meters are calibrated on an annual basis by NTMWD to maintain the required accuracy.

5.2 Metering of Customer and Public Uses and Meter Testing, Repair, and Replacement

The provision of water to all customers, including public and governmental users, will be metered in the City of Plano. The City of Plano tests and/or replaces their residential customer meters in accordance with Sec. 4.2.8 of AWWA C700-95 and M-6, Water Meters – Selection, Installation, Testing and Maintenance Record Management System. All residential customer meters will be budgeted to be replaced on a minimum of a 10-15 year cycle. Additionally, large meters will be regularly tested on no less than a 5-year interval and either maintained or replaced when their test flow is outside standards established by AWWA.

As required by TAC Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2(a)(1)(B), the City of Plano will maintain a customer billing and record management system that allows for the separation of water sales and uses into residential, commercial, public/institutional, and industrial categories. This information will be included in an annual water conservation report, as described in Section 5.6 below.

5.3 Determination and Control of Water Loss

The Texas Water Development Board utilizes a methodology derived from the American Water Works Association (AWWA) and the International Water Association (IWA). This new standard uses terminology such as authorized consumption, real loss, apparent loss, and non-revenue water. Total water loss, as reported to TCEQ, includes two categories:

- Apparent Losses – Water that has been consumed but not properly measured or billed. These losses represent under-registered or under-billed water that occurs via customer meter inaccuracies, systematic data handling errors in the customer billing system, and unauthorized consumption due to illegal connections and theft.
- Real Losses – These are physical losses from the pressurized water distribution system, including water mains and all appurtenances (for example, valves and hydrants) and customer service connection piping. Real losses represent water that is lost from the distribution system prior to reaching the customer destination.

Measures to control apparent and real water losses will be part of the routine operations of the City of Plano. Maintenance crews and personnel will look for and report evidence of leaks in the water distribution system. A leak detection and repair program is described in

Section 5.4 below. Meter service technicians, building inspectors, and all City crews will watch for and report signs of illegal connections, so they can be quickly addressed.

The Water Audit Worksheet, provided by TCEQ, is a "top down" audit of a utility's system using existing estimations and records. This audit will be completed annually using the Water Loss Audit Worksheets available from the Texas Water Development Board online at <https://www.twdb.texas.gov/conservation/municipal/waterloss/index.asp>. With the measures described in this plan, the City of Plano should maintain unaccounted water below 12%. If unaccounted water exceeds this goal, the City of Plano will implement a more intensive audit to determine the source(s) of and reduce the unaccounted water. The annual conservation report described below is the primary tool that should be used to monitor unaccounted water.

5.4 Leak Detection and Repair

As described above, city crews and personnel should look for and report evidence of leaks in the water distribution system. Areas of the water distribution system, in which numerous leaks and line breaks occur, should be targeted for replacement, as funds are available. The City central irrigation system uses sub-metering and real-time data collection to monitor for leaks, line breaks, and malfunctions. The system automatically shuts down when leaks are detected, then automatically generates reports for these occurrences so they may be followed up by field technicians.

5.5 Monitoring of Effectiveness and Efficiency – NTMWD Member City and Customer Annual Water Conservation Report

The City of Plano will complete the NTMWD Member City and Customer Annual Water Conservation Report (**Appendix D**) by March 31 each year and will use this report to monitor the effectiveness and efficiency of the water conservation program and to plan conservation-related activities for the next year. The form records the water use by category, per capita municipal use, and unaccounted water for the current year and compares them to historical values. The annual water conservation report should be sent to NTMWD, which will monitor NTMWD Member Cities' and Customers' water conservation trends.

The City of Plano will consider using the Texas Water Development Board's Water Conservation Tracking Tool to assess existing water conservation initiatives and potential future initiatives.

5.6 Water Conservation Implementation Report

The TCEQ-required Water Conservation Plan Annual Implementation Report (TWDB Form No. 1966) is due to the TCEQ by May 1 of every year. This report lists the various water conservation strategies that have been implemented, including the date the strategy was implemented. The report also calls for the five-year and ten-year per capita water use goals from the previous water conservation plan. The reporting entity must answer whether or not these goals have been met and if not, why not. The amount of water saved is also requested.

6. CONTINUING PUBLIC EDUCATION AND INFORMATION CAMPAIGN

The public education and information campaign on water conservation is carried out primarily by the Water Education Coordinator, a full-time staff member within the Sustainability and Environmental Education Division (SEED) of the Environmental Health and Sustainability Department. SEED's mission is to educate and engage the community in sustainable practices and environmental stewardship.

The Water Education Coordinator works with SEED staff and other City of Plano staff to develop classes, workshops, events, presentations, exhibits, communications campaigns, rebate programs and other resources that promote efficient water use. SEED notifies local organizations, schools, and civic groups that its staff and NTMWD's staff are available to provide presentations on the importance of water conservation and ways to save water.

The Water Education Coordinator develops and maintains a web site designed to educate residents on the importance of water conservation and ways to save water. This includes access to real-time water use data through the Customer & Utility Services online portal, recommended seasonal watering guidelines and schedules and links to other helpful resources, including the TWDB, TCEQ, EPA WaterSense and others.

The Water Education Coordinator develops utility bill inserts, electronic and print newsletter articles and social media campaigns to share water conservation information, garner trust and encourage interaction. These include material developed by the Environmental Health and Sustainability Department and material obtained from the TWDB, the TCEQ, EPA WaterSense and other sources. The City of Plano encourages local media coverage of water conservation issues and the importance of water conservation.

The Water Education Coordinator utilizes "Water IQ: Know Your Water," "Water4Otter," "Water My Yard" and other public education materials produced by the NTMWD as appropriate for targeted audiences. SEED staff actively promote the Texas Smartscape Web site (www.txsmartscape.com) as well as other regional resources, including Texas A&M AgriLife Water University, and make water conservation brochures and other materials available to the public.

The Water Education Coordinator develops and maintains partnerships with regional and national like-minded entities. These include the Water Efficiency Network of North Texas (WENNT), Texas A&M AgriLife Water University, the Dallas Irrigation Association, the North Central Texas Council of Governments (NCTCOG), EPA WaterSense and others.

SEED offers free classes and workshops, including a multi-part, in-person Sprinkler Spruce Up class series, a hands-on Fix-a-Leak Week workshop and additional seasonal classes on water-efficient gardening topics. SEED maintains a set of online learning modules, which allow users to work through interactive online courses at their convenience. One of these focuses on DIY residential sprinkler repairs. SEED is piloting additional online learning options, including webinars and video clips.

