CHAPTER 18
WATER SUPPLY & ENVIRONMENTAL QUALITY

Protecting and enhancing environmental quality is a key livability issue. How the City chooses to grow could have significant impacts on the quality and sustainability of our environment.

This chapter is intended to consolidate the many environmental concerns facing the City, and to identify management practices that will most effectively address these issues. Topics covered in this chapter include water supply and wastewater management, surface water quality, stormwater management, land quality, air quality, hazardous materials management, solid waste and litter control, energy and water conservation, endangered species, and natural habitats.

DRINKING WATER SUPPLY & WASTEWATER TREATMENT

158

Gallons of water used, person/per day on average.

132.13M

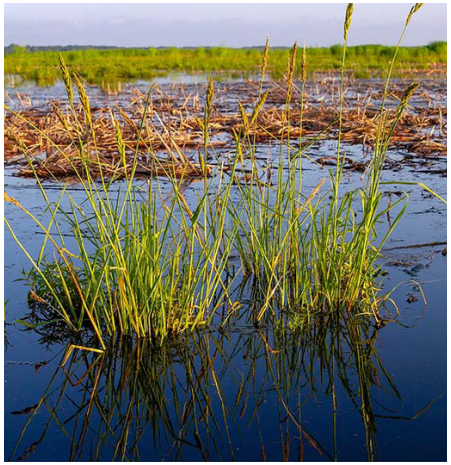
Wastewater gallons of flow per day.

500M

Drinking water gallons treated per day on average annually.

6

Reservoir water sources



A Tarrant Regional Water District lake providing water supply resources to the City of Fort Worth.

Source: Tarrant Regional Water District, 2021.

ENVIRONMENTAL QUALITY MANAGEMENT: LAND, AIR, & SURFACE WATER

105

Demolition and remediation projects annually.

6,153

Stormwater Compliance Investigations annually.

300

Air quality investigations per year on average.

Subsurface soil sampling cores are collected to determine environmental impacts.

Source: City of Fort Worth Environmental Master Plan, 2018.

PROTECTING PUBLIC HEALTH: HAZARDOUS MATERIALS, SOLID WASTE, & LITTER CONTROL

10,000+

Litter cleanup volunteers for Keep Fort Worth Beautiful, annually.

300,000

Visits to the Drop-Off Stations annually.

24,000 lbs

Hazardous waste generated at municipal facilities annually

A mechanical compactor being driven at the southeast landfill.

Source: City of Fort Worth Code Compliance Department, Solid Waste Section, 2021.

GREEN INFRASTRUCTURE, CONSERVATION, NATURAL SPACES, & HEALTHY ECOSYSTEMS

3,400

Residential streetlights converted to LED in total.

7

Total City facilities with solar panels.

28

Threatened or endangered species in Tarrant County.

Monarch butterfly on milkweed in one of the species-focused preservation gardens or meadows in the city.

Source: The City of Fort Worth Nature Center & Refuge, 2021.

DRINKING WATER SUPPLY, TREATMENT, & WASTEWATER INFRASTRUCTURE

The Water Department enables our community to thrive with clean water done right every time. The utility is responsible for providing drinking water, wastewater, and reclaimed water service that protects human health and the environment. Water and its associated infrastructure is the lifeblood of the city. Optimization of water resources is critical to Fort Worth's future. The draft 2021 Texas State Water Plan identifies conservation and reuse accounting for 31% of Fort Worth's future water supply over the next fifty years.

PROGRAM AREAS

- Water Supply Management and Maintenance
- Drinking Water Compliance and Capacity
- Wastewater Reuse
- Water Communication and Collaboration

5
Water Treatment Plants

21
Booster Pump Stations

500M
Water Treatment Capacity (Gallons per Day)

166M
Wastewater Treatment Capacity (Gallons per Day)

29
Water Storage Tanks

541.28M
Reclaimed Water Used (Gallons per Year)

STRATEGIC ASSET MANAGEMENT MASTER PLAN

The City maintains master plans for the water, wastewater, and reclaimed water systems. There are 16 regional water planning groups across Texas and all regions are rolled up into the State Water Plan. Regional planning is performed on a fifty-year planning horizon, in five year increments. The latest version was adopted in 2017, and the next one is due in 2022.

2017 STATE WATER PLAN

The water utility is developing a strategic asset management plan to establish the framework for managing its assets, and will use a condition risk and criticality matrix to prioritize water and wastewater pipeline replacement projects. The associated manual on the Installation Policy and Design Criteria for Water, Wastewater, and Reclaimed Water Infrastructure governs the policies, procedures, and design criteria for engineering, planning, and design work performed by Fort Worth Water, engineering firms contracted by the City, developers, and other public or private interests. The purpose is to ensure the City is assuming responsibility for infrastructure that meets TCEQ and Fort Worth standards, and allows it to maintain a system that provides reliability, quality, and value to its ratepayers. This includes meeting the fire flow requirements for maintaining the city's ISO rating of One.

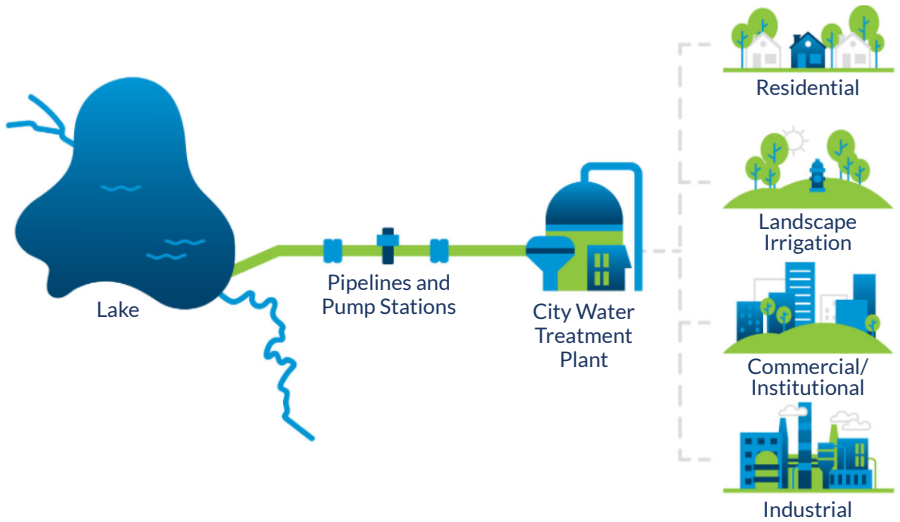
City elevated water storage tank. (Source: City of Fort Worth, Water Department, 2021.)

DRINKING WATER

Fort Worth's water system is recognized as "Superior" by the Texas Commission on Environmental Quality. This recognition takes into account not only water quality compliance but also the quantity of storage, the condition of storage tanks, and the asset base with respect to the population and service area. Though the city has grown considerably, the need to expand treatment capacity has been postponed because of an effective water conservation program. Fort Worth provides treated drinking water to 30 other cities and entities in Tarrant, Johnson, Denton, Parker, and Wise counties. The Parker County towns of Willow Park and Hudson Oaks are expected to connect to the system in 2021.

WATER IN LAKES & PIPELINES

All drinking water begins with raw water supplied by the Tarrant Regional Water District (TRWD) from six lakes — Lake Worth, Eagle Mountain Lake, Lake Bridgeport, Cedar Creek Lake, Richland Chambers Reservoir, and Benbrook Lake. Adequate water treatment and pipeline capacity is crucial to protecting water quality in the lakes, streams, and rivers. The collection system has more than 3,565 miles of pipe, connecting to six regional lakes. Fort Worth owns Lake Worth, but the water rights belong to TRWD.

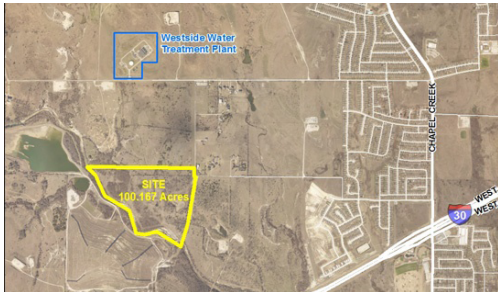


Pipes bring lake water to the local Water Treatment Plant.

Source: City of Fort Worth, Water Department, 2021.

WATER RECLAMATION

To encourage water reuse the Texas Water Development Board has funded 50% of Fort Worth's Reclaimed Water Priority and Implementation Plan. Reclaimed water utilization and expansion is a key component of Fort Worth's future water supply planning. The future Mary's Creek Water Reclamation Facility in west Fort Worth also anticipates providing valuable reclaimed water to a growing portion of west Fort Worth. The city is in the process of permitting the Mary's Creek Water Reclamation Facility to serve growth on the west side. The City projects that the new facility needs to be operational in 2026.



Mary's Creek Water Reclamation Facility site map. Student intern, S. Cisneros, takes part in supervised lab sessions at the Village Creek Water Reclamation Facility . Bottles showing reclaimed water stages.

