



# Public Works Department

REAL.TEXAS.SERVICE.



## Overview

The City of Mesquite Public Works Department is responsible for the physical assets and personnel necessary for our local government to provide and sustain structures and services essential to the welfare and acceptable quality of life for our citizens. As a result, Public Works is committed to providing the best service possible to our residents. This Progress Report highlights the accomplishments for Fiscal Year 2018-19.

## Public Works Divisions

- Engineering
- Utilities
- Solid Waste
- Streets
- Traffic Engineering
- Equipment Services
- GIS
- Infrastructure Management



# ENGINEERING

REAL.TEXAS.SERVICE.

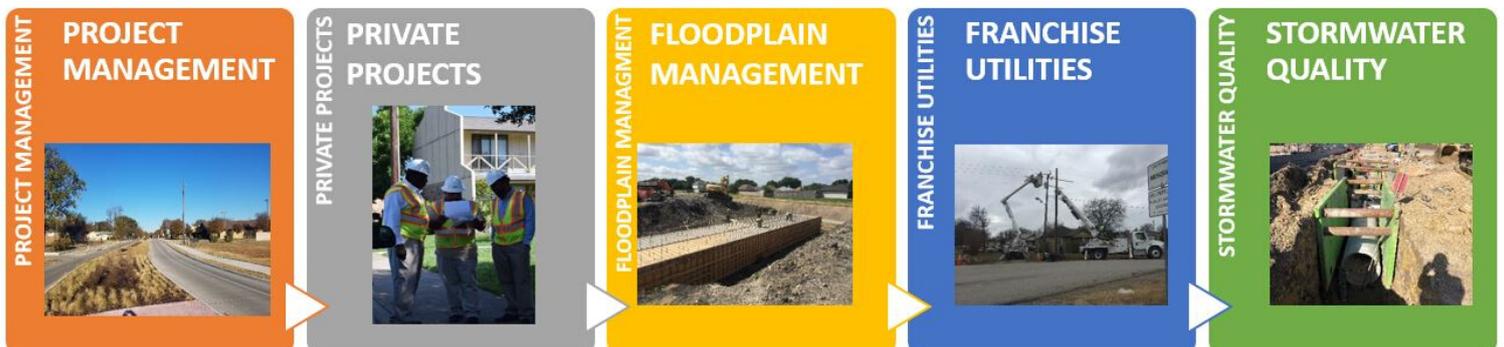
# MESQUITE

The Engineering Division is responsible for facilitating the design and administration of Capital Improvement Projects which include infrastructure such as roads, alleys, storm water drainage, the potable water distribution and the sanitary sewer system. These Capital Improvement Projects provide essential services to the citizens of Mesquite. During project design and construction, the City strives to integrate community concerns while efficiently using public funds. Engineering is also responsible for the plan review, permitting and construction inspection of infrastructure associated with private developments and franchise utilities located within the City's right of way.



**Matt Holzappel, Director  
Public Works**

## RESPONSIBILITIES



# UTILITIES

## REAL.TEXAS.SERVICE.

The Utilities Division has 91 staff members and is responsible for:

- Supplying safe, uninterrupted water and wastewater services to Mesquite customers
- Maintaining pumping and storage facilities
- Assuring consistent water pressure
- Repairing and replacing distribution system pipe and apparatuses
- Maintaining water quality
- Providing wastewater service for residential and commercial customers



### UTILITIES SECTIONS:



#### Water Production

Water Production monitors and maintains all of the City pumping facilities, ground storage reservoirs and overhead storage tanks. In addition, the Production section is responsible for water quality including all TCEQ required sampling. Dispatch processes all phone calls, 24-7, for non-emergency calls for water and sewer.



#### Water Distribution & Reconstruction

Water Distribution maintains all potable water piping and apparatuses belonging to the City. This includes emergency repairs, assistance with line flushing for water quality control, fire hydrant maintenance and some pipe replacement responsibilities. Reconstruction crews are responsible for the replacement of aging or inadequate distribution lines and assist with emergency repairs to back up the Distribution team.