SEED hosts an annual WaterWise Landscape Tour. Residents can visit beautiful, sustainable Plano landscapes that thrived in the summer heat with minimal irrigation. This event introduces attendees to plants and practices that are suitable for North Texas as well as resources to help them incorporate those plants and practices into their own yards.

The City of Plano is an award-winning EPA WaterSense partner. SEED continues to strive for award-worthy excellence by promoting EPA WaterSense campaigns, resources, and products.

The Water Education Coordinator oversees the Water Conservation Incentive Program. This includes free conservation items for City of Plano residents and the Water Rebate Program. See Appendix C for details and guidelines.

In addition, trained water meter technicians provide face-to-face communication with residents concerning proper irrigation system design and operation and other conservation practices.

7. WATER RATE STRUCTURE

The City of Plano will continue to bill customers using an increasing block rate water structure that is intended to encourage water conservation and discourage excessive use and waste of water. See City of Plano Code of Ordinances §21-147 establishing an increasing block rate structure and minimum charge and base charges for all tiers for residential and commercial/industrial water rates.

8. OTHER WATER CONSERVATION MEASURES

8.1 NTMWD System Operation Plan

Member Cities and Customers of NTMWD purchase treated water from NTMWD and do not have surface water supplies requiring implementation of a system operation plan. NTMWD's permits do allow some coordinated operation of its water supply sources, and NTMWD is seeking additional water rights for coordinated operation to optimize its available water supplies.

8.2 Reuse and Recycling of Wastewater

The City of Plano does not own and operate its own wastewater treatment plants. The wastewater is treated by NTMWD. NTMWD currently has the largest wastewater reuse program in the state. NTMWD also provides treated effluent from its wastewater treatment plants available for direct reuse for landscape irrigation and industrial use. In Plano, one golf course, one city park and one athletic training facility use wastewater effluent for irrigation.

8.3 Ordinances, Plumbing Codes, or Rules on Water-Conserving Fixtures

State and federal standards have required water-conserving fixtures in new construction and renovations since 1992. The state standards call for flows of no more than 2.5 gallons per minute (gpm) for faucets, and 3.0 gpm for showerheads. As of January 1, 2014, the state requires maximum average flow rates of 1.28 gallons per flush (gpf) for toilets and 0.5 gpf for urinals. These state and federal standards assure that all new construction and renovations will use water-conserving fixtures. As it deems appropriate, the City of Plano will continue to implement ordinances, plumbing codes, and rules for water conserving fixtures as they evolve through relevant building codes and State of Texas requirements. The current plumbing code is adopted in the City of Plano Code of Ordinances §§ 6-236 - 6-239.

8.4 Landscape Water Management Measures

The City of Plano adopts the following basic landscape water conservation measures as required by NTMWD:

- Per the Water Waste; Excess Flow Ordinance, the City of Plano restricts irrigation with sprinklers between the hours of 10 am to 6 pm from April 1 to October 31 of each year. To protect public safety during a freeze event, the City of Plano restricts irrigation with sprinklers any time other than between the hours of 10 am to 6 pm from November 1 to March 31 of each year.
- The City of Plano encourages limiting irrigation with sprinklers to a maximum of twice per week between April 1 and October 31 when not in a drought stage that further limits watering days.
- The City of Plano encourages limiting irrigation with sprinklers to no more than one day per week between November 1 and March 31.

- The City of Plano encourages customers to adhere to designated watering days based on the last digit of their service address.

Service Address	Spring/Summer (April 1 to October 31)	Fall/Winter (November 1 to March 31)
Even (Ends in 0,2,4,6, or 8)	Mondays and Thursdays	Thursdays
Odd (Ends in 1,3,5,7, or 9)	Tuesdays and Fridays	Tuesdays

No person or operation shall cause or permit the flow of excess or fugitive water onto any adjacent property or public right-of-way. This includes watering impervious surfaces and watering during a precipitation or freeze event as stated in the City of Plano Code of Ordinances §21-52.

- The City of Plano discourages the planting of cool season grasses.
- The City of Plano discourages the planting of new landscapes or replacement of existing landscapes during summer months.

Soaker hoses should be utilized only within a tree's dripline or within 24" of a foundation. The City has adopted landscape regulations as part of its Zoning Ordinance in Article 3.1200 (Landscaping Requirements). The requirements are intended to minimize waste in landscape irrigation by requiring:

- Submission of a water budget with landscape plans for new commercial development
- Rain sensors on irrigation systems
- Irrigation system zones to water plants based on similar water needs
- Trees and plants suitable for local soil and climate conditions
- Landscape designs that conserve water through creative design and that comply with the following principles:
 - Soil protection and improvement
 - Careful selection and design of turf areas
 - Use of site-appropriate plan materials with water conservation in mind
 - Use of mulch around all plant materials and areas that are not turf or hardscape

In addition, the adopted plumbing codes in the City of Plano Code of Ordinances §6-561 require:

- New irrigation systems meeting detailed requirements of use of drip and low flow irrigation, distribution uniformity (75 percent), low-angle spray heads, designs in accordance with TCEQ
- No spray heads allowed between street and sidewalk planting areas of both residential and commercial properties

- Installation and inspection for irrigation systems that include an evaluation of the system for the distribution uniformity
- Rain and freeze sensors are required on all new irrigation systems. Rain and freeze sensors must be maintained to function

8.5 Additional Water Conservation Measures

- Promote proper maintenance of irrigation systems and sprinklers
- Promote the use of drip irrigation that is properly designed, installed and scheduled.
- Encourage customers to only seek the services of TCEQ licensed irrigators when they pursue contracted irrigation system design or repair. Partner with the Dallas Irrigation Association to promote vetted resources and contractors.
- “At home” car washing can be done only when using a water hose with a shut-off nozzle.
- Charity car washes are allowed only if they use hoses with shut-off nozzles.
- Promote outdoor water efficiency on Web site, including water conserving irrigation systems.
- The Finance Department will continue to use the fixed network system. The fixed network system offers the ability to analyze water usage by meter by time of day. Data is captured on a daily basis that assists in the City's efforts to educate and inform customers of patterns of water usage to help customers make better decisions regarding their water consumption and will also help identify presence of leaks. The city will continue outreach efforts to develop resources to educate customers how they can use the online meter data to view and reduce their water use.
- The City of Plano will consider adding ordinances that regulate water use for splash pads, car washes and ponds. Splash pads and car washes will require recirculating systems, and ponds will be prohibited from using potable water.