WASTEWATER TREATMENT FACILITIES

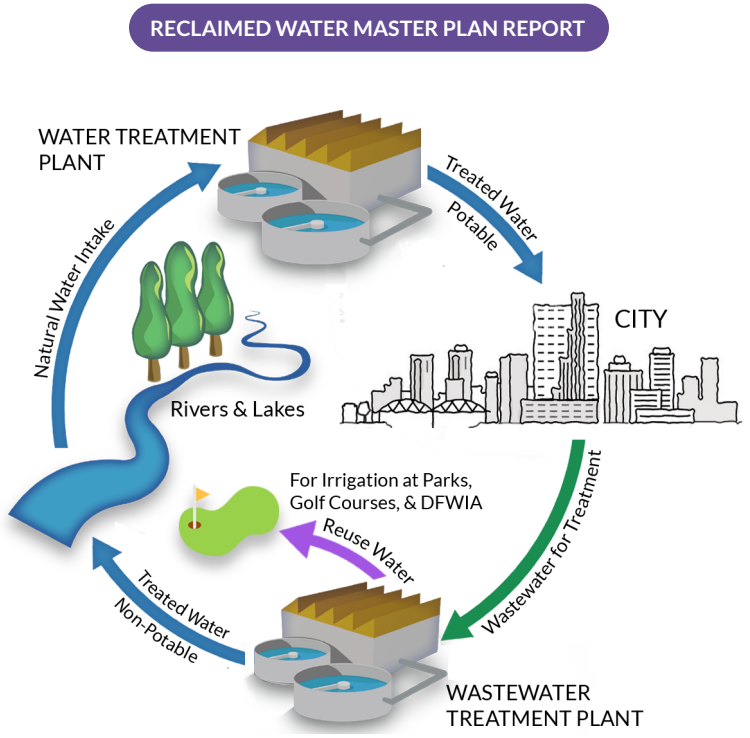
The Trinity River Authority of Texas (TRA) Denton Creek Wastewater Treatment Plant serves areas of far north Fort Worth, and the TRA Central Wastewater Treatment Plant serves the eastern arm of the city. Fort Worth accepts septage, chemical toilet waste, and landfill leachate through permitted haulers in Tarrant and neighboring counties. Fort Worth is in the process of constructing a new biosolids processing facility that will use a rotary drum dryer. The dryer will reduce the volume of biosolids produced by 70 to 80 percent. The new dryer facility should be operation in the summer of 2022.

More than 1,000,000 people and numerous industries in 23 communities are served by Village Creek Water Reclamation Facility. The plant, capable of processing 166 million gallons of wastewater each day, is owned and operated by the City of Fort Worth. Treated effluent is discharged into the Trinity River, and performance of the Village Creek facility is critical to the river's vitality and usefulness as a drinking water source for those downstream. The Village Creek Water Reclamation Facility is the only wastewater treatment plant the City currently owns and operates. The purpose of a water reclamation facility is to take the wastewater created by each of us and make it safe for people and the environment. The discharge standards for the cleaned water are protective of public health, aquatic life, and the environment.

Village Creek Water Reclamation Facility.

ENERGY CONSERVATION / ENERGY RECYCLING AT VILLAGE CREEK

Village Creek Water Reclamation Facility is dedicated to using its resources efficiently, and that includes recycling energy. A combined heat and power energy recovery process allows Village Creek Water Reclamation Facility to produce up to 65 percent of its electrical demand. The two 5.2-megawatt turbine engine generators can be run on digester gas, natural gas or landfill gas, depending on fuel availability and cost. Methane is a byproduct of anaerobic digestion treatment of the solids — this gas is used as a fuel on site, and it also is captured and sold to a renewable natural gas facility. Waste heat generated by the turbines is captured and used to produce steam. This steam powers two steam-driven blowers that produce air for the aeration basins, where the liquid wastewater stream is treated. The steam serves as a heat source for the anaerobic digesters and plant buildings.



Turning a liability into an asset.

Source: City of Fort Worth, Water Department, 2021.

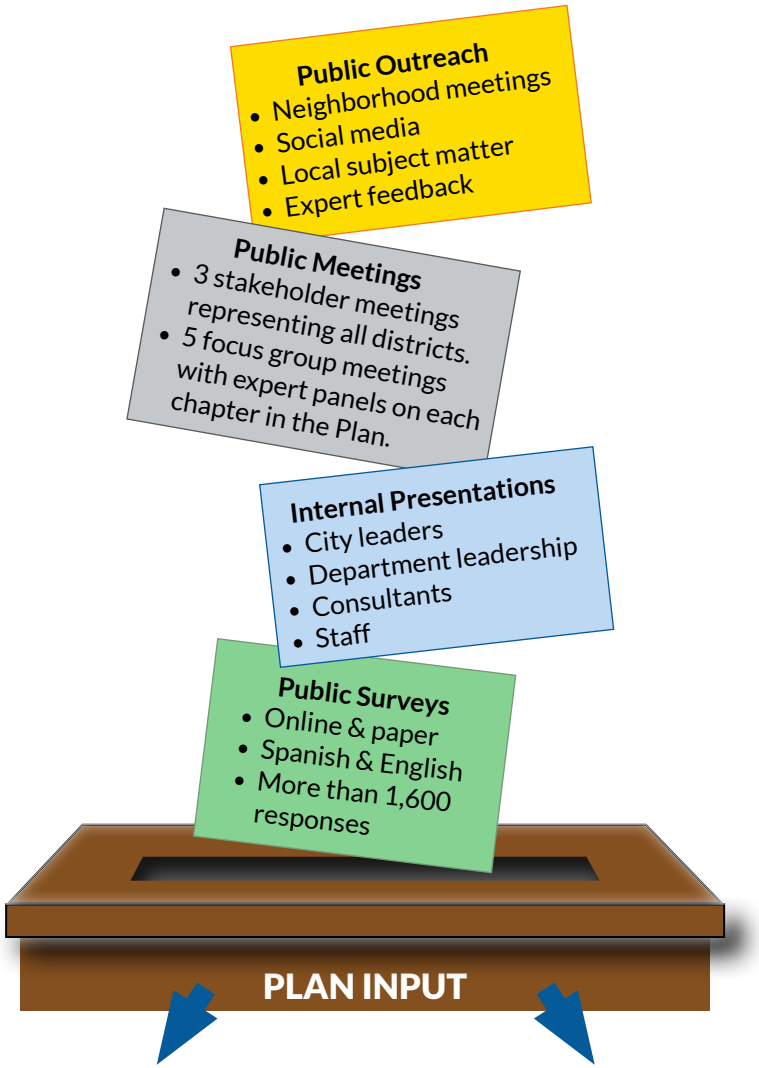
ENVIRONMENTAL MASTER PLAN

The Environmental Quality Division of the Code Compliance Department has developed a master plan to assess its programs and create a vision for the future that protects and improves Fort Worth's environment. The Environmental Master Plan defines the City's long-range strategy to address environmental problems by developing and implementing programs and projects that produce solutions. The environmental problems facing Fort Worth include air pollution, surface water pollution, brownfields and blighted properties, litter and aquatic trash, hazardous materials, and land pollution (e.g., contaminated soil, groundwater, or structures contaminated with asbestos or lead paint). The actions outlined in the Plan include pollutant source controls, comprehensive monitoring programs, mitigation and compliance programs, and litter cleanup projects throughout the city, ensuring compliance with federal and state environmental regulations, and enforcement of the City's ordinances.

ENVIRONMENTAL MASTER PLAN

The City sought and incorporated public input into the development of this Plan, using several different methods and technologies to reach out to stakeholders and residents. These included public stakeholder meetings, focus group meetings, online surveys, and social media outreach.

Stakeholders gather to to discuss the Plan with City staff.



PLAN VISION

Fort Worth's environmental quality will be superior, meeting the highest national standards.

PLAN MISSION

Working together to build a strong community by protecting public health, safety, and the environment.

Source: City of Fort Worth, Environmental Master Plan, 2018.

SURFACE WATER QUALITY — STREAMS, LAKES, & THE TRINITY RIVER

The City of Fort Worth strives to protect water resources for drinking water, flood control, recreation, industrial operations, natural habitat, and other uses. As Fort Worth continues to grow, the City must act to prevent the degradation of surface water quality in our streams, lakes, and the Trinity River. The Environmental Master Plan describes how the City manages Fort Worth's watersheds and protects surface water quality through planning, monitoring, regulatory compliance, and education. The City continues to work closely with its partners to develop a comprehensive regional approach to preserving and improving surface waters. Protecting water resources for current and future generations takes the effort of the whole community.

PROGRAM AREAS

- Watershed Planning
- Stormwater Management
- Surface Water Quality Monitoring and Compliance
- Surface Water Quality Communication & Collaboration

Watershed Planning

There are numerous streams, lakes, and rivers located within Fort Worth's 31 watersheds. The City gathers data to analyze these watersheds and establish baselines for pollutants and environmental conditions, in order to create effective plans to better protect and manage its watersheds. The stormwater ordinance prohibits illicit discharges into the stormwater system and provides for the regulation of discharges from various sources through local and state permits.

Biological sample analysis.

Stream health monitoring activity.

Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

SURFACE WATER QUALITY & FLOOD CONTROL PROGRAMS

Stormwater Management
Stormwater Management plays a key role in protecting and enhancing the water quality in the community. The surest way to improve water quality in Fort Worth is to better manage stormwater and potential pollutants entering our surface water resources. Stormwater picks up pollution from the urban environment, including sediment, oil and grease, metals, bacteria, and pet waste and conveys it directly to the storm sewer system. Storm drains serve to convey runoff as quickly as possible to the nearest waterbody to prevent urban flooding. Stormwater management includes maintenance of the stormwater system to minimize waterway erosion and maintain natural streambank vegetation, which helps to remove pollutants and sediment from waterways, lakes, and drinking water supply reservoirs.

STORMWATER MANAGEMENT PLAN

The City of Fort Worth's stormwater system is a *municipal separate storm sewer system* (MS4). The system is referred to as a "separate system" because the water entering the system does not go to the municipal wastewater sewer system. Every time it rains, stormwater and any pollutants it picks up flows directly to the nearest body of water without being treated. An MS4 is designed to remove stormwater runoff from urban areas as quickly as possible to reduce the risk of flooding. The City's MS4 Stormwater Management Plan (SWMP) meets the Texas Commission on Environmental Quality (TCEQ) requirements, which are designed to reduce negative impacts to water quality in streams and rivers. The City of Fort Worth a nd TRWD are co-permittees on the MS4 permit.