#### Wastewater

Wastewater crews maintain the sewer system, regularly replace existing sanitary sewer lines with deteriorated infrastructure and manage the City's preventive maintenance program to maximize system performance and prevent costly repairs.



#### Meter Services

Meter Services is responsible for reading over 54,000 residential and commercial water meters monthly and the maintenance and repair of all meters and leaks.

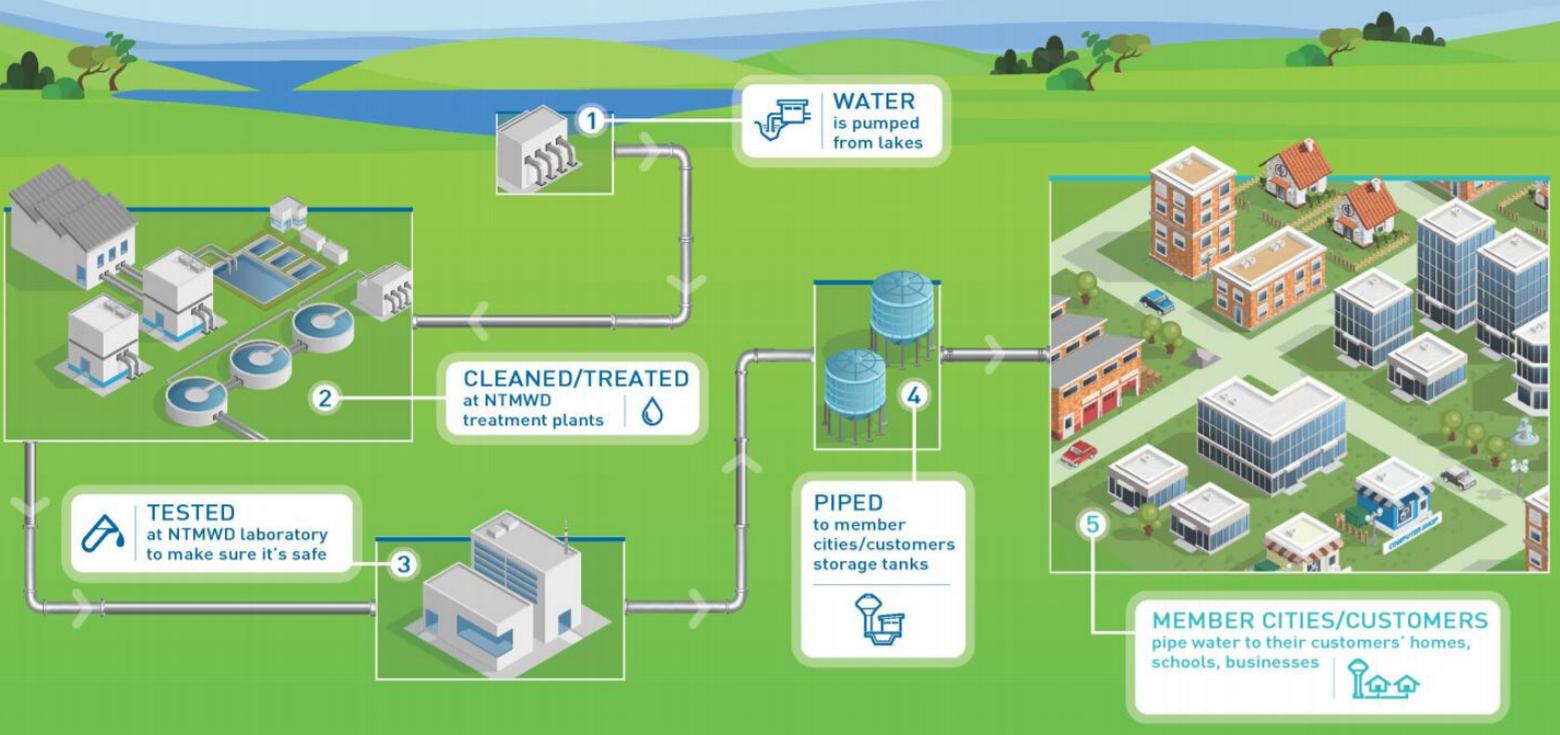
# UTILITIES

REAL.TEXAS.SERVICE.