8.6 Rebates and Free Distribution of Water Conserving Devices

The Water Conservation Incentive Program is described in **Appendix C**. The items may change from time to time as the program evolves. The appendix will be modified as these changes occur.

The City offers partial credit for leak repair with sufficient documentation.

8.7 Requirement for Water Conservation Plans by Wholesale Customers

The NTMWD Model Plan requires that every contract for the wholesale sale of water by Member Cities and/or Customers that is entered into, renewed, or extended after the adoption of this water conservation plan include a requirement that the wholesale customer and any wholesale customers of that wholesale customer develop and implement a water conservation plan meeting the requirements of Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 of the Texas Administrative Code. The

requirement will also extend to each successive wholesale customer in the resale of the water. The Colony is the only active wholesale customer of Plano's water system.

9. IMPLEMENTATION OF THE DROUGHT CONTINGENCY & WATER EMERGENCY RESPONSE PLAN

A drought is defined as an extended period of time when an area receives insufficient amounts of rainfall to replenish the water supply, causing water supply sources, in this case reservoirs, to be depleted. In the absence of drought response measures, water demands tend to increase during a drought due to the need for additional outdoor irrigation. The severity of a drought depends on the degree of depletion of supplies and on the relationship of demand to available supplies. The NTMWD considers a drought to end when all of its supply reservoirs refill to the conservation storage pool.

City of Plano Code of Ordinances §§ 21-53 - 21-60.2 establish procedures and criteria for declaring a water emergency and implementing and terminating drought response stages, procedures for requesting variances, and establishing administrative remedies and fees and criminal penalties for violating the restrictions.

10. COORDINATION WITH THE REGIONAL WATER PLANNING GROUP AND NTMWD

The City of Plano will send a copy of this water management plan, the resolution adopting the plan, and the water utility profile to the NTMWD and the Chair of the Region C Water Planning Group.

11. REVIEW AND UPDATE OF WATER MANAGEMENT PLAN

As required by TCEQ rules, the City of Plano will review the Water Management Plan, including the Drought Contingency and Water Emergency Response Ordinance, every five years. The plan will be updated as appropriate based on new or updated information.

12. IMPLEMENTATION AND ENFORCEMENT OF THE WATER MANAGEMENT PLAN

A resolution adopted by the City Council regarding the Water Management Plan on April 22, 2019. The following ordinances are also included as part of the Water Management Plan:

Landscape Water Management Regulation – City of Plano Zoning Ordinance Article 17: Landscaping and Tree Preservation

Illegal Water Connections and Theft of Water – City of Plano Code of Ordinances §21-17 and §21-18

Water Rates - City of Plano Code of Ordinances §21-147

Drought Contingency & Water Emergency Response - City of Plano Code of Ordinances §§21-53 -21-60.2

Plumbing Code - City of Plano Code of Ordinances §§6-236 - 6-239 and §6-561

Water Waste; Excess Flow - City of Plano Code of Ordinances §21-47 through §21-52

APPENDIX A LIST OF REFERENCES

- (1) Title 30 of the Texas Administrative Code, Part 1, Chapter 288, Subchapter B, Rule 288.20.
- (2) Freese and Nichols, Inc.: *North Texas Municipal Water District Water Conservation and Drought Contingency and Water Emergency Response Plan*, prepared for the North Texas Municipal Water District, Fort Worth, March 2014.

The following conservation and drought contingency plans and related documents were reviewed in the development of this plan. References marked with a * were used heavily in the development of this plan.

- (3) City of Austin Water Conservation Division: "City of Austin Water Drought Contingency Plan, Developed to Meet Senate Bill 1 Regulatory Requirements," Austin, August 1999.
- (4) City of Austin Water Conservation Division: "City of Austin Water Conservation Plan, Developed to Meet Senate Bill 1 Regulatory Requirements," Austin, August 1999.
- (5) Upper Trinity Regional Water District: "Water Conservation Plan and Emergency Water Demand Management Plan," adopted by the Board of Directors, Lewisville, August 5, 1999.
- (6) Upper Trinity Regional Water District: "Water Conservation Plan and Emergency Water Demand Management Plan (2002 Amended)," adopted by the Board of Directors, Lewisville, February 2002.
- (7) *City of Dallas Water Utilities Department: "City of Dallas Water Management Plan," adopted by the City Council, Dallas, September 1999.
- (8) Updates to City of Dallas Water Management Plan found at <http://www.dallascityhall.com> in September 2003.
- (9) *City of Dallas Water Utilities Department: "City of Dallas Water Conservation Plan," adopted by the City Council, Dallas, September 1999.
- (10) *City of Fort Worth: "Water Conservation plan for the City of Fort Worth," Fort Worth, August 1999.
- (11) Updates to the City of Fort Worth water conservation plan found at <http://ci.fort-worth.tx.us> in September 2003.
- (12) *City of Fort Worth: "Emergency Water Management Plan for the City of Fort Worth," Fort Worth, August 19, 2003.
- (13) HDR Engineering, Inc.: "Water Conservation and Emergency Demand Management Plan," prepared for the Tarrant Regional Water District, Austin, February 2000.
- (14) Freese and Nichols, Inc.: "Water Conservation and Drought Contingency Plan," prepared for Brown County Water Improvement District No. 1, Fort Worth, August 1999.
- (15) Freese and Nichols, Inc.: "Water Conservation and Drought Contingency Plan," prepared for the Sabine River Authority of Texas, Fort Worth, September 1994.