KEY MANAGEMENT ACTIVITIES

- Stormwater Development Review
- Stormwater Utility Funding
- Floodplain Management Plan

Stormwater Development Review
Development and redevelopment activities increase flooding risks by increasing the amount of impervious surfaces and sources for pollution in runoff. To manage these heightened flooding risks, a stormwater development plan review is required within the City of Fort Worth and its extraterritorial jurisdiction. The stormwater development review ensures that plans meet or exceed the City's adopted criteria for development relative to stormwater runoff. These standards apply to all new development and redevelopment projects that are greater than one acre, and are designed to manage the quantity of stormwater from these developments to prevent adverse impacts on waterways, such as erosion and channel scouring.

Stormwater Utility
The Stormwater Utility provides stable and equitable funding for its stormwater management program. The establishing ordinance gives the Transportation and Public Works (TPW) Director authority to grant credits to non-residential rate payers who voluntarily use stormwater runoff management techniques. These credits are applied as percent discounts to regular monthly stormwater fees. Each credit listed in the Stormwater Credit Fee Policy is given to encourage voluntary practices which will benefit the drainage system, waterways, and Stormwater Management Program.

Floodplain Management Plan
The City of Fort Worth has developed a Floodplain Management Plan for the entire city, as part of a growing public planning and interaction program led by the Stormwater Management Division. This plan identifies flood risks, their impact on the community, and a prioritized action plan for reducing flood risks. By implementing this plan, the City will not only be on a path to becoming safer and more resilient to flooding hazards, but it will also improve Fort Worth's National Flood Insurance Program (NFIP) Community Rating System (CRS) score. Improving the City's CRS score will reduce eligible flood insurance premiums, which will save money for residents and businesses.

Stormwater flooding streets.

Clearing debris from storm drains.

Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

SURFACE WATER QUALITY PROGRAMS

For a better understanding of surface water quality, local rivers, streams, and lakes are monitored throughout the year, including during wet and dry weather. These screening samples are analyzed for pollutants and general conditions indicative of ecosystem health and water quality. The City also regularly tests for pathogens that pose risks to human health. This data can help prevent hazardous surface water conditions and identify illicit discharges into the stormwater system. This information is also useful for watershed planning at the local and regional levels.

The Texas Commission on Environmental Quality (TCEQ) Texas Pollutant Discharge Elimination System (TPDES) program now has federal regulatory authority over discharges of pollutants to Texas surface waters. As the City continues to grow, additional monitoring will be necessary to comply with the TPDES permit, which will require additional resources. There are currently over 1,700 major outfalls that require monitoring under the permit, including approximately 500 priority outfalls.

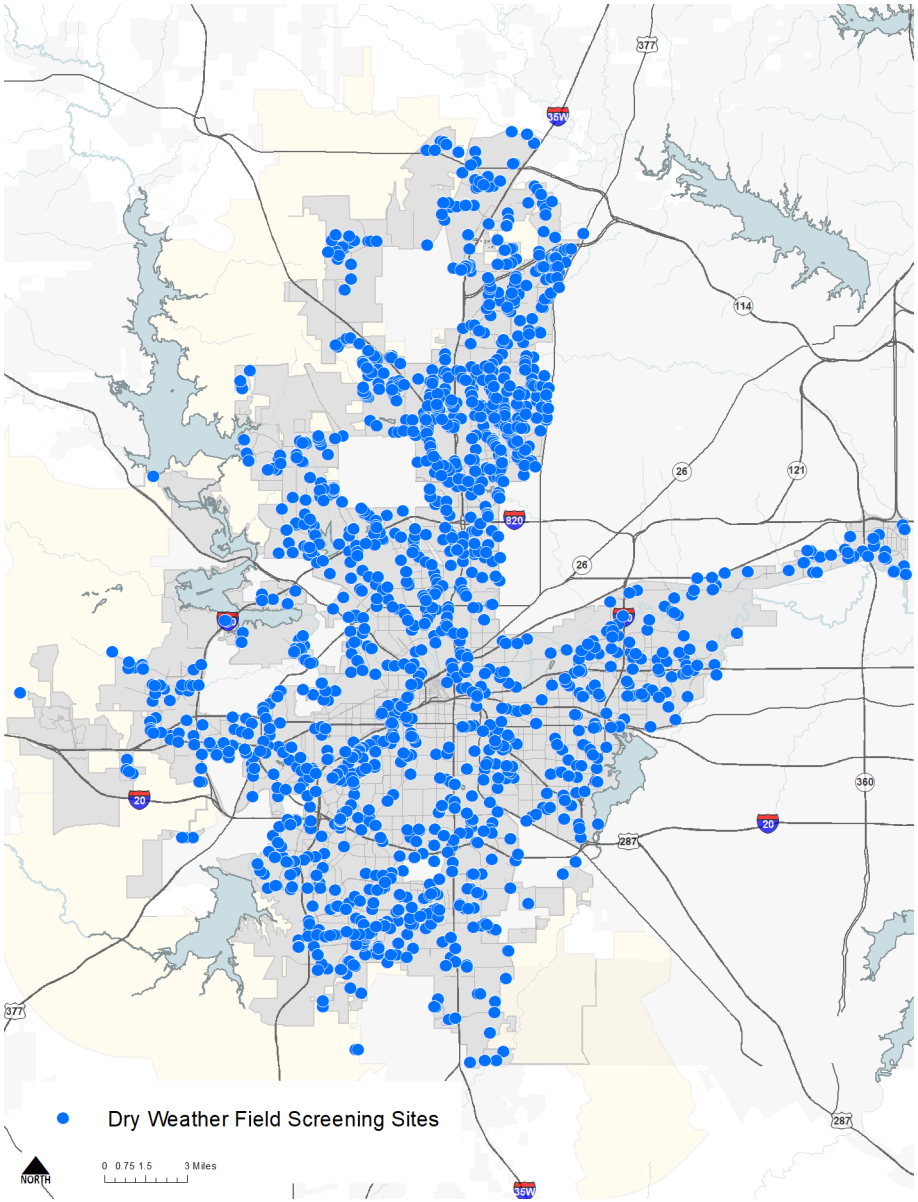
KEY MONITORING ACTIVITIES

- Dry Weather Field Screenings
- Wet Weather Field Screenings
- Indicator Bacteria Monitoring (Clean Rivers Program)
- Regional Wet Weather Characterization Program
- Stream Health Monitoring

Dry weather discharge.

Sampling before water enters the MS4.

DRY WEATHER FIELD SCREENING LOCATIONS, 2019



Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

SURFACE WATER QUALITY PROGRAMS

Dry Weather Field Screenings
Dry weather field screenings of major outfalls detect and isolate the presence of illicit connections and improper discharges to the municipal separate storm sewer system (MS4). Dry weather screening can also find potable water and sewer infrastructure breaks, which conserves water, saves tax dollars, and helps eliminate sources of bacterial impacts to creeks and rivers.

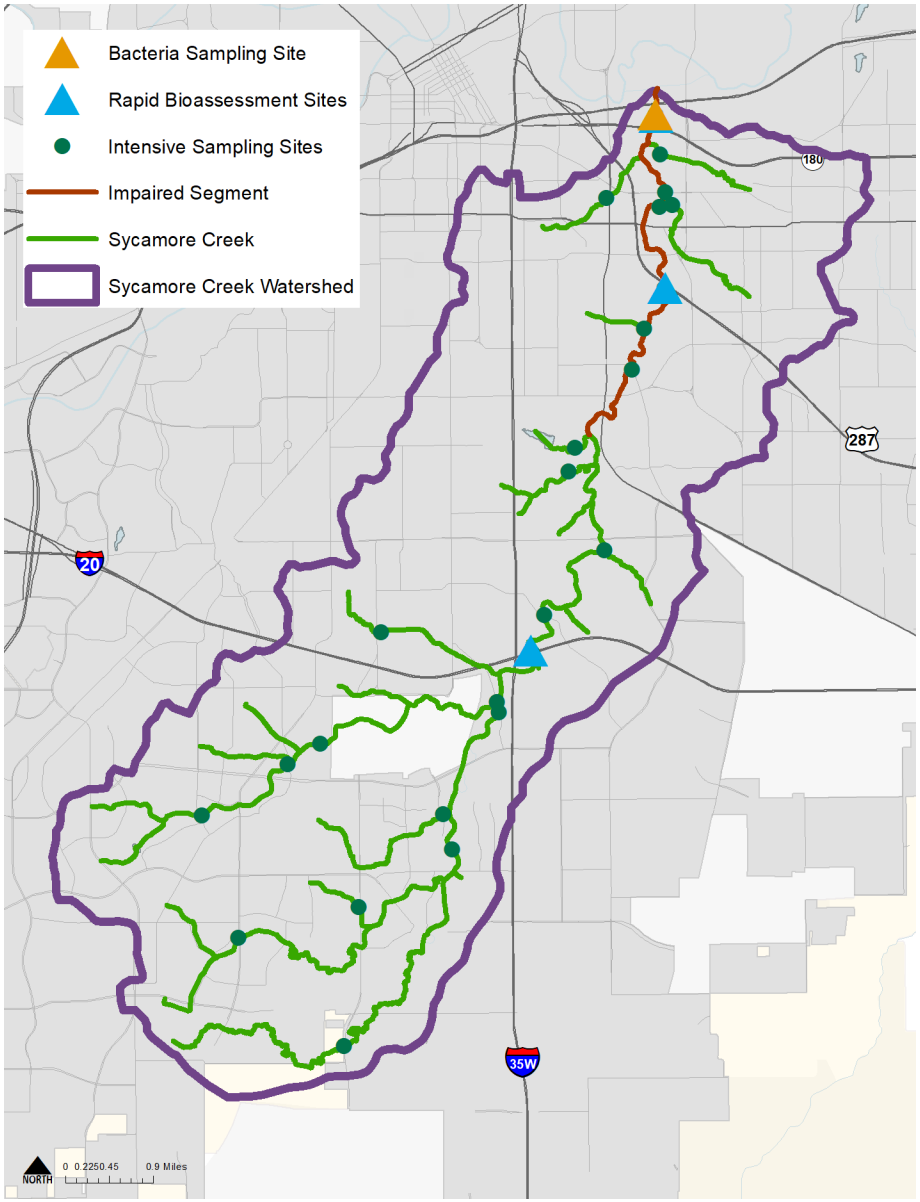
Wet Weather Field Screenings
The City performs over 50 wet weather field screenings each year at municipal separate storm sewer system (MS4) outfalls and inlets across the city. Additional sampling and monitoring locations are needed to establish baselines for watershed analysis and to monitor long-term trends as the city grows.