## GETTING WATER TO YOU

Shared Regional System Serves 80 North Texas Communities



Mesquite is a member of the North Texas Municipal Water District (NTMWD) that supplies water to over 35 cities across North Texas. The primary source for Mesquite's water is surface water delivered from Lavon Lake and is supplemented by water from Lake Texoma, Jim Chapman Lake, Lake Tawakoni and the East Fork Raw Water Supply Project (Wetland). Mesquite's water is treated at the NTMWD facility in Wylie, Texas and is delivered to customers through the City's distribution system. The NTMWD conducts daily tests on both the raw water in Lavon Lake and the treated water delivered to the City of Mesquite.

Bois d'Arc Lake in Fannin County is the first major reservoir to be built in Texas in nearly 30 years. After 15 years of planning and permitting, construction began in May 2018. Water delivery is scheduled to begin in 2022. The additional supply will help ensure crucial water supplies for the future of the region.



# UTILITIES

## REAL.TEXAS.FACTS.

During FY 2018-19, Utilities:



### Wastewater

475



Maintained  
or  
Repaired

MILES of sewer pipes

- over 799,748 feet cleaned; 120,335 feet CCTV
- 5,611 manholes; 899 inspected
- 5 lift stations
- 3,401 calls responded to



### Water Distribution/Reconstruction



600

MILES of pipes maintained

- 5,010 fire hydrants
- 12,306 valves
- 181 main breaks & 444 leaks repaired
- 1,560 feet of pipe replaced
- 853 calls responded to



### Meter Services

495,005



METERS READ

- 3,272 leaks repaired
- 1,866 meters replaced
- 65,572 calls responded to including rereads & reconnets



### Water Production



62.5

MILLION GALLONS

Maximum total pumping capacity per day

- 17 million gallons average per day
- over 120 water quality samples a month

# UTILITIES

## REAL.TEXAS.FACTS.

**TOTAL STORAGE CAPACITY: 34 Million Gallons**

Elevated Storage Tanks (9.5 million gallons):

- Big Town 2 million
- Town East 2 million
- Peachtree 2.5 million
- McKenzie 3 million

Pump Stations/ground storage (24.5 million gallons):

- Barnes Bridge 7 million
- Hailey 5 million
- Southeast 12.5 million

Average daily pumping: 17 million/day

Peak in Summer: 31 million/day in FY 18-19

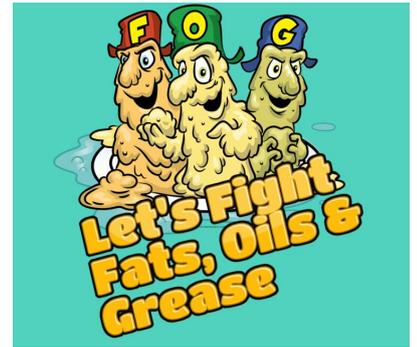


Barnes Bridge Pump Station



McKenzie Tower

### Recent Educational Initiatives



**DEFEND**  
★ ★ ★ ★ YOUR ★ ★ ★ ★  
**DRAINS**



## Utilities Mission

- Supply safe, uninterrupted water and wastewater service to Mesquite customers
- Provide adequate infrastructure, supply and storage capacity for household consumption, commercial, industrial and institutional use and for fire fighting

# Solid Waste

REAL.TEXAS.SERVICE.