- (16) HDR Engineering, Inc.: "Water Conservation and Emergency Demand Management Plan," prepared for the Tarrant Regional Water District, Austin, June 1998.
- (17) HDR Engineering, Inc.: "Water Conservation Plan for the City of Corpus Christi," adopted by the City of Corpus Christi City Council, August 24, 1999.
- (18) City of Houston's water conservation plan downloaded September 2003 from <http://www.cityofhouston.gov>
- (19) City of Houston: "Ordinance N. 2001-753, Amending Chapter 47 of the Code of Ordinances Relating to Water Emergencies," Houston, August 2001.
- (20) City of Houston: "Ordinance No. 98-764, Relating to Water Conservation," Houston, September 1998.
- (21) City of Houston: "Water Conservation Plan," 1998.
- (22) City of Houston: "Water Emergency Response Plan," Houston, July 15, 1998.
- (23) City of Lubbock: "Water Conservation Plan," ordinance number 10177 adopted by the City Council in August 1999.
- (24) City of El Paso Water Conservation Ordinance downloaded August 14, 2003 from <http://www.epwu.org/ordinance.html>
- (25) San Antonio Water System: "Water Conservation and Reuse Plan," San Antonio, November 1998 with June 2002 updates.
- (26) North Texas Municipal Water District: "District Policy No. 24 Water Conservation Plan Containing Drought Contingency Plan," adopted August 1999.
- (27) GDS Associates, Inc.: "Water Conservation Study," prepared for the Texas Water Development Board, Fort Worth, 2002.
- (28) A & N Technical Services, Inc.: "BMP Costs & Savings Study: A Guide to Data and Methods for Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices," prepared for The California Urban Water Conservation Council, Santa Monica, California, July 2000.
- (29) *City of Dallas: "City of Dallas Ordinances, Chapter 49, Section 21.1," Dallas, October 1, 2001.
- (30) Title 30 of the Texas Administrative Code, Part 1, Chapter 288, Subchapter A, Rules 288.1 and 288.2.
- (31) Water Conservation Implementation Task Force: "Texas Water Development Board Report 362, Water Conservation Best Management Practices Guide," prepared for the Texas Water Development Board, Austin, November 2004.
- (32) Freese and Nichols, Inc.: *North Texas Municipal Water District Water Conservation and Drought Contingency/Water Emergency Response Plan*, prepared for the North Texas Municipal Water District, Fort Worth, March 2008.
- (33) Edward Motley, Marisa Vergara, Tom Gooch, and Stephanie Griffin: Memorandum to File on "Region C Municipal Water Use Projections Adopted on August 18, 2003," Fort Worth, August 21, 2003.
- (34) City of Austin Water Conservation Division: "City of Austin Water Drought Contingency Plan, Developed to Meet Senate Bill 1 Regulatory Requirements," Austin, August 1999.

- (35) City of Austin Water Conservation Division: "City of Austin Water Conservation Plan, Developed to Meet Senate Bill 1 Regulatory Requirements," Austin, August 1999.
- (36) Upper Trinity Regional Water District: "Water Conservation Plan and Emergency Water Demand Management Plan," adopted by the Board of Directors, Lewisville, August 5, 1999.
- (37) Upper Trinity Regional Water District: "Water Conservation Plan and Emergency Water Demand Management Plan (2002 Amended)," adopted by the Board of Directors, Lewisville, February 2002.
- (38) *City of Dallas Water Utilities Department: "City of Dallas Water Management Plan," adopted by the City Council, Dallas, September 1999.
- (39) Updates to City of Dallas Water Management Plan found at <http://www.dallascityhall.com> in September 2003.
- (40) *City of Dallas Water Utilities Department: "City of Dallas Water Conservation Plan," adopted by the City Council, Dallas, September 1999.
- (41) *City of Fort Worth: "Water Conservation plan for the City of Fort Worth," Fort Worth, August 1999.
- (42) Updates to the City of Fort Worth water conservation plan found at <http://ci.fort-worth.tx.us> in September 2003.
- (43) *City of Fort Worth: "Emergency Water Management Plan for the City of Fort Worth," Fort Worth, August 19, 2003.
- (44) HDR Engineering, Inc.: "Water Conservation and Emergency Demand Management Plan," prepared for the Tarrant Regional Water District, Austin, February 2000.
- (45) Freese and Nichols, Inc.: "Water Conservation and Drought Contingency Plan," prepared for Brown County Water Improvement District No. 1, Fort Worth, August 1999.
- (46) Freese and Nichols, Inc.: "Water Conservation and Drought Contingency Plan," prepared for the Sabine River Authority of Texas, Fort Worth, September 1994.
- (47) HDR Engineering, Inc.: "Water Conservation and Emergency Demand Management Plan," prepared for the Tarrant Regional Water District, Austin, June 1998.
- (48) HDR Engineering, Inc.: "Water Conservation Plan for the City of Corpus Christi," adopted by the City of Corpus Christi City Council, August 24, 1999.
- (49) City of Houston's water conservation plan downloaded September 2003 from <http://www.cityofhouston.gov>
- (50) City of Houston: "Ordinance N. 2001-753, Amending Chapter 47 of the Code of Ordinances Relating to Water Emergencies," Houston, August 2001.
- (51) City of Houston: "Ordinance No. 98-764, Relating to Water Conservation," Houston, September 1998.
- (52) City of Houston: "Water Conservation Plan," 1998.
- (53) City of Houston: "Water Emergency Response Plan," Houston, July 15, 1998.

- (54) City of Lubbock: "Water Conservation Plan," ordinance number 10177 adopted by the City Council in August 1999.
- (55) City of El Paso Water Conservation Ordinance downloaded August 14, 2003 from <http://www.epwu.org/ordinance.html>
- (56) San Antonio Water System: "Water Conservation and Reuse Plan," San Antonio, November 1998 with June 2002 updates.
- (57) North Texas Municipal Water District: "District Policy No. 24 Water Conservation Plan Containing Drought Contingency Plan," adopted August 1999.
- (58) GDS Associates, Inc.: "Water Conservation Study," prepared for the Texas Water Development Board, Fort Worth, 2002.
- (59) A & N Technical Services, Inc.: "BMP Costs & Savings Study: A Guide to Data and Methods for Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices," prepared for The California Urban Water Conservation Council, Santa Monica, California, July 2000.
- (60) *City of Dallas: "City of Dallas Ordinances, Chapter 49, Section 21.1," Dallas, October 1, 2001.