Indicator Bacteria Monitoring (Clean Rivers Program)
Indicator bacteria serve as a measure for water safety, because they tend to correlate with the presence of fecal matter and pathogens in the water. Bacteria are the most common cause of impairments in rivers and streams, and can cause serious illness in humans and pose a threat to aquatic ecosystems. The City continues to monitor impaired waters, such as Sycamore Creek, to determine if management practices are reducing the bacteria load.

Regional Wet Weather Characterization Program
As part of the TPDES permit monitoring requirements, the City participates in the NCTCOG Regional Wet Weather Characterization Program (RWWCP). The objectives are to assess changes to waterways as they pass through urban areas, evaluate long-term trends in water quality, and identify potential concerns from stormwater runoff. The City takes samples at alternating upstream and downstream locations in two watersheds each year, analyzing them for pollutants, including E. coli, metals, and an array of other chemicals.

Stream Health Monitoring
The City has also chosen to implement the representative rapid bioassessment monitoring option of the Regional Wet Weather Characterization Program (RWWCP). The objective of this program is to assess the health of aquatic biological communities and stream health. The presence or absence of specific insects and animals can effectively indicate the conditions of local streams, rivers, and lakes, and assist in showing long-term trends in water quality. Samples are taken at three locations at six watersheds twice per year.

SYCAMORE CREEK IMPAIRED SEGMENT, 2019



Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

SURFACE WATER QUALITY PROGRAMS

Local surface water quality is regulated by standards at the federal, state and local levels. The City enforces these rules through permit regulations for activities that result, or may result, in pollution entering the stormwater system. The City also inspects industrial operations, municipal facilities, construction sites, and commercial operations across the city for compliance with their stormwater permits. Complaints regarding discharges into the stormwater system or surface water conditions, such as fish kills, odors, or discoloration are also investigated. Additional resources are needed to keep up with the growing number of compliance inspections.

KEY COMPLIANCE ACTIVITIES

- Industrial Stormwater Compliance
- Municipal Stormwater Compliance
- Construction Site Stormwater Compliance
- Commercial Cosmetic Cleaner Compliance
- Complaint Investigations

Industrial Stormwater Compliance
The City performs site inspections at industrial facilities that are required to obtain coverage under the TCEQ multi-sector general permit, or other permits applicable to industrial discharges. These permits may require the facility to conduct sampling of stormwater runoff from their site that is sent to the state, maintained on site, or sent to the City.

Municipal Stormwater Compliance
Each department in the City is responsible for ensuring TPDES permit compliance for all of its own operations, facilities, and contractors. Each department is also responsible for managing any compliance deficiencies, including corrective action measures and fines.

Construction Site Stormwater Compliance
Prior to construction, projects that are one acre or greater in scope or are part of a larger common plan of development are required to obtain a grading permit. The City reviews the stormwater pollution prevention plans (SWP3) and operator permits for these sites, as required by the TCEQ construction general permit. Sediment is the primary pollutant from construction sites, but other contaminants of concern include sanitary wastes, vehicle maintenance lubricants, concrete washout slurry, equipment fuels, and litter.

There are now more than 550 active, permitted sites, one acre or greater, at any given time that require compliance inspections.

Commercial Cosmetic Cleaner Compliance
Any person or business who engages in mobile commercial cosmetic cleaning is required by City code to obtain a permit for each unit in operation. The process water from these activities must be collected and disposed of properly, as it contains pollutants that pose a threat to surface water quality if it enters the MS4. The process water is typically discharged to the sanitary sewer system on the site where cleaning is performed. Operators must inform the Water Department if they plan to discharge off site and/or if they recycle process water. Additional outreach is needed to notify operators of steam cleaning, mobile carpet cleaning, mobile auto detailers, and similar businesses of permit requirements and provide training to permittees about the effects of commercial cosmetic cleaner discharges on the environment.

Complaint Investigations
Complaints vary in complexity and might require close coordination with other departments and external agencies for regulatory reporting. Complaints may involve construction and industrial sites, as well as situations that apply to the City's illicit discharge ordinance. Other common complaints include residential pool drainage into the MS4, and leaves a being blown into storm drains. Some reports are of conditions in surface waters, such as fish kills, discolored water, or odors. The City receives 16 complaints per month, on average annually.

Detergents can be harmful.

Complaint received of discolored water.

Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

LAND QUALITY — SOIL, GROUNDWATER, & THE BUILT ENVIRONMENT

Fort Worth has experienced significant change, both in population growth and land use, since it was incorporated in 1873. Land use has evolved with each decade, resulting in a diverse blend of industrial, commercial, and residential use throughout the city. Today, this trend continues, which places great emphasis on infill development to optimize use of land resources. The City strives to improve land quality for development by reducing pollution in soil, groundwater, and the built environment. The City works with community partners to address potential environmental contamination and to facilitate revitalization throughout Fort Worth, safeguard the public, and protect property.

PROGRAM AREAS

- Land Quality Planning and Management
- Land Reclamation
- Land Quality Compliance
- Land Quality Communication and Collaboration

Environmental Site Assessments

Environmental due diligence helps the City maintain compliance with state and federal regulations, as well as develop local ordinances to prevent future soil and groundwater pollution. When the City considers acquiring a property or comes into the possession of a property, the property is typically evaluated for environmental concerns through an environmental site assessment, or ESA. The Phase I ESA identifies potential environmental pollution, including hazardous substances and petroleum products. If it is suspected that a site is contaminated, a Phase II ESA is performed to collect samples of soil and groundwater for testing. Data collected from ESAs provide the basis for effective land planning, including prioritizing remediation activities on City-owned properties, which are often large-scale multi-year projects. An average of 50 Phase I and/or Phase II ESAs are completed annually, facilitating the transfer and redevelopment of over 100 properties each year.

50

Phase I and/or Phase II ESAs Annually, (average)

100

Properties Transfered or Redeveloped Annually (Average)

Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

LAND QUALITY — SOIL, GROUNDWATER, & THE BUILT ENVIRONMENT (CONT)

Brownfields
Brownfields are properties that either have or are perceived to have negative environmental impacts. Since 1999, the brownfields program has helped remediate environmental hazards to support redevelopment of Fort Worth landmarks, such as LaGrave Field. The City has utilized several EPA Brownfields Program grants —brownfields assessment grants, Brownfields Revolving Loan Fund (BRLF) grants, brownfields cleanup grants, and brownfields area-wide planning grants. These grants help overcome many of the challenges faced by stakeholders during the redevelopment process — resulting in the transfer, development, or redevelopment of properties that would have otherwise remained underutilized or blighted.

BROWNFIELDS

Municipal Setting Designations
The City oversees programs and permits with regulatory requirements at the federal, state, and local levels. This includes the application process for municipal setting designation (MSDs), which certify that historically contaminated groundwater at a property is prohibited from future use as potable water. This allows for the development of properties that would have otherwise required cost prohibitive remediation activities. Technical assistance is provided by the City to municipal setting designation (MSD) applicants, facilitating 29 MSD regulatory closures and the redevelopment of over 3,000 acres of land with groundwater impacts since 2005.

Substandard Structure Demolitions
They City identifies abandoned or vacant non-industrial structures for demolition. These properties can be a community nuisance, diminishing surrounding property values and potentially inviting crime. The City also inspects a property when the owner fails to maintain a building to municipal code standards, and evaluates structures for environmental concerns, such as asbestos. The City plans and executes approximately 75 substandard structure demolitions each year on residential and/or commercial properties.

50
Contaminated structure demolitions on average per year

3,000+
Acres covered by MSD projects since 2005

Soil and Groundwater Remediation and Groundwater Monitoring
Monitoring is necessary when contaminants are known to exceed the regulatory thresholds in the groundwater located beneath properties. Groundwater monitoring is used to determine whether remediation technologies should be introduced to mitigate pollution. Through continued groundwater monitoring and remediation, sites may be deemed eligible for enforcement case closure by the state regulatory agency when contaminates are reduced below regulatory thresholds.

Land Quality Communication and Collaboration
The City provides training and technical guidance across departments to help them achieve and maintain compliance with environmental regulations. Public notices, announcements, and other important information are distributed by City communications staff to both internal and external audiences. The City may also directly communicate information to the public through forums, hearings, or door-to-door visits to ensure residents know about demolition operations and redevelopment plans in their neighborhoods. Collaborations with community partners, including developers, academic institutions, government agencies, and other organizations are vital to the success of Land Quality programs. The City works with these partners, supporting volunteer efforts and attending outreach events to promote responsible management of the city's land resources.

The City assessed all properties along Vickery Boulevard and remediated properties in preparation for the Chisolm Train Parkway project.

Source: City of Fort Worth Code Compliance Department, Environmental Quality Section, 2021.

AIR QUALITY

Human activity and natural processes can cause air pollutants to be released into the atmosphere. Exposure to such contaminants can cause risks to health, safety, and the environment. In 1970, the federal Clean Air Act (CAA) required the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants, including ozone. The EPA has designated a majority of the counties in the North Central Texas region as nonattainment areas for ground-level ozone. While some progress has been made to reduce this threat, more work is needed to reduce emissions that contribute to the formation of ozone. Air pollution is a regional problem, and collaborating with regional and local partners to address air quality issues through outreach and education is necessary to achieve air quality goals.