The Solid Waste Division has 65 staff members and is responsible for:



Providing weekly municipal solid waste collection service for residential customers



Operating the City's Transfer Station



Operating the City's Convenience Center



Operating the City's Compost Facility

**38** Garbage Collection Routes: 19 Mon/Thurs & 19 Tues/Friday

**987** Homes/Route

**13** Tons of Trash

Each garbage route averages two 20 cubic yard loads per day @ 6.5 tons per load

An icon of a garbage truck.

In FY 18-19, Mesquite recycled over 2000 tons of recyclable materials and, as a result, these recycling efforts conserved the following resources:



**2,005 Mature Trees were Saved**

Representing enough saved timber resources to produce more than 24,842,900 sheets of newspaper!



**644 Cubic Yards of Landfill Airspace**

Representing enough airspace to fulfill the municipal waste disposal needs for 826 people for one year!



**686,500 Kw-Hrs of Electricity from Recycling**

Enough power to fulfill the annual electricity needs of more than 57 homes!



**346 Barrels of Oil**

Representing enough energy to heat and cool more than 71 homes for one year!



**Avoided 25632 Metric Tons (MTCO2E) of GHG Emissions**

The recycling of these materials prevented these GHG emissions!



**991,900 Gallons of Water**

Representing enough fresh water to meet the daily fresh water needs of more than 13,225 people!

## GUIDE TO SOLID WASTE & RECYCLING



# Solid Waste

## REAL.TEXAS.FACTS.

### FY 2018-19 TOTAL TONNAGE FOR ALL SOLID WASTE AND RECYCLING PROGRAMS

Total recycling programs: 48,457 tons  
Total landfill use: 56,707 tons  
Total Solid Waste: 105,164 tons

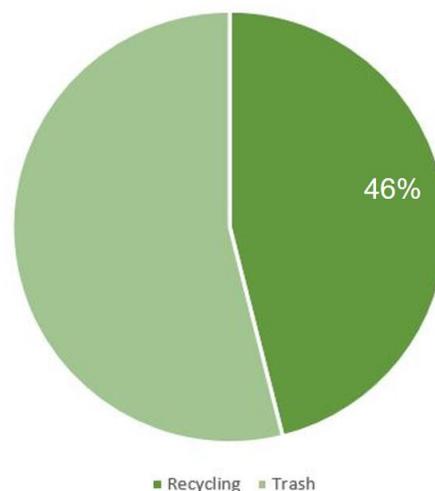
Percentage of **Waste Diverted** from landfill: 46%



**148,550** Miles logged by Transfer Trucks

**62** RT's to California & back

Total Solid Waste



### During FY 18-19:



**56,707** Tons of trash disposed of in the landfill

### During FY 18-19, the Compost Facility and Convenience Center:

- accepted 46,074 tons of brush and yard waste
- dispersed 32,304 cubic yards of mulch
- dispersed 4,719 cubic yards of compost
- gave mulch & compost to 4,348 residents
- provided waste disposal for 7,119 residents
- handled a total of 25,575 customers
- provided services to 12,716 businesses and City of Mesquite internal customers