APPENDIX B

WATER CONSERVATION UTILITY PROFILE

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

CONTACT INFORMATION

Name of Utility:

Public Water Supply Identification Number (PWS ID):

Certificate of Convenience and Necessity (CCN) Number:

Surface Water Right ID Number:

Wastewater ID Number:

Contact: First Name: Last Name:

Title:

Address: City: State:

Zip Code: Zip+4: Email:

Telephone Number: Date:

Is this person the designated Conservation Coordinator? ☐ Yes ☒ No

Coordinator: First Name: Last Name:

Title:

Address: City: Zip Code:

Email: Telephone Number:

Regional Water Planning Group:

Groundwater Conservation District:

Our records indicate that you:

- ☐ Received financial assistance of \$500,000 or more from TWDB
- ☒ Have 3,300 or more retail connections
- ☐ Have a surface water right with TCEQ

A. Population and Service Area Data

1. Current service area size in square miles:

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

2. Historical service area population for the previous five years, starting with the most current year.

Year	Historical Population Served By Retail Water Service	Historical Population Served By Wholesale Water Service	Historical Population Served By Wastewater Water Service
2018	283,700	8,142	283,700
2017	279,700	8,142	279,700
2016	277,400	8,142	277,400
2015	274,000	41,352	274,000
2014	270,900	37,853	270,900

3. Projected service area population for the following decades.

Year	Projected Population Served By Retail Water Service	Projected Population Served By Wholesale Water Service	Projected Population Served By Wastewater Water Service
2020	285,100	8,142	285,100
2030	296,600	8,142	296,600
2040	300,000	8,142	300,000
2050	304,000	8,142	304,000
2060	308,000	8,142	308,000

4. Described source(s)/method(s) for estimating current and projected populations.

City of Plano Planning Department provided estimates through 2040. 2050 and 2060 were estimated by adding 4,000 people total every 10 years.

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

B. System Input

System input data for the previous five years.

Total System Input = Self-supplied + Imported – Exported

Year	Water Produced in Gallons	Purchased/Imported Water in Gallons	Exported Water in Gallons	Total System Input	Total GPCD
2018	0	20,813,503,000	150,990,000	20,662,513,000	200
2017	0	20,170,188,420	138,476,000	20,031,712,420	196
2016	0	21,707,428,000	146,716,000	21,560,712,000	213
2015	0	20,275,042,000	151,201,000	20,123,841,000	201
2014	0	17,396,017,000	142,139,000	17,253,878,000	174
Historic Average	0	20,072,435,684	145,904,400	19,926,531,284	197

C. Water Supply System

1. Designed daily capacity of system in gallons 230,000,000

2. Storage Capacity

2a. Elevated storage in gallons: 17,500,000

2b. Ground storage in gallons: 68,000,000

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

D. Projected Demands

1. The estimated water supply requirements for the next ten years using population trends, historical water use, economic growth, etc.

Year	Population	Water Demand (gallons)
2020	285,100	20,710,000,000
2021	286,250	20,690,000,000
2022	287,400	20,670,000,000
2023	288,550	20,640,000,000
2024	289,700	20,620,000,000
2025	290,850	20,590,000,000
2026	292,000	20,570,000,000
2027	293,150	20,540,000,000
2028	294,300	20,520,000,000
2029	295,450	20,490,000,000

2. Description of source data and how projected water demands were determined.

Population estimates and consumption do not include The Colony. Estimated Plano's population will grow 1,150 people each year based on the 2020 estimate of 285,100 and the 2030 estimate of 296,600. Water Demand has been relatively stable and we anticipate consumption to decrease by about 0.2% each year.

E. High Volume Customers

1. The annual water use for the five highest volume **RETAIL customers.**

Customer	Water Use Category	Annual Water Use	Treated or Raw
Plano Independent School District	Institutional	264,758,000	Treated
WSG Parent Gold IV LP	Commercial	61,083,200	Treated
NTT Data Inc.	Commercial	54,030,000	Treated
TX APT 8205 Town Main Drive LM	Residential	51,492,500	Treated
The Giovanna	Residential	50,588,000	Treated

2. The annual water use for the five highest volume **WHOLESALE customers.**

Customer	Water Use Category	Annual Water Use	Treated or Raw
The Colony	Municipal	150,000,000	Treated

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

F. Utility Data Comment Section

Additional comments about utility data.

Section II: System Data

A. Retail Water Supplier Connections

1. List of active retail connections by major water use category.

Water Use Category Type	Total Retail Connections (Active + Inactive)	Percent of Total Connections
Residential - Single Family	72,579	85.13 %
Residential - Multi-Family	1,893	2.22 %
Industrial	23	0.03 %
Commercial	9,536	11.19 %
Institutional	1,225	1.44 %
Agricultural	0	0.00 %
Total	85,256	100.00 %

2. Net number of new retail connections by water use category for the previous five years.

	Net Number of New Retail Connections						
Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2018	463	0	2	82	28	0	575
2017	343	9	0	249	11	0	612
2016	0	0	11	684	370	0	1,065
2015	732	78	0	0	499	0	1,309
2014	477	0	0	133	6	0	616

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

B. Accounting Data

The previous five years' gallons of RETAIL water provided in each major water use category.

Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2018	9,440,539,290	134,948,620	19,817,700	6,249,720,580	910,849,930	0	16,755,876,120
2017	9,511,162,000	118,845,000	19,215,000	6,347,947,000	693,912,000	0	16,691,081,000
2016	9,528,527,000	121,588,000	21,070,000	6,204,852,000	340,461,000	0	16,216,498,000
2015	10,012,192,000	125,613,000	21,309,000	6,077,198,000	557,259,000	0	16,793,571,000
2014	8,867,566,330	119,848,040	18,942,160	5,325,463,510	190,967,380	0	14,522,787,420

C. Residential Water Use

The previous five years residential GPCD for single family and multi-family units.

Year	Residential - Single Family	Residential - Multi-Family	Total Residential
2018	92	0	92
2017	94	0	94
2016	95	0	95
2015	101	0	101
2014	91	0	91
Historic Average	95	0	95

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

D. Annual and Seasonal Water Use

1. The previous five years' gallons of treated water provided to RETAIL customers.

Month	Total Gallons of Treated Water				
	2018	2017	2016	2015	2014
January	945,219,390	942,281,070	889,983,025	861,847,300	877,619,860
February	842,067,290	872,574,730	876,123,425	770,192,000	850,110,090
March	864,999,800	989,844,700	987,089,765	744,472,000	853,724,590
April	1,067,864,210	1,152,846,850	1,136,262,375	900,587,000	1,063,429,610
May	1,374,629,150	1,343,183,940	1,112,014,000	866,063,000	1,275,575,370
June	1,855,105,790	1,583,373,560	1,282,639,300	1,093,571,000	1,365,747,740
July	2,312,250,520	1,643,425,680	1,899,596,500	1,811,406,000	1,421,548,420
August	2,402,674,720	1,824,207,260	2,181,432,400	2,636,379,000	1,516,424,770
September	1,814,038,010	1,825,948,090	1,881,237,300	2,630,097,000	1,649,470,250
October	1,182,803,730	1,753,941,710	1,672,053,700	2,149,609,000	1,645,959,830
November	946,821,990	1,398,612,460	1,300,639,700	1,348,032,000	1,200,330,820
December	919,685,680	1,216,235,530	1,056,597,000	985,544,000	923,896,190
Total	16,528,160,280	16,546,475,580	16,275,668,490	16,797,799,300	14,643,837,540