PROGRAM AREAS

- Air Quality Planning and Management
- Air Quality Monitoring
- Air Quality Compliance
- Air Quality Communication and Collaboration

Planning and Management

Air quality is a complex issue that requires continual monitoring to better understand the sources of air pollution, changes in air pollutant levels, and meteorological conditions that can impact human health and the environment. The City utilizes data generated from monitoring and compliance program activities to analyze trends that inform local and regional planning decisions in transportation, energy, and land use. This helps the City and its partners develop strategies to address current regulatory challenges and mitigate air pollution, while preparing for the future. The City also evaluates new tools and technologies with the potential to more accurately identify emissions sources and emerging pollutants, as well as to enhance existing air monitoring networks.

300

Air quality investigations annually, on average

98,000

Average air monitoring data samples taken per year

Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

AIR QUALITY PROGRAMS (CONT)

Air Quality Monitoring

The City manages the Ambient Air Quality Monitoring Program in cooperation with the Texas Commission on Environmental Quality (TCEQ) to measure pollutants under the National Ambient Air Quality Standards (NAAQS) criteria pollutant data. The City operates, maintains, and repairs monitoring equipment owned by the TCEQ, and performs sampling and data collection activities at five stations throughout Tarrant County. Overall, the data return rate is over 97% for data collected by the City-maintained monitoring network, while TCEQ's standard for data return is 85%.

A separate network of air monitoring stations are maintained and operated in cooperation with the TCEQ and the Department of Homeland Security (DHS). These monitors collect data to evaluate threats of an airborne bio-terrorism attack under the BioWatch Program. They have historically maintained a data return rate of 100%. Local air monitors allow for quick access to data and direct collaboration with City administration and emergency management officials in the event of a threat to human health. The City is exploring options for mobile monitoring to improve our air quality monitoring capabilities.

KEY MONITORING ACTIVITIES

- Ambient Air Quality Monitoring
- Particulate Matter Monitoring
- Biohazard Monitoring
- Mobile Monitoring

Compliance and Permit Review

Complaints that involve specific concerns for air emissions, such as odors, smoke, dust, and potential health effects are investigated. Air investigations and inspections of facilities support the protection of local air quality through ensuring compliance with state and federal environmental rules and regulations. The City is also authorized to enforce regulations to reduce environmental impacts to the ambient atmosphere and public health.

136

Commercial and industrial inspections, annual average

25

Average TCEQ permit reviews conducted per year

KEY COMPLIANCE ACTIVITIES

- Industrial and Commercial Air Quality Compliance
- Municipal Air Quality Compliance
- Construction Air Quality Compliance
- Complaint Investigations

The City conducts compliance inspections for air quality regulations at industrial, commercial, and construction operations throughout Fort Worth, and audits municipal facilities that generate air pollution emissions. The TCEQ sets an annual investigation work plan for the City to perform regularly scheduled site inspections of used car lots, gas stations, auto body shops, manufacturing operations, and major sources (Title V facilities) for emissions. The City also performs inspections of construction sites, including asphalt and concrete batch plants, rock crushers, and sand/gravel operations. To ensure internal compliance with air regulations and prevent violations and enforcement actions against the City, Environmental Quality Division staff are partnering with other departments to develop a comprehensive municipal facility audit program.

Air North Texas

The North Central Texas Council of Governments promotes regional air quality awareness through the Air North Texas program. This program provides material and educational resources for local governments, businesses, and residents. Air North Texas campaigns, like Arlo the "Airmadillo," help explain the Air Quality Index and encourage residents to sign up for air pollution alerts.

Gas station compliance inspection.

Air quality sample collection.

Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

HAZARDOUS MATERIALS MANAGEMENT

A hazardous material is defined as any substance or material which can potentially cause harm to humans, animals, or the environment. Hazardous materials have many applications, and the City uses some of these materials in municipal operations and stores them at City facilities. Once the material has reached the end of its useful life, it is stored and managed as hazardous waste.
The City also accepts household hazardous waste (HHW) from residents and surrounding partner cities to ensure that this waste is handled and disposed of properly. Environmental hazards on City properties, such as asbestos, lead paint, and mold, are abated in accordance with health and safety regulations. In addition, the City's petroleum storage tanks are managed to ensure that all City-operated tanks comply with U.S. Environmental Protection Agency (EPA) and state regulations.

PROGRAM AREAS

- Hazardous Materials Planning and Management
- Hazardous Materials Mitigation Program Area
- Hazardous Materials Compliance Program Area

Planning and Management
The City of Fort Worth has developed hazardous materials management plans and waste minimization plans for the effective and safe management of hazardous materials generated at municipal facilities, as well as from residents. Proper management includes the handling, storing, transporting, disposal and tracking of these materials, while ensuring environmental compliance with local, state, and federal regulations.

Hazardous Materials Mitigation
Hazardous materials can pose a serious threat to human health and the environment if they are not managed and abated properly.

KEY MITIGATION ACTIVITIES

- Asbestos, Lead Paint, and Mold Remediation
- Emergency Spill/Release Response
- Household Hazardous Waste Collection
- Petroleum Storage Tank Remediation

Source: City of Fort Worth, Code Compliance Department, Solid Waste Section, 2021.

HAZARDOUS MATERIALS MANAGEMENT (CONT)

Hazardous Materials Remediation and Abatement Compliance
Asbestos, lead paint, and mold abatement are all handled on an as-needed basis. A comprehensive inventory of municipal buildings with asbestos-containing materials and lead paint is needed.

Emergency Spill/Release Response
The City responds to spills and emergency incidents throughout Fort Worth, including traffic accidents, fires, and uncontrolled releases of hazardous materials from industrial and commercial facilities. As required by the TPDES permit, Fort Worth has two programs to handle spills: a hazardous materials team within the Fort Worth Fire Department, and trained staff within the Environmental Quality Division.

Household Hazardous Waste Collection
Common household hazardous waste (HHW) like batteries, fluorescent light bulbs, ammunition, paint, and automotive fluids should not be disposed of in the landfill. HHW is accepted at the Environmental Collections Center, mobile HHW collection events, and drop-off stations. "Crud Cruiser" Mobile HHW collection events are held from March through November.

Drop-off Stations
Four drop-off stations are available to residential customers for the disposal of materials that are accepted in the residential collection programs, including household hazardous waste. A fifth location is planned for 2023.

Environmental staff coordinate with the Transportation and Public Works Department when responding to incidents that require special equipment. Environmental compliance is critical for aboveground storage tanks, like this fuel tank at a FWFD fire station.

HAZARDOUS MATERIALS COMPLIANCE PROGRAMS

The City is committed to ensuring compliance with all applicable environmental regulations and permits at the federal, state, and local levels for the hazardous materials it manages.

Petroleum Storage Tank Compliance
Underground storage tanks require annual testing, current registrations, monthly maintenance, posting of required signage and delivery certificates, and regulatory inspections. Additionally, difficulty in obtaining fuel inventory from non-automated sites located at fire stations presents a challenge in understanding the amount of fuel used by the City and identifying leaking tanks, which must be removed and replaced.

EPCRA Tier II Chemical Reporting
The Employee Protection Community Right to Know Act (EPCRA) EPCRA Tier II Chemical Reporting Program provides comprehensive records of reportable chemicals used and stored at City-owned facilities, as well as hazardous waste generated through City operations. The City currently keeps track of over 50 different regulated materials at City-owned facilities, and 72 chemicals are stored at quantities requiring reporting. The Tarrant County Local Emergency Planning Committee (LEPC) receives copies of the Tier II reports and uses the information for emergency response planning to help protect the community and first responders.

Municipal Hazardous Waste Compliance
The City is developing a municipal facility hazardous materials audit program that will identify any compliance issues and provide guidance to facility managers for improvement.

Batteries and HHW dropped off for proper disposal.

Chemical shelf at the Environmental Collection Center.

Source: City of Fort Worth, Code Compliance Department, Solid Waste Section, 2021.

SOLID WASTE & LITTER CONTROL

Fort Worth is committed to being litter free. With more than 850,000 residents and over 1.5 million visitors each year, litter is a constant challenge. Litter is considered one of the most important environmental concerns facing Fort Worth, and the City plays a crucial role in preventing and mitigating litter and illegal dumping within its jurisdiction. Litter is not only prevalent throughout the city, it is also persistent — an area can be cleaned only to become littered again within days.

PROGRAM AREAS

- Litter Control Planning and Administration
- Disposal Facilities and Contract Compliance
- Litter Abatement and Enforcement
- Disposal Facilities and Contract Compliance

COMPREHENSIVE SOLID WASTE MANAGEMENT PLAN

The 2037 Comprehensive Solid Waste Management Plan is named "Rethinking Waste for a Greener Fort Worth". Its primary goal is to establish sustainable ways to divert materials away from the City Southeast Landfill and to preserve its capacity. The Rethinking Waste Plan is the City's first step beyond the residential waste stream to incorporating commercial, institutional, and industrial waste, as well as recycling and diversion efforts. The Rethinking Waste Plan advances 130+ action items and sets timely target goals to achieve the diversion of materials away from the City Southeast Landfill.

RETHINKING WASTE For a Greener Fort Worth

Source: City of Fort Worth, Code Compliance Department, Solid Waste Section, 2021.

SOLID WASTE & LITTER CONTROL

Solid Waste Administration
Solid Waste Administration keeps all operations running smoothly for the 240,000+ single-family residences receiving weekly garbage, yard waste, and recycling collection services.

Contract Compliance
The contract compliance section is responsible for overseeing City contracts for residential solid waste collection and recycle processing services. It also manages the Grants of Privilege Program for authorized and permitted commercial solid waste haulers which collects 10% of the contractor's gross receipts for transferral to the General Fund and Solid Waste Fund.

Litter and Illegal Dumping
The litter and illegal dumping section is responsible for overseeing and responding to illegal dump complaints and related code enforcement activities.