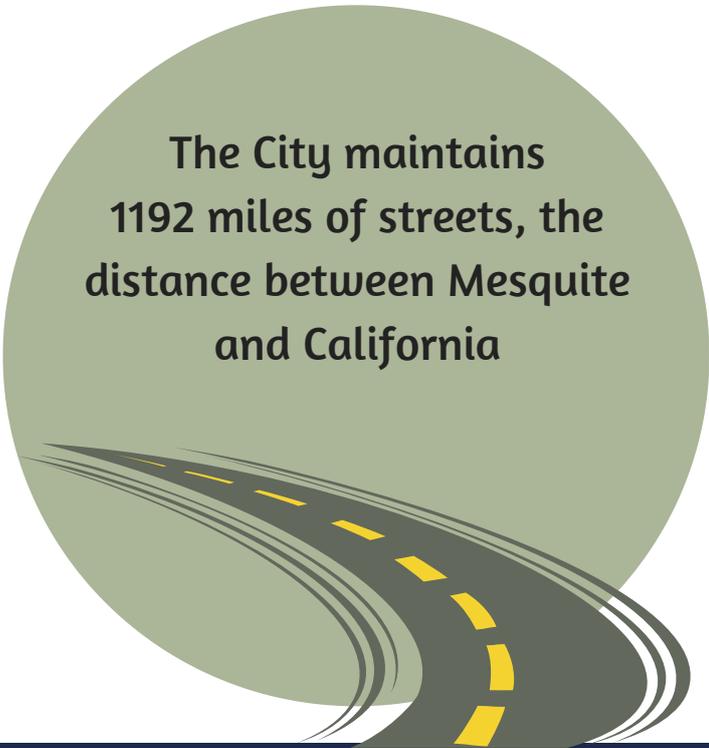
# Streets

## REAL.TEXAS.FACTS.

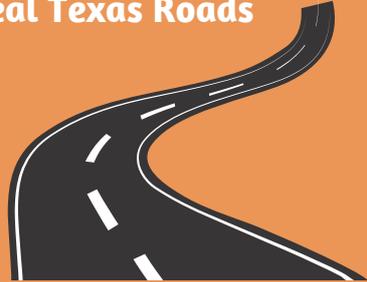
The Streets Division is responsible for the:

- repair and maintenance of streets and alleys
- maintenance of storm drains/drainage channels
- emergency response to ice, snow, high water, traffic hazards and other activities

The City maintains  
1192 miles of streets, the  
distance between Mesquite  
and California



### 2018-19 "Milestones"

- Performed 3,095 work order service requests
  - Completed 3,224 cubic yards of concrete and 4,026 tons of asphalt repairs to streets and alleys
  - Swept 2,263 lane miles of major thoroughfares and collectors
  - Checked 9,225 storm drain inlets & cleaned and removed debris from 300 inlets
  - Completed over 7 miles of roads through the Real Texas Roads program
- 

## STREET AND ALLEY INVENTORY

**Total Street Inventory: 1192 lane miles (268 lane miles are grade 4 = 23%)**

- Residential Streets (2-lane): 647 lane miles (199 miles are Grade 4 = 30%)
- Collector Streets (3-lane): 124 lane miles (41 miles are Grade 4 = 33%)
- Major Arterial Streets (4-lane or more): 309 lane miles (20 miles are Grade 4 = 6%)
- Secondary Arterial Streets: 112 lane miles (8 miles are Grade 4 = 0.7%)

**Total Linear Miles of Paved Alleys: 213 (81 miles are Grade 4 = 38%)**

- Linear Miles of Rear Entry Alleys: 158 miles (62 miles are Grade 4 = 39%)
- Linear Miles of Front Entry Alleys: 55 miles (19 miles are Grade 4 = 35%)

# Streets

REAL.TEXAS.FACTS.



## Street Selection Process

The City uses a variety of repair methods and each street is evaluated by various factors, including traffic volume, pavement condition index, rideability, existing surface type, drainage issues, etc. to determine the correct repair method.



## Optimized Pavement Reconstruction Process

This process, developed by the City of Mesquite, costs about 60% of the traditional method of removing and replacing streets and allows streets to be repaired in less than 90 days, which is about half of the estimated time for traditional reconstruction.



## Asphalt Pavement Reclamation

This process, for existing asphalt streets, involves crushing or pulverizing the asphalt into small pieces and then mixing them in with the existing base material below. Cement will be mixed in as well. Then a new layer of asphalt is placed on the prepared base material.

**27+** Miles Completed

**\$39**

Million spent  
to date

**3.8+** Miles in Progress



Real. Texas. Roads. is the program name for the road repairs funded by a \$125 million bond sale approved by Mesquite voters in 2015 to repair Grade 4 residential streets throughout the community.