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

2. The previous five years' gallons of raw water provided to RETAIL customers.

Month	Total Gallons of Raw Water				
	2018	2017	2016	2015	2014
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Total	0	0	0	0	0

3. Summary of seasonal and annual water use.

	Summer RETAIL (Treated + Raw)	Total RETAIL (Treated + Raw)
2018	6,570,031,030	16,528,160,280
2017	5,051,006,500	16,546,475,580
2016	5,363,668,200	16,275,668,490
2015	5,541,356,000	16,797,799,300
2014	4,303,720,930	14,643,837,540
Average in Gallons	5,365,956,532.00	16,158,388,238.00

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

E. Water Loss

Water Loss data for the previous five years.

Year	Total Water Loss in Gallons	Water Loss in GPCD	Water Loss as a Percentage
2018	3,386,467,089	33	16.38 %
2017	2,916,174,101	29	14.55 %
2016	3,550,265,359	35	16.46 %
2015	3,043,746,672	30	15.13 %
2014	2,162,785,934	22	12.54 %
Average	3,011,887,831	30	15.01 %

F. Peak Day Use

Average Daily Water Use and Peak Day Water Use for the previous five years.

Year	Average Daily Use (gal)	Peak Day Use (gal)	Ratio (peak/avg)
2018	45,282,630	71413380	1.5771
2017	45,332,809	54902244	1.2111
2016	44,590,872	58300741	1.3075
2015	46,021,367	60232130	1.3088
2014	40,120,102	46779575	1.1660

G. Summary of Historic Water Use

Water Use Category	Historic Average	Percent of Connections	Percent of Water Use
Residential - Single Family	9,471,997,324	85.13 %	58.48 %
Residential - Multi-Family	124,168,532	2.22 %	0.77 %
Industrial	20,070,772	0.03 %	0.12 %
Commercial	6,041,036,218	11.19 %	37.30 %
Institutional	538,689,862	1.44 %	3.33 %
Agricultural	0	0.00 %	0.00 %

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

H. System Data Comment Section

We do not have a breakdown of GPCD by single-family and multi-family customers.

Section III: Wastewater System Data

A. Wastewater System Data

1. Design capacity of wastewater treatment plant(s) in gallons per day:

2. List of active wastewater connections by major water use category.

Water Use Category	Metered	Unmetered	Total Connections	Percent of Total Connections
Municipal			0	0.00 %
Industrial			0	0.00 %
Commercial			0	0.00 %
Institutional			0	0.00 %
Agricultural			0	0.00 %
Total			0	100.00 %

3. Percentage of water serviced by the wastewater system:

 %

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

4. Number of gallons of wastewater that was treated by the utility for the previous five years.

Month	Total Gallons of Treated Water				
	2018	2017	2016	2015	2014
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Total					

5. Could treated wastewater be substituted for potable water?

☐

Yes

☐

No

B. Reuse Data

1. Data by type of recycling and reuse activities implemented during the current reporting period.

Type of Reuse	Total Annual Volume (in gallons)
On-site Irrigation	
Plant wash down	
Chlorination/de-chlorination	
Industrial	
Landscape irrigation (park,golf courses)	
Agricultural	
Discharge to surface water	
Evaporation Pond	
Other	
Total	

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

C. Wastewater System Data Comment

Additional comments and files to support or explain wastewater system data listed below.

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APPENDIX C

WATER CONSERVATION INCENTIVE PROGRAM

The Water Conservation Incentive Program includes two components, as outlined below:

1. Free Water Conservation Items

The City of Plano offers residents free water conservation items that are available at the Customer and Utility Service counter from 8am to 5pm, Monday through Friday at the Municipal Center.

Following is the list of items available and a description of each item:

- Low-Flow Shower Head: This self-cleaning showerhead features a non-aerating spray, meaning less temperature loss and hot water energy savings.
- Toilet Leak Detection Tablets: These dye tablets are used to check for a leak between the toilet tank and bowl.
- Toilet Flapper: Water treatment processes, toilet bowl cleaners, and high water pressure can cause replaceable toilet parts, such as the toilet flapper, to disintegrate. This item should be used to replace an existing toilet flapper if black “goo” is found to be present.
- Faucet Aerator: By introducing air into the stream, the aerator provides an even spray pattern while saving water.
- Rain Gauge: This gauge assists the resident in determining how to adjust an outdoor irrigation schedule according to season and recent rainfall.

Other items are available seasonally, including soil moisture meters and garden kneeling pads embossed with water-efficient landscaping practices.

2. Water Conservation Rebate Program

Program Eligibility and Guidelines

Eligibility:

- Participant must currently own their home and have a City of Plano water utility account in good standing for the property where installation of qualifying item occurred.
- Eligibility is limited to residential homes only; commercial buildings are not eligible.
- To meet eligibility guidelines, items must be purchased from a retailer located within the City of Plano.
- The City of Plano reserves the right to terminate or modify the water conservation rebate program at any time.

Process:

- Resident mails receipt and application to City of Plano Water Conservation Rebate Program: 4200 W. Plano Parkway, Plano, TX 75093.

- Completed applications must be received by the City of Plano within 120 days of purchase of eligible water conserving item.
- Utility credits will be processed in the order they are received on a first-come first-served basis.
- The City issues a credit on resident's utility bill within 30 days of receipt of completed application.

WaterSense Approved, High Efficiency Toilets (HET's)

Eligibility:

- Only homes built in 1994 or earlier are eligible for the program.
- Only new, EPA WaterSense labeled high efficiency models of toilets (HET) will be eligible for utility credit.
- New high efficiency qualifying toilet (average of 1.28 gallons per flush) must replace an older, inefficient toilet (using greater than 1.6 gallons per flush). Residence must not already have low-flow or high efficiency toilets (HET's) installed.