6,500 +
Volunteers at Cowtown Great American Cleanup, annually

100,000
Pounds of litter picked up annually by volunteers

Volunteers display the litter and dumped items collected at Eugene McCray Park.

KEY LITTER AND ILLEGAL DUMPING ABATEMENT ACTIVITIES

- Garbage Collection and Curbside Recycling
- Yard Waste Collection and Bulk Waste Pick-up
- Dead Animal Pick-up
- Litter and Illegal Dumping Abatement
- Homeless Camp Abatement
- Environmental/Illegal Dumping Investigation Unit
- Targeted Street Sweeping Program

KEEP FORT WORTH Beautiful
KEEP AMERICA BEAUTIFUL AFFILIATE

Top: City vehicle displaying the "Still Littering - Seriously?" graphics. Bottom Left: Lowery Road Elementary School Green Team. Bottom Right: Keep Fort Worth Beautiful logo.

Source: City of Fort Worth, Code Compliance Department, Litter Control Section, 2021.

RENEWABLE ENERGY & ENERGY CONSERVATION

A 2019 report from the American Council for an Energy-Efficient Economy ranked Fort Worth 44th among 75 large U.S. cities in energy conservation. Fort Worth performed best in buildings policies and energy and water utilities. Most electricity in Texas is generated using fossil fuels, and according to the Texas Commission on Environmental Quality the electric industry is a major source of air pollution in the state. The City of Fort Worth has adopted energy efficiency performance standards and energy consumption reduction plans. The City continues to explore renewable energy options to power its facilities, including the installation of on-site solar and wind power generation and the purchase of renewables by contract for all City facilities.

Better Communities Alliance
In 2016, the City joined the DOE's Better Communities Alliance, a program to bring together public and private sector leaders to deliver energy efficiency, sustainable transportation, and renewable energy solutions to create more prosperous communities.

The Property Assessed Clean Energy (PACE) Program
The PACE program allows businesses to obtain low-cost, long-term loans for water conservation, energy efficiency, and renewable retrofits to their facilities. In Tarrant County, $15,854,426 in PACE investments has resulted in the completion of 5 projects with an annual reduction of:

- 4,964,261 kWh of energy
- 3,450 tonnes of CO2
- 16,350 BTU of natural gas
- 5,014,070 gallons of water

Solar-powered bike rental kiosk at Fort Worth B-Cycle Bike Sharing station.

Source: Fort Worth Bike Sharing, 2021.

CONSERVATION PRACTICES IN BUILDINGS

The energy conservation program includes building codes for construction of new commercial and residential homes, and a Weatherization Assistance Program providing services to improve the energy efficiency of homes.

Better Buildings Program
Since 2012, the City has partnered with the Department of Energy (DOE) in the Better Buildings program, which is designed to make homes, commercial buildings, and industrial plants more energy efficient. Fort Worth's real estate portfolio consists of more than 120 public and private buildings, totaling 20 million square feet, as well as one wastewater treatment plant. Fort Worth has improved energy performance in municipal buildings by 16% over the past decade through numerous methods including lighting retrofits, HVAC upgrades, and a private sector education program. Nearly half of municipal buildings, and the largest of the City's 11.8 million square feet in facilities, have undergone energy and water efficiency retrofits over the last decade.

+16%
Improvement in Energy Performance between 2010 - 2020

61
City Facilities Achieving Greater than 10% Improvement

5
Completed Projects in the Property Assessed Clean Energy Program

4,964,261
Kilowatts of Energy Saved Through Investment in the PACE Program

Source: City of Fort Worth, Code Compliance Department, Environmental Quality Section, 2021.

WATER CONSERVATION

Fresh water is a limited resource, making up approximately three percent of the world's water. The City has taken action to ensure the security of Fort Worth's water supply, which includes implementation of a Drought Management Plan, a Residential Water Conservation Plan, a Water Conservation Ordinance, and an Irrigation Ordinance.

The Residential Water Conservation Program includes irrigation system checkups, a toilet replacement program and an ordinance that restricts outdoor watering to twice a week year round. SmartFlush CARE – provides low-flush toilets and installation. TheMyH2O is a Fort Worth water utility program designed to improve customer engagement by better informing customers about their daily water use. I'm For Water helps residents take one or two simple steps each month to reduce water usage.

The Water Department has developed a Water Reuse Program for non-domestic uses — industrial uses, irrigation of golf courses and nonresidential landscaped areas, cemeteries, playing fields, and City parks.

WATER CONSERVATION PLAN

DROUGHT WATER MANAGEMENT PLAN

Clean, clear insights MyH2O

I'm for Water℠

Water conservation programs MyH2O and I'm For Water.

4

Plans and Ordinances in Effect to Save Water in Fort Worth

5,014,070

Gallons of Water Saved Through Investment in the PACE Program

Source: City of Fort Worth, Water Department, 2021.

RECYCLING & COMPOSTING

Recycling and composting are two environmentally friendly methods of handling waste that help keep material out of landfills. Fort Worth has implemented both recycling and composting programs within the community, which includes the Environmental Collection Center, four Drop-Off Stations, and the Compost Outpost. The City has a separate green waste program that takes clean tree and bush trimmings and turns them into free mulch for residents. The City also works with the State of Texas Alliance for Recycling (STAR) to host a Master Composting Program for interested residents.

- Sensitive Document Shredding and Recycling is available at all four Drop-Off Stations.
- Styrofoam Recycling — In 2019, using the funds which were awarded to the City from the Texas Commission on Environmental Quality through the North Central Texas Council of Governments, the City implemented a Styrofoam Recycling Program. It is available at all four Drop-Off Stations.

Residential Food Scrap Composting – Pilot Program, is underway, making use of a grant award the City received from the Texas Commission on Environmental Quality through the North Central Texas Council of Governments (NCTCOG). This pilot program will test the interest and readiness of Fort Worth's residents for residential composting. Household food scraps can be disposed of at 12 collection sites dispersed throughout the City. The material is composted into rich soil nutrients, while ultimately being diverted from the City Southeast Landfill.

Residential composting class.

Recyclable materials are sorted and collected in bails.

Source: City of Fort Worth, Code Compliance Department, 2021.

NATURAL ENVIRONMENTS — NATURAL SPACES & HEALTHY ECOSYSTEMS

SUSTAINABILITY

How the City chooses to grow and develop can significantly affect the quality and sustainability of our environment — in both positive and negative ways. There are a wide variety of environmental and sustainability topics that are important to the City of Fort Worth. Sustainability is balancing the needs of people, the environment, and the economy in daily operations in a renewable way that ensures these needs will be met in the future. Implementation of effective long-range plans that manage growth and development results in more desirable and sustainable neighborhoods, ensures robust economic opportunities, and creates long-term value for residents. The City established a sustainability task force to prepare a Comprehensive Sustainability Action Plan for the City.

NATIVE PLANTS & NATURAL HABITATS

Ecosystems

The Grand Prairie, Western Cross Timbers, Eastern Cross Timbers, and the Trinity River Bottomland are the four primary ecosystems in the greater Fort Worth area. Ensuring the preservation of native plants and natural habitat in these ecosystems, including the endangered Blackland Prairie (less than 1 percent remaining as of 2019), is important for the protection of threatened and endangered species. There are several examples of restored or preserved prairie land in Fort Worth, including the campus of the Botanic Research Institute of Texas, the Tandy Hills Natural Area, and the Fort Worth Prairie Park.

4

Primary Ecosystems in North Central Texas

94%

Protion of Acreage in Texas that is Privately Owned

7

City-Owned Natural Lands/Prairies on a Reduced Mowing Schedule

28 acres

Land Planted with Milkweed Plugs Near Eagle Mountain Lake

Pollinators

The Texas Parks and Wildlife Department (TPWD) notes that pollination is a critical ecosystem service that helps to maintain the integrity of native plant communities and ensures production of agricultural crops. Every year, billions of dollars in crops are pollinated by honey bees and native pollinators. The majority of pollination is achieved by four insect orders — bees and wasps (Hymenoptera spp.), flies (Diptera spp.), butterflies and moths (Lepidoptera spp.), and beetles (Coleoptera spp.). In recent decades, pollinator populations have declined rapidly due to a variety of reasons, including habitat loss, disease and pesticide use. A concerted effort is underway to increase native habitat that pollinators rely on for food and shelter. Because more than 94 percent of the land in Texas is privately owned, effective conservation can only be achieved through private landowner engagement and involvement.

The prairies at the Fort Worth Nature Center and Refuge help support pollinator populations. The City has designated the Nature Center and six other areas to be on a reduced mowing schedule to support native grass and wildflower growth, which provides a food source for pollinators. The City has also installed pollinator gardens at select properties, including the Hazel Harvey Peace Center for Neighborhoods. In 2019, The Fort Worth Pollinator Ambassadors, a group of organizations dedicated to native plants and ecosystem health, planted 300 milkweed plugs over 28 acres near Eagle Mountain Lake. Milkweed is vital to the survival of Monarch butterflies, as they will only lay their eggs on these plants. The Pollinator Ambassadors also spearheaded the development of the Fort Worth Monarch Conservation Plan.

The majority of pollination is achieved by four insect orders — bees and wasps, flies, butterflies and moths, and beetles. Hummingbirds also contribute to pollination.

Source: City of Fort Worth, Nature Center and Refuge.

NATURAL ENVIRONMENTS – NATURAL SPACES & HEALTHY ECOSYSTEMS (CONT)

Endangered Species

Texas Parks and Wildlife oversees the list of threatened or endangered species. Endangered species are plants or animals that will likely become extinct within the foreseeable future. Threatened species may become endangered within the foreseeable future. In Texas, plants or animals may be protected under the authority of state law and/or under the Federal Endangered Species Act. Examples of federally listed species in north Texas are the Black-Capped Vireo, Golden-Cheeked Warbler, and the Texas Poppy Mallow. Some of the state listed species are the Texas Horned Lizard (horny toad) and the Texas Kangaroo Rat.