# Streets/Engineering

## REAL.TEXAS.FACTS.



### Major Thoroughfare Construction

#### Completed:

- Northwest Drive - IH30 to Oates
- Motley Drive - Gus Thomasson to Town East
- Gross Rd/Kearney St. - IH635 to N. Galloway
- Bruton Rd - IH635 to Rodeo Center
- Scyene Rd - Clay Mathis to Lawson

#### Under Construction:

- Town East Blvd, Phase 1 - Skyline Dr to Military Pkwy
- Front Street - N. Galloway to Ebrite
- Gus Thomasson - Karla to Moon
- Gus Thomasson - US 80 to Town East Blvd
- Town East Blvd., Phase 2 - Skyline to US 80

#### Under Design:

- Gus Thomasson - IH30 to Moon
- Gus Thomasson - Karla to city limits
- Skyline Dr - Town East to Peachtree

## Street Division Staffing



### FY 18-19 Budget

Streets Operation (Salaries & Equipment)	\$2,520,640
Streets (Materials)	\$993,960
Real Texas Roads (Contractual)	\$8,002,183
50/50 Cost Share	\$237,948
Utility Concrete Repairs	\$758,677

# Streets

REAL.TEXAS.SERVICE.



Updates on current road projects can be found online at:

[www.cityofmesquite.com](http://www.cityofmesquite.com)

# The Road Report

# Drainage Utility District

## REAL.TEXAS.FACTS.

- The Drainage Utility District (DUD) was established on November 1992.
- DUD legislation was adopted by the Texas Legislature in the early 1990's in response to new Environmental Protection Agency (EPA) unfunded mandates for storm water quality and the need for an equitable funding mechanism for drainage projects.
- By law DUD funds must be kept separate from the general fund and must be used for drainage related operations, maintenance and capital improvement.
- DUD funds are also used to meet EPA and TCEQ-mandated storm water quality programs.

### Drainage Infrastructure

- Storm Sewer Pipe: 205-miles
- Earthen Channel: 114-miles
- Concrete or Improved Channels: 26
- Number of Headwalls: 1,385
- Number of Inlets: 6,400



# Drainage Utility District

## REAL.TEXAS.FACTS.

- Total Annual Revenue - \$3.6 Million
- Storm Drainage Improvements - \$2.5 Million
- Operations (street sweeping, storm water regulations) - \$1.1 Million
- Over \$100 million in drainage and erosion control projects have been identified

### FY 2018-19 Drainage Utility District Capital Improvement Projects

<b>Thomasson Square Drainage</b>	<b>\$ 754,172</b>
<b>Town East Boulevard (Military Parkway to Skyline)</b>	<b>\$ 1,049,000</b>
<b>Town East Blvd (US80 to Skyline)</b>	<b>\$ 1,459,012</b>
<b>Scyene Road</b>	<b>\$ 599,816</b>
<b>Project Stallion</b>	<b>\$ 537,000</b>
<b>Parks Various Projects</b>	<b>\$ 163,000</b>
<b>Service Center Improvements</b>	<b>\$ 50,000</b>
<b>Flood Control</b>	<b>\$ 100,000</b>
<b>Drainage Property Acquisitions</b>	<b>\$ 175,000</b>
<b>Grand Total</b>	<b>\$4,887,000</b>

# Traffic Engineering

REAL.TEXAS.SERVICE.

## PURPOSE

The Traffic Engineering Division is responsible for the installation, maintenance and operation of all traffic signals, signage, pavement markings, school zone flashers, message boards and radar trailers.



## Primary Focus Areas of Traffic Engineering

Traffic Signals

Signs & Markings

Freeway Lighting

3 Engineers



11 Field  
Personnel



14 FT Staff

# Traffic Engineering

REAL.TEXAS.FACTS.

## TRAFFIC ENGINEERING OPERATIONS

The Traffic Engineering Division also conducts numerous traffic related studies, such as speed studies, accident studies and stop sign studies, etc.