Process:

- Resident must first purchase and install qualified toilet from local retailer.
- Rebate Applications are available online at www.livegreeninplano.com or www.plano.gov/waterrebates.
- Once installed, the resident must submit a copy of the receipt and application within 120 days of purchase date.
- Complete application will be sent to City of Plano Water Conservation Rebate Program by mail, e-mail, fax or hand delivery.
- Credits will be issued to the utility bill for the following amounts:
 - \$100 for the first toilet
 - \$75 for the second toilet
 - \$50 for the third toilet
- If required documentation has not been provided, rebate will be denied.

Rain/Freeze Sensor and EPA WaterSense Labeled Smart/ET Controllers

Eligibility:

- New irrigation systems are not eligible for this program.
- Irrigation system must not already have a rain and freeze sensor device installed.
- Only new rain and freeze sensors and controllers purchased from a retailer located within the City of Plano will be eligible for rebate. The City of Plano does not require an irrigation permit to retrofit an irrigation system for a rain and freeze sensor or a controller.

Process:

- Resident must select, purchase, and install rain/freeze sensor or controller from a retailer within Plano.
- Rebate Applications are available online at www.livegreeninplano.com or www.plano.gov/waterrebates.
- Resident must mail in rebate application and proof of purchase no later than 120 days from date of purchase.

- If installed by licensed irrigation professional, resident must submit proof of installation, including license number of irrigation professional.
- Complete application will be sent to City of Plano Water Conservation Rebate Program by mail, e-mail, fax or hand delivery.
- The City of Plano will issue a \$50 water utility credit to resident's utility bill for the purchase and installation of a rain freeze sensor or controller.
- If a licensed irrigation profession installed the device and proof of the installation including the irrigator's license number, then a total of \$75 water utility credit will be issued to the resident's utility bill.
- If required documentation has not been provided, rebate will be denied.

Pressure Reducing Valve (PRV)

Eligibility:

- Eligibility is limited to single-family detached homes, townhomes, duplexes and condos that were built before January 1, 2013.
- Apartments and commercial properties are not eligible at this time.
- Applicant must currently own the dwelling and have a City of Plano water utility account in good financial standing for the property where the PRV is installed.
- Water Pressure must exceed 80 psi according to the PRV Eligibility Map at plano.gov/PRVMap.
- PRV should reduce pressure below 80 psi at residence. If it is not possible to reduce water pressure below 80 psi, PRV should be installed according to manufacturer's guidelines for maximum pressure reduction.
- PRV must reduce pressure to the house. PRVs that reduce pressure only to irrigation systems are not eligible for rebate.
- Limit one PRV rebate per residential address.
- PRV must be installed after October 1, 2015 to be eligible for rebate.
- PRV must be installed by a licensed plumber that is registered in the City of Plano.
- PRV must be purchased from a retailer located within the City of Plano.
- If the installation of the valve includes installing expansion tanks at the water heaters, then a Miscellaneous Simple Permit Application should be submitted to the City of Plano Building Inspections Department prior to installation. If the installation of the PRV does not include installation of expansion tanks, then no permit is necessary. Miscellaneous Simple Permit Application can be downloaded from www.buildinginspections.org.

Process:

- The City of Plano will issue a rebate for 50% of the PRV, associated parts, and installation costs. The maximum PRV rebate is \$500. Tax is not included.
- Rebate Applications are available online at www.livegreeninplano.com or www.plano.gov/waterrebates.
- Completed applications and itemized invoice for PRV, associated parts, and installation must be received by the City of Plano within 120 days of the installation of the PRV. Plumber's license number and installation date must be on the invoice.
- Complete application will be sent to City of Plano Water Conservation Rebate Program by mail, e-mail, fax or hand delivery.

APPENDIX D

NTMWD MEMBER CITY AND CUSTOMER ANNUAL WATER CONSERVATION REPORT

APPENDIX D
NTMWD MEMBER CITY AND CUSTOMER WATER CONSERVATION REPORT
Due: March 31 of every year

Water Utility Reporting: Plano
Filled Out By: _____
Phone Number: _____
Email: _____
Date Completed: _____
Year Covered: _____
of Connections _____
Estimated Population _____
Source: _____
of Irrigation Systems _____

Recorded Deliveries and Sales by Month (in Million Gallons):

Month	Deliveries from NTMWD	Other Supplies	Sales by Category							
			Residential	Commercial	Public/ Institutional	Industrial	Metered Irrigation	Wholesale	Other	Total
January	1,290.254									
February	1,195.924									
March	1,297.882									
April	1,498.989									
May	2,164.846									
June	1,915.751									
July	3,084.231									
August	2,697.472									
September	1,658.851									
October	1,518.020									
November	1,413.088									
December	1,078.195									
TOTAL	20,813.503									

Peak Day Usage

Peak Day (MG)

Average Day (MG) 57.023

Peak/Average Day Ratio

Authorized Consumption and Water Loss

Total System Input Volume: 20,813.503

Billed Metered: ** does not include Metered Irrigation because this is already counted in each customer class.*

Billed Unmetered: -

Unbilled Metered:

Unbilled Unmetered: 260.169

Total Authorized Consumption: 260.169

Water Losses: 20,553.334

Total Loss Percent: 98.75%

Goal for Total Loss Percent:

Per Capita Use (Gallons per person per day)

Municipal Use (MG) 20,814

Residential Use (MG)

Total Per Capita Use (gpcd) #DIV/0!

Municipal Per Capita Use (gpcd) #DIV/0!

Residential Per Capita Use (gpcd) #DIV/0!