Texas Parks and Wildlife lists some species as *state* threatened or endangered, although the species might not be federally listed, such as the Texas Horned Lizard, because the state list deals only with the status of the species within the borders of Texas. In Tarrant County, there are 12 animal, insect and plant species listed as either threatened or endangered. These include the Texas Horned Lizard, Alligator Snapping Turtle and the Whooping Crane. An additional 44 species are listed as rare.

The Texas Parks and Wildlife website describes the importance of each species, despite the seeming insignificance to the overall landscape as we know it:

"An ecosystem is like a spider web. It is held together by all the plants, animals, water, air, and nutrients, each being a thread in the web. With each thread that is removed, many other threads are weakened until the entire web collapses. The fact is that when animals disappear from an ecosystem, it indicates that the area is not only becoming less inhabitable for animals, but also for people. The bottom line is that in North Central Texas we don't have any large, attractive animals that are threatened or endangered to get everyone's attention — we have already lost those."

Threatened bird species are the White-Faced Ibis, Black Rail, and Peregrine Falcons; threatened mammals include Black Bears; reptiles listed are Alligator Snapping Turtles, and Texas Horned Lizards; and three varieties of mollusks are threatened in Tarrant County. Endangered species in Tarrant County are the Interior Least Tern and the Whooping Crane. The Least Tern can be found in habitats along the Trinity River on broad sandbars.

The construction of reservoirs and channelization projects that exacerbate habitat flooding, water pollution, and increased vegetative growth has damaged Least Tern habitat areas. The Whooping Crane has historically used the Dallas-Fort Worth area in its regular migratory route. These large birds frequent marsh areas, river bottoms, and prairie and croplands. According to the U. S. Fish and Wildlife Service, Whooping Cranes are threatened by the destruction of wintering and breeding habitats, entanglement in human structures like power lines and fences, and poaching.

Examples of federally listed species in north Texas are the Golden-Cheeked Warbler, and the Texas Poppy Mallow which is a rare annual Winecup species.

Source: Texas Parks and Wildlife, 2021.

OIL & NATURAL GAS OPERATIONS

The Barnett Shale formation is a large natural gas reserve that stretches across a 17-county area. Almost 2,000 gas wells are currently permitted within the Fort Worth city limits.

The drilling and production of gas wells within Fort Worth is regulated primarily by the Texas Railroad Commission and the City's Gas Drilling Ordinance. These regulations minimize the potential negative impact to surface property and mineral rights owners, protect the quality of the environment, and encourage the orderly production of available mineral resources. Additionally, the City's regulations govern notice requirements, well setbacks, noise levels, delivery hours, truck traffic, fencing, landscaping, and technical regulations in conformance with the Railroad Commission rules.

WATER SUPPLY, TREATMENT, & WASTEWATER

1 Protect public health and the environment.

- 100 percent compliance with federal and state drinking water standards.
- 100 percent compliance with federal and state discharge permit requirements.
- 100 percent beneficial reuse of biosolids.
- Reduce number of sanitary sewer overflows.
- Eliminate all City-side lead service lines by the end of 2021.
- Reduce number of water quality complaints.
- Reduce number of water main breaks.

2 Develop and maintain reliable and resilient water, wastewater, and reclaimed water systems to meet the needs of all users.

- Complete projects identified in the Sanitary Sewer Overflow Initiative entered into with the Texas Commission on Environmental Quality.
- Reduce running 5-year per capita water use average to 140 gallons per person per day by 2024.
- Increase use of reclaimed water.
- Maintain water system performance and collaborate with the Fire Department to maintain ISO rating of "1".
- Reduce the Infrastructure Leakage Index, a measure of how well the utility is managing its water loss.
- Ensure professional and licensed staff meet individual training requirements.
- Reduce health and safety severity rate.
- Finalize and implement Strategic Asset Management Plan.
- Ensure succession planning through knowledge base transfer and skills assessment.
- Reduce employee turnover.
- Fully implement the MyH2O initiative by the end of 2022.

3 Manage financial resources to ensure equity among all ratepayers, balancing affordability and growth.

- Improve financial viability of the utility by meeting key performance indicators for days cash on hand, debt service coverage ratio, levels of working capital, and percentage of delinquent accounts.
- Maintain or improve bond ratings.
- Reduce apparent water loss through improved metering and addressing water use by inactive accounts.

STORMWATER, DRAINAGE, & FLOODPLAIN MANAGEMENT PROGRAM

1 Maintain the existing systems of pipes and channels to function as designed.

- Inspect the City's approximately 35,000 inlets once every 5 years and clean them as needed.
- Perform condition assessment of 25 miles of critical storm drain a year and clean sediment and debris based on condition.
- Mow approximately 75 miles of channels 3 times/year.
- Maintain approximately 170 miles of City-owned channel each year.
- Inspect City-owned dams annually.
- Inspect and maintain the 18 City-owned water quality devices (that capture trash) twice a year.
- Inspect approximately 390 privately owned detention ponds each year to ensure proper maintenance, including sediment removal and erosion repair.

2 Improve drainage and reduce erosion through construction projects.

- Mitigate hazardous road overtopping through major capacity improvement projects at 12 to 14 locations from FY21 – FY25
- Mitigate hazardous road overtopping through safety improvement projects at 35 to 40 locations from FY21 – FY25.
- Rehabilitate 15 to 17 miles of critical aging City-owned pipe from FY 21 – FY 25.
- Restore 4 to 5 miles of highly eroded City-owned channels from FY 21 – FY 25.

3 Review development for compliance with City stormwater standards.

- Complete 70% of drainage reviews within 10 business days.
- Complete 70% of floodplain reviews within 15 business days.
- Reduce the number of drainage review cycles.
- Achieve a customer service survey rating of 3.5 out of 5.
- Update the Stormwater Criteria Manual to comply with House Bill 3167.

4 Warn the public and property owners of flooding and erosion hazards.

- Update the flood warning system to Alert 2 to improve system reliability and resilience.
- Maintain a level 8 or better in FEMA's Community Rating System.
- Mitigate flood risk to insurable structures and reduce flood insurance claims.
- Reduce the number of repetitive flood loss structures in the community.
- Improve the ability to warn first responders and motorists of flooded roadways before and during flood events.
- Evaluate ways to improve flood forecasting and unmonitored/ ungauged hazardous road overtopping locations using data collected from the monitored crossings.

SURFACE WATER QUALITY

1 Protect the water quality in our lakes, streams and the Trinity River.

- Ensure City compliance with federal and state environmental regulations for surface water quality.
- Monitor surface water quality and establish watershed management practices and plans in the community.

2 Control surface water pollution to support stream health and surface water quality.

LAND QUALITY

1 Address environmental concerns in soil, groundwater, and the built environment.

- Ensure City compliance with federal and state environmental regulations for soil, groundwater, and the built environment.

2 Reduce impacts of soil and groundwater pollution to the environment and human health.

3 Mitigate blight and encourage the revitalization of previously developed properties and brownfields.

HAZARDOUS MATERIALS MANAGEMENT

1 Reduce environmental impacts from hazardous materials.

- Ensure City compliance with federal and state environmental regulations for hazardous materials management.
- Reduce the amount of hazardous waste generated and maintained at City facilities.

2 Minimize exposures and risks to human health and the environment.

AIR QUALITY

1 Protect air quality in the outdoor environment.

- Ensure municipal compliance with federal and state environmental regulations for air quality.
- Achieve air quality compliance through inspections and enforcement.

SOLID WASTE

1 Increase the diversion of material away from the southeast landfill.

- Promote the minimization of waste generation overall.
- Increase residential and commercial reuse and recycling.
- Incorporate Commercial & Industrial Waste Strategies.
- Engage and Promote Environmental Stewardship.
- Utilize the Roadmap for Future Policy Considerations.

LITTER CONTROL

1 Eliminate litter and illegal dumping throughout our community.

- Increase public awareness of litter issues and encourage behavioral changes to prevent litter.
- Support volunteer efforts to reduce litter.
- Improve the appearance of the City through the removal of litter and illegal dumps.
- Achieve City ordinance compliance through education, investigations, and enforcement.
- Provide technical guidance, outreach, and education to develop a culture against litter and illegal dumping.

ENERGY CONSERVATION

1 Reduce energy and water consumption and utilize renewable sources of energy.

2 All new City buildings will be built to LEED Silver standards, at a minimum.

NATURAL ENVIRONMENTS

1 Improve sustainability of public and private development activities within Fort Worth.

- Improve overall environmental quality with responsible environmental planning and management.

POLICIES

Water Supply, Treatment, and Wastewater

- Assure adequate treated water to meet projected demands.
- Promote water efficiency and water reuse to ensure resiliency and sound stewardship of public resources.
- Evaluate development proposals and infrastructure investments based on the impacts to land use and the overall water and wastewater systems.
- Maintain and renew existing infrastructure.
- Continue using the Community Facilities Agreement and Design Procurement Agreement programs to develop water, wastewater and reclaimed water infrastructure in conjunction with new private development.
- Evaluate new wholesale customer requests based on impacts to the overall system and Fort Worth's growth patterns.
- Manage assets in a holistic, strategic, and comprehensive manner through integrated business processes, trained and knowledgeable staff, and data-driven decisions that incorporate innovation and optimization.
- Provide clear, simple, and effective communications with customers and stakeholders.
- Provide affordable water and wastewater service in an equitable manner for all customers while meeting all federal and state water quality standards.
- Set rates and fees based on cost of service, using guidelines and principles outlined by the water sector as best practice.
- Balance policies related to growth paying for growth.
- Leverage technology and data to address customer needs and optimize operations.
- Monitor air quality and establish practices and plans to minimize air pollution.
- Regulate sources of air pollutants to minimize adverse impact on human health and the environment.