### Traffic Signals

Total Inventory = 121



### Traffic Control & Street Name Signs

Total Inventory = 32,450



### School Zone Flashers

Total Inventory = 80



### Signals Equipped with Video Detection

Total Inventory = 74



### PTZ Cameras

Total Inventory = 20



### Radar Trailers & Dynamic Message Boards

Total Inventory = 7

# Traffic Engineering

## REAL.TEXAS.FACTS.

### FY 18-19 Budget & Milestones

Annual Traffic Control Devices Upgrade	\$230,000
Traffic Operations (Salaries & Equipment)	\$1 Million
Streets & Freeway Lighting	\$1.24 Million



- Speed studies = 69
- Accident studies = 45
- Visibility reviews = 58
- Miscellaneous studies = 222
- Plat & zoning reviews = 150
- Plan reviews = 265



- 5,234 Street lights maintained by Oncor
- 1,270 Highway lights maintained by City staff
- 4,224 Hours dedicated to traffic studies
- 519 Reviews and studies completed
- 115 Street lane miles marked with paint or buttons



# EQUIPMENT SERVICES

REAL.TEXAS.SERVICE.

## EQUIPMENT SERVICES

2018-19  
Highlights

### Fleet Inventory

**896** TOTAL ASSETS

- 85 Heavy Duty Trucks
- 331 Light Duty Trucks & Cars
- 28 Refuse Trucks
- 57 Off Road Equipment
- 95 Trailers
- 137 Police Patrol Vehicles
- 163 Small Equipment
- 19 Vehicles powered by Alternative Fuel



### Fuel Transactions & Management

**698,000**



TOTAL GALLONS

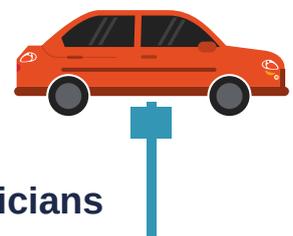
- 46,000 Transactions for Diesel, Gasoline & Propane



### Production Operations

**7,812** WORK ORDERS

- 22,148 Total Labor Hours
- 17 Fleet Technicians
- 53:1 Ratio of Equipment/Technicians



# Geographic Information Systems (GIS)

## REAL.TEXAS.FACTS.

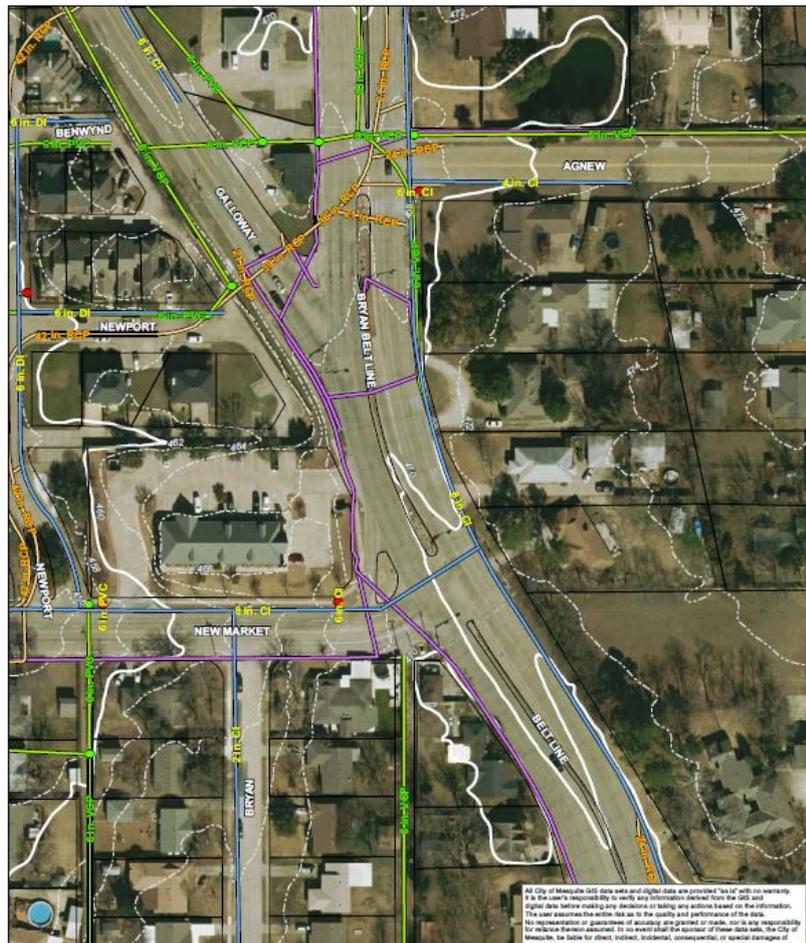
### Department Responsibilities:

