

SANITARY SEWER OVERFLOW INITIATIVE

City of Fort Worth Case Study



Presented By – Fort Worth Water Department

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SANITARY SEWER OVERFLOW INITIATIVE

- System Overview
- Regulatory History
- Fort Worth SSOI Program
- Public Education



Fort Worth System

- Active Wastewater Accounts = 219,355
- Wholesale Wastewater Population Served = 318,519
- Collector Mains (Miles) = 3,059
- Permitted Wastewater Treatment Capacity (MGD) = 166
- Wastewater Treated Daily-Average (MG) = 94.41*

* Includes Wholesale Customers



Regulatory History

- 1989 EPA requests Fort Worth's plan to address wet weather overflows in the collection system
- 1993 EPA issued Administrative Order (AO)
- 8 years to complete AO requirements
- 1994 Wet Weather Program (WWP) began
- 1996 Water Department begins Preventive Maintenance Program for sanitary sewer collection system
- 2000 EPA closes AO – 1 year ahead of schedule
- Wet Weather Program - \$ 215,743,000
- Entered SSOI April 2007



Fort Worth Program

- Fort Worth focused on maintenance, renewal, and replacement of deteriorating and capacity challenged infrastructure
- Fort Worth committed funds for infrastructure rather than penalties
- Team approach

Team Approach

- Engineering
- Field Operations
- Pretreatment
- Public Education
- Regulatory
- Laboratory
- Village Creek WRF

Field Operations Wastewater



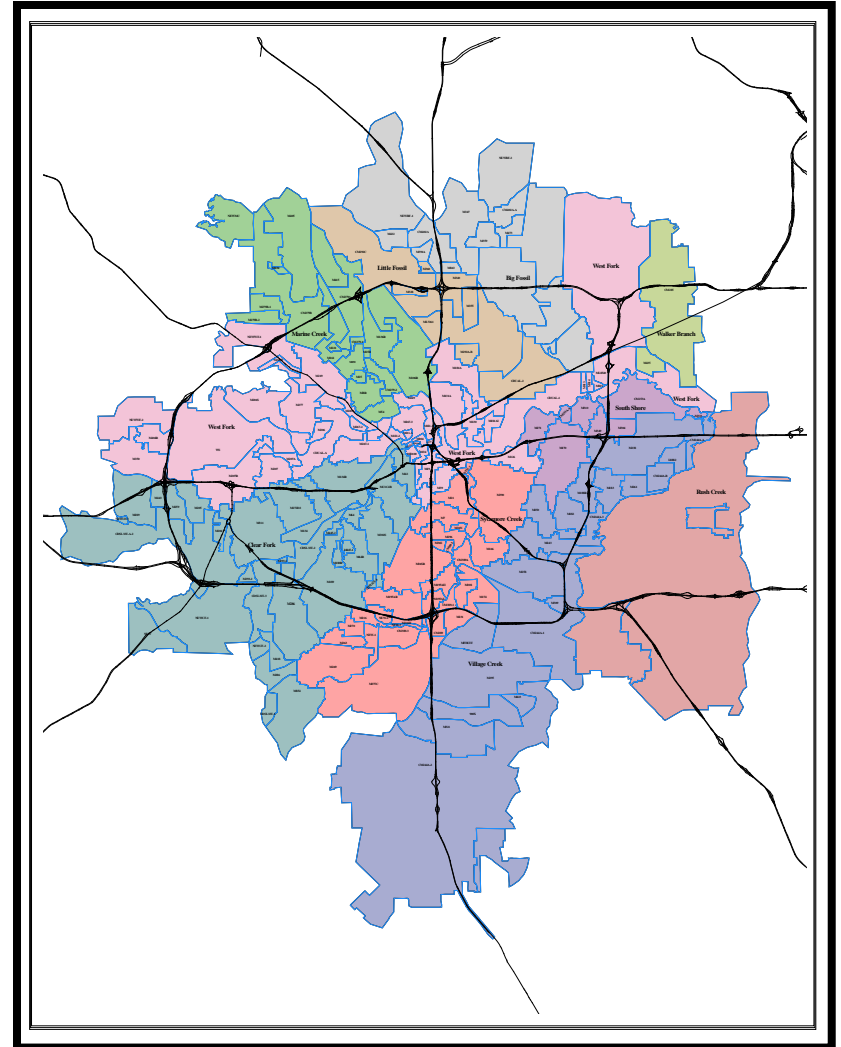


Wastewater - General Information

- Wastewater Collection System Operations & Maintenance
- One Facility
- 350 Square Miles Service Area
- 24/7 Operations
- \$19.7M Budget, 184/146 Employees
- 23 Wholesale Customer Cities
- Over 1.1 Million Customers

Wastewater Collection System

- 3,059 miles
- 1 ¼ " - 108" (Gravity/Force)
- 9 Major Basins
- 167 Sub-Basins
- 53,783 Manholes and junction chambers
- 14,198 work orders/yr.



Repeat Offenders

- Team Effort
- Easements Clearing
- Responsive First Responders
- CCTV Follow-Ups
- Repairing Problems
- Recommendations
- Additional Programs



Wastewater Sections

184/146 10 Sections

-
- 30 - Sewer Mains
 - 30 - Sewer Taps & Services
 - 13 - Sewer Asset Management (SAM)
 - 37 - Sewer Stops (SERI Sewer Emergency Response Investigators)
 - 36 - Preventative Maintenance (Cleaning and CCTV)
-
- 11 - Warehouse (Support)
 - 11 - Dispatch (Support)
 - 04 - Earthfill (Support)
 - 07 - Administrative Services (Support)
 - 03 - Training (Support)

Sewer Asset Management

- Maintenance of our large diameter lines
- Aerial and creek crossings
- Odor control /corrosion devises
- Sanitary sewer easements
- Emergency by-pass pumping support
- Field investigations
- Manhole rehabilitation activities
- Assist neighboring cities, and many other duties.



Monitoring Equipment

Fort Worth TX SMARTCOVER MONITORING SYSTEM
 You are logged in as: hundvall :: Administrator :: Logout

Map Alarms and Alerts System Operations Multi Graphs Contact Support

SmartCover® Unit Location: 2201 Burleson Retta Rd ID 46392 Application: Collection Level

Charts Management Status Alarm Settings Info Maintenance

2201 Burleson Retta Rd ID 46392

	Enabled	Disabled
Tilt 1	<input checked="" type="radio"/>	<input type="radio"/>
Tilt 2	<input checked="" type="radio"/>	<input type="radio"/>
Level Alarm	<input type="radio"/>	<input checked="" type="radio"/>
SmartCover®	<input type="radio"/>	<input checked="" type="radio"/>
TrafficKush®	<input type="radio"/>	<input checked="" type="radio"/>

Update

Alarm Notification Holdoff