Stormwater Management Program Policies

- Ensure no adverse impact from the construction of stormwater projects.
- Review all building and development permits for compliance with National Flood Insurance Program regulations, and the floodplain Provisions Ordinance standards.
- Do not mitigate flooding by moving it to a different location.

Surface Water Quality Policies

- Minimize impervious land cover in areas of new development and significant redevelopment.
- Encourage redevelopment and infill in order to reduce the amount of new impervious surfaces outside Loop 820.
- Use natural areas to retain and filter storm water runoff.
- Maintain environmental compliance through inspections, permitting and enforcement.

Air Quality Policies

- Encourage regional public transportation by working with other cities in the Metroplex to create efficient commuter rail, modern streetcar, light rail, bus service, and other types of mass transit.
- Encourage development that reduces daily vehicle miles traveled for commuters through the creation of urban villages, transit-oriented development, and mixed-use growth centers.
- Encourage the development of industries with minimal air emissions which will allow continued economic growth while the Metroplex is under strict federal emissions standards.
- Encourage development practices that help reduce the higher temperatures in urban areas that accelerate ground-level ozone formation (the urban heat island effect), such as planting shade trees and using appropriate highly reflective (high albedo) paving surfaces and roofing materials.
- Use City projects to demonstrate the effectiveness of these development practices.

Solid Waste and Litter Policies

- Pursue and implement methods to minimize waste generation, reduce recycling contamination, increase re-use, recycle, and composting of materials.
- Assure the long-term disposal capacity for the City municipal solid waste.
- Support volunteer efforts to reduce litter.

Hazardous Materials

- Maintain environmental compliance through inspections and recommendations.

POLICIES (CONT)

Conservation of Energy and Water Policies

- Pursue methods to reduce the impact of the urban heat island effect on Fort Worth.
- Promote energy efficiency and use of renewable energy.

Natural Environments — Natural Spaces and Healthy Ecosystems

- Increase the efficiency and cost-effectiveness of providing City services by promoting development in urban villages, transit-oriented developments, and mixed-use growth centers.
- Support innovative development projects that showcase low-impact development practices, conserve riparian buffers, and extend greenway networks with hike/bike trails.
- Promote sustainable development practices within the public and private sectors.
- Wherever possible, the City should set an example for private sector developers and builders by developing facilities that demonstrate the most effective technologies and techniques available.
- Ensure public facilities are environmentally responsible, highly energy efficient, and take the most advantage of opportunities to co-locate activities and reuse land and structures.
- Encourage development and building practices that reduce environmental impacts.
- Protect riparian corridors as natural buffers to conserve natural habitats.
- Facilitate orderly and sustainable development through technical guidance, outreach, and education to encourage responsible environmental stewardship.
- Promote a safe city and protect public health through environmental monitoring and compliance.

STRATEGIES

Water Supply, Treatment, and Wastewater

- Protect water quality and public health by implementing, evaluating, and enforcing pretreatment and backflow programs and regulations in existing and new development.
- Optimize corrosion control, replace all City-side lead service lines, and conduct customer outreach to minimize lead in drinking water.
- Work with Tarrant Regional Water District to monitor raw water resources and develop water supply strategies.
- Provide tools for timely, easy, and effective information sharing and customer feedback.
- Expand working relationships with public health departments in all counties served.
- Encourage the use of reclaimed water in new development and redevelopment, through the use of reclaimed water from both Village Creek and Mary's Creek water reclamation facilities.
- Encourage the public to implement recommended water conservation measures and comply with the Water Conservation Ordinance.
- Implement the Comprehensive Water Loss Plan that addresses both real and apparent losses.
- Enhance the focus on replacing higher risk assets placements while leveraging partnership opportunities.
- Implement a multi-faceted communication plan focused on building stakeholder support.
- Conduct a customer satisfaction survey every two years and monitor JD Powers Water Utility Survey results — using the information to shape customer communication efforts.
- Promote the vital role Fort Worth Water plays in the community.
- Equip employees with the resources and knowledge to be effective Fort Worth Water ambassadors.
- Make the customer experience convenient and seamless.
- Evaluate development proposals and infrastructure investments in accordance with the City's annexation policy, future growth areas, the 20-year planned service areas, and the City's Economic Strategic Plan.

Stormwater Management Program Strategies

- Maintain the current level of review while evaluating potential regulation revisions for flood prone areas.
- Leverage available resources and opportunities to expand the capacity of the Stormwater Management Program to meet the program's established vision and mission.
- Continue to expand the acquisition and effective use of data to inform and prioritize programming decisions.

STRATEGIES (CONT)

- Communicate effectively to the public and City staff so they can make informed and educated decisions.
- Apply asset management principles and develop data in conjunction with other strategic factors, in order to optimize programming decisions.
- Increase emphasis on life safety projects, such as mitigating hazardous road overtopping and rehabilitating aging storm drain pipes.
- Emphasize smaller project execution with operating budget and seek partnerships for larger projects.
- Increase communication of real-time and historic flooding and erosion risk through mapping and other tools in areas where risk mitigation is not affordable.
- Develop a policy to improve identification, communication, and planning for flood hazards that exist beyond the limits of FEMA floodplains. Determine if they should be regulated differently and, if so, how.
- Identify erosion prone areas and develop policies, practices, and standards to protect channels and creeks in those areas from harmful erosion.
- Develop a policy regarding private property erosion resulting from streams and channels that are not located within a public drainage easement.
- Continue to expand the percentage of City-owned channels that are restored and maintained to minimize erosion.
- Encourage the incorporation of Low Impact Development features in both public and private projects.
- Develop a policy regarding participation in the voluntary buy-out of properties at risk of flooding or erosion.
- Investigate policy refinements that, if implemented, would further reduce the risk of adverse flooding impacts as result of development in flood prone areas, properly account for the cumulative impacts of development, and incentivize development to help reduce flood risk.
- When developing new projects involving channels or detention, consider how erosion and sediment control features can be designed as a part of the project to help protect water quality.
- Update FEMA maps through the Cooperating Technical Partners Program to leverage program dollars and provide more accurate flood risk regulation and communication.
- Maintain floodplains in their natural state to the extent possible to protect water quality, reduce the risk of erosion, and protect the riparian environment.

Surface Water Quality Strategies

- When feasible, develop linear parks with walking and biking trails along drainage ways as an effective means of filtering out water pollutants and connecting neighborhoods.
- Reduce erosion and improve ground cover along drainage channels through effective design, construction, and maintenance.
- Support innovative efforts that are cost- and environmentally-effective in addressing water quality issues associated with new development and extensive redevelopment.
- Identify and address potential concerns regarding nonpoint source pollution prevention requirements by providing information to developers and builders.
- Develop a detailed mitigation plan for increasing capacity and eliminating bottleneck conditions in areas presently subject to flooding.
- Provide technical guidance, outreach and education to encourage responsible environmental stewardship.

Land Quality Strategies

- Provide expert environmental inspection and monitoring.
- Provide technical guidance, outreach, and education to encourage environmental stewardship of land resources.

Air Quality Strategies

- Reduce automobile emissions by using alternative-fueled and hybrid City vehicles, where appropriate.
- Encourage citizens, City employees, and contractors to follow ozone reduction practices throughout the year, and more so during the ozone season (May 1st through October 31st), particularly on Air Pollution Watch Days.
- Preserve mature trees and plant additional trees to help the air filtering process and to reduce the ambient outdoor temperature in summertime.
- Determine the feasibility of an idling restriction ordinance for all vehicles.
- Monitor energy consumption at City facilities to track conservation plan progress, and communicate results to City administrators, employees, and elected officials to maintain awareness.
- Research options to increase the reflectivity of City roofs and paved surfaces to reflect more solar radiation, thereby reducing air conditioning loads and urban heat island effects.

STRATEGIES (CONT)

- Encourage planting and maintenance of native vegetation near buildings and along paved surfaces to directly shield them from the sun's rays, reducing urban heat island effects.
- Provide technical guidance, outreach, and education to encourage responsible actions for air quality.

Solid Waste and Litter Strategies

- Preserve the capacity of the City's Southeast Landfill through increased diversion of materials.
- Educate residents and businesses on how to better manage waste.
- Promote the minimization of the overall waste generation.
- Promote reuse.
- Increase residential recycling.
- Increase industrial, commercial, and institutional recycling.
- Decrease overall recycling contamination.
- Advance a residential composting program.
- Advance an industrial-scale composting operation.
- Facilitate the processing and recovery of C&D (construction and demolition) materials.
- Support the City's litter plan.
- Provide technical guidance, outreach, and education to develop a culture against litter and illegal dumping.

Hazardous Materials Strategies

- Provide technical guidance, outreach, and education to encourage responsible environmental stewardship at all City facilities.

Conservation of Energy and Water Policies

- Reduce the amount of energy consumed throughout the city through administration, enforcement, and amendment of the Fort Worth Energy Code to require use of EnergyStar appliances at City facilities.
- Reduce the reliance on electricity produced by fossil fuels by encouraging the use of renewable energy sources in new development and redevelopment.
- Educate employees on energy conservation in daily activities both at work and at home.

Natural Environments — Natural Spaces and Healthy Ecosystems

- Implement a sustainable development online forum — an educational and networking resource that will inform the public about local opportunities and the benefits of sustainable development while increasing builder and developer participation.
- Promote the use of vegetation adapted to the local climate on City property and in parks. (There are areas where this is not an appropriate or desirable goal, such as in historically significant parks like Capps, or in special venues such as the Water Gardens and the Zoo.)
- Seek opportunities and encourage developers to use natural landscapes and preserve undisturbed open space in its natural state where possible.
- Develop and implement a plan for the designation and protection of natural open spaces as sanctuary for threatened and endangered species.
- Develop and implement an ecotourism plan that is focused on the natural attractions of Fort Worth.