- Update and maintain over 49,000 parcels and 66,000 address points in Dallas and Kaufman counties
- Maintain geographic relevant data for all City departments
- Create digital PDF, webmaps, and paper maps for City Staff and City Council
- Maintain public webmaps, which include street construction, garbage and recycling days, voting precincts, and polling locations
- Updating utility lines in the WIMP through engineering plans
- Maintain and map 35 critical public works infrastructure files and over 125,000 individual assets
- Provide services to over 20 City departments

### Mesquite Land Facts

- City Square Miles: 47.456
- ETJ Square Miles: 15.858

**Total Staff: 7**  
**FY 18-19 Budget:**  
**GIS Operating Budget =**  
**\$386,150**



# Infrastructure Management

## REAL.TEXAS.FACTS.

The Infrastructure Management Division is tasked with evaluating the existing water, sanitary sewer, drainage and traffic inventory within the City to determine which assets should be maintained next and what level of maintenance should be performed. Overall responsibilities include:

- Develop and maintain Asset Management Plans for the following infrastructure: water, sanitary sewer, drainage, paving (public streets, alleys and sidewalks), signs, signals and markings
- Develop criteria to assess and rank infrastructure condition
- Insure infrastructure condition data is adequate to assess accurate infrastructure condition
- Produce short and long term plans for rehabilitation of existing infrastructure rehabilitation
- Produce planning-level costs for projects in short and long term plans
- Conduct complex financial analysis related to infrastructure programs and prioritize program changes to increase efficiencies and improve effectiveness

## 2018-19 Highlights



A major project of the Division was undertaking implementation of a new asset management software, Cityworks. The new software will better enable the City to track work history on each asset to streamline the City's scheduling and maintenance practices.

### Engineering Design Manual

Staff assisted a consultant in developing a comprehensive manual for infrastructure design and construction to enhance the City's development and capital improvement process.

The Division provided in-house design and contract management for over \$2.5 million in utility replacement and street construction projects.

FY 18-19 IM Operating Budget = \$250,000

# Public Works

## REAL.TEXAS.CHALLENGES.

### Streets

- Aging infrastructure
- Need additional funding for roadway maintenance
- Need additional street crew personnel
- Additional equipment needed to increase efficiencies in street maintenance

### Traffic Engineering

- Additional staff to monitor 24/7 traffic management system
- Additional Engineer to optimize signal timing and coordination
- Funding for essential equipment including upgrading the school flasher system

### Drainage Utility District

- Lack of funding for drainage and erosion control projects
- Additional funding needed to start addressing large backlog of identified drainage and erosion projects



# Social Media Information

REAL.TEXAS.PEOPLE.



[www.facebook.com/mesquitetexas](http://www.facebook.com/mesquitetexas)



[www.nextdoor.com](http://www.nextdoor.com)



[www.pinterest.com/cityofmesquite](http://www.pinterest.com/cityofmesquite)



[www.instagram.com/cityofmesquite](http://www.instagram.com/cityofmesquite)



[www.twitter.com/cityofmesquite](http://www.twitter.com/cityofmesquite)



[www.youtube.com/cityofmesquitetexas](http://www.youtube.com/cityofmesquitetexas)



[www.linkedin/company/city-of-mesquite](http://www.linkedin/company/city-of-mesquite)



# Public Works Progress Report

*Produced by Kathy Fonville & Kimberly Garduno*