5-year Per Capita Goal

10-year Per Capita Goal

Recorded Wholesale Sales by Month (in Million Gallons):

Month	Sales to...	Sales to...	Sales to...	Sales to...	Sales to...	Sales to...	Sales to...	Sales to...	Total Wholesale Sales
January									
February									
March									
April									
May									
June									
July									
August									
September									
October									
November									
December									
TOTAL									

Information on Wholesale Customers:

Customer	Estimated Total Population

Unusual Circumstances (use additional sheets if necessary):

Progress in Implementation of Conservation Plan (use additional sheets if necessary):

Conservation measures planned for next year (use additional sheets if necessary):

Assistance requested from North Texas Municipal Water District (use additional sheets if necessary):

Other (use additional sheets if necessary):

Historical Water Use Data for Plano

Year	Connections	Estimated Population	Deliveries from NTMWD (MG)	Other Supplies (MG)	Metered Sales by Category (Million Gallons)							
					Residential	Commercial	Public/ Institutional	Industrial	Metered Irrigation	Wholesale	Other	Total
1990	41,017	127,885	10,814	0	6,197	3,384	133	34	0	9	78	9,835
1991	42,750	135,558	10,578	0	5,821	3,180	125	32	0	9	73	8,776
1992	45,454	143,692	10,631	0	6,363	3,477	136	35	0	10	80	9,594
1993	48,156	152,313	12,393	0	7,171	3,918	154	39	0	11	90	11,383
1994	51,152	161,452	12,397	0	7,250	3,961	155	39	0	11	91	11,507
1995	53,767	171,139	13,770	0	7,975	4,357	171	43	0	12	100	12,658
1996	57,047	180,552	15,341	0	9,083	4,963	194	49	0	14	114	14,417
1997	60,421	190,482	15,685	0	10,250	5,601	219	56	0	15	128	16,269
1998	64,769	200,958	20,380	0	12,408	6,780	266	67	0	19	155	19,695
1999	68,156	212,011	22,298	0	12,936	7,068	277	70	0	20	162	20,533
2000	70,782	222,030	23,823	0	12,837	7,000	375	32	0	73	169	20,487
2001	72,745	227,200	26,720	0	13,262	7,605	346	23	0	92	162	21,490
2002	74,002	233,700	22,459	0	11,636	6,877	253	42	0	82	157	19,047
2003	75,132	237,925	22,745	0	11,895	7,094	442	35	0	73	162	19,701
2004	76,108	243,500	22,149	0	10,734	7,244	292	40	0	98	153	18,561
2005	77,400	247,000	22,432	0	12,856	8,020	183	37	0	82	176	21,354
2006	78,600	252,950	23,524	0	12,837	7,000	375	32	0	73	153	20,470
2007	79,429	255,700	19,182	0	9,433	6,139	224	23	0	89	316	16,224
2008	79,990	263,900	23,024	0	11,605	7,509	376	33	0	106	44	19,674
2009	80,293	264,600	21,313	0	10,435	6,808	356	25	0	111	30	17,765
2010	80,685	266,600	23,110	0	11,591	7,280	493	34	0	118	28	19,544
2011	81,061	262,800	23,256	0	12,953	7,301	577	29	0	134	31	21,025
2012	81,612	265,400	21,273	0	11,728	6,600	393	21	0	135	38	18,914
2013	82,085	266,600	19,338	0	10,580	5,763	505	16	0	140	36	17,040
2014	82,700	270,900	17,518	0	8,988	5,163	446	20	0	142	27	14,786
2015	83,286	274,000	20,275	0	10,138	6,020	557	21	0	151	62	16,949
2016	84,081	277,400	21,707	0	9,650	6,205	340	21	0	147	59	16,422
2017	84,693	279,700	20,553	0	9,630	6,305	549	19	2,860	138	43	19,545
2018	0	0	20,814	0	0	0	0	0	0	0	0	0

Historical Per Capita Use Data and Water Loss for Plano

Year	Estimated Population	In-City Municipal Use (MG)	Per Capita Municipal Use (gpcd)	Per Capita Residential Use (gpcd)	Deliveries from NTMWD (MG)	Other Supplies (MG)	Wholesale Sales (MG)	Billed Metered (MG)	Billed Unmetered (MG)	Unbilled Metered (MG)	Unbilled Unmetered (MG)	Water Losses (MG)	% Water Loss
1995	171,139	13,615	218	127	13,770	0	12	12,658	0	460	323	329	2.00%
1996	180,552	15,164	230	137	15,341	0	14	14,417	0	485	341	98	1.00%
1997	190,482	15,486	223	147	15,685	0	15	16,269	0	512	360	-1,455	-9.00%
1998	200,958	20,139	275	169	20,380	0	19	19,695	0	540	379	-234	-1.00%
1999	212,011	22,046	285	167	22,298	0	20	20,533	0	570	400	795	4.00%
2000	222,030	23,549	291	158	23,823	0	73	20,487	0	597	419	2,320	10.00%
2001	227,200	26,443	319	159	26,720	0	92	21,490	0	610	429	4,191	16.00%
2002	233,700	22,178	260	136	22,459	0	82	19,047	0	628	441	2,343	10.00%
2003	237,925	22,475	259	137	22,745	0	73	19,701	0	639	449	1,956	9.00%
2004	243,500	21,858	246	120	22,149	0	98	18,561	0	654	460	2,474	11.00%
2005	247,000	22,137	246	142	22,432	0	82	21,354	0	664	466	-52	0.00%
2006	252,950	23,266	252	139	23,524	0	73	20,470	0	680	477	1,897	8.00%
2007	255,700	18,754	201	101	19,182	0	89	16,224	0	767	392	1,799	9.00%
2008	263,900	22,841	237	120	23,024	0	106	19,674	0	0	467	2,883	13.00%
2009	264,600	21,147	219	108	21,313	0	111	17,765	0	0	387	3,161	15.00%
2010	266,600	22,931	236	119	23,110	0	118	19,544	0	1	380	3,185	14.00%
2011	262,800	23,063	240	135	23,256	0	134	21,025	0	1	34	2,197	9.00%
2012	265,400	21,080	218	121	21,273	0	135	18,914	0	1	40	2,318	11.00%
2013	266,600	19,146	197	108	19,338	0	140	17,040	0	0	33	2,265	12.00%
2014	270,900	17,329	175	91	17,518	0	142	14,786	0	0	355	2,377	14.00%
2015	274,000	20,041	200	101	20,275	0	151	16,949	0	1	233	3,092	15.25%
2016	277,400	21,480	212	95	21,707	0	147	16,422	0	2	1,514	3,768	17.36%
2017	279,700	20,352	199	94	20,553	0	138	16,546	0	145	255	3,469	16.99%
2018	0	20,814	#DIV/0!	#DIV/0!	20,814	0	0	0	0	0	260	20,553	98.75%

Note:

In-city municipal use = total water supplied less sales to industry, metered irrigation, wholesale sales and other sales.

After 2017 - Unaccounted Water has been removed and replaced with Water Losses (per TWDB definition). This category is inclusive of real and apparent losses. Categories for authorized consumption were also added; Unbilled metered replaced estimated fire use, unbilled unmetered replaced estimated line flushing, and a new category for billed unmetered sales was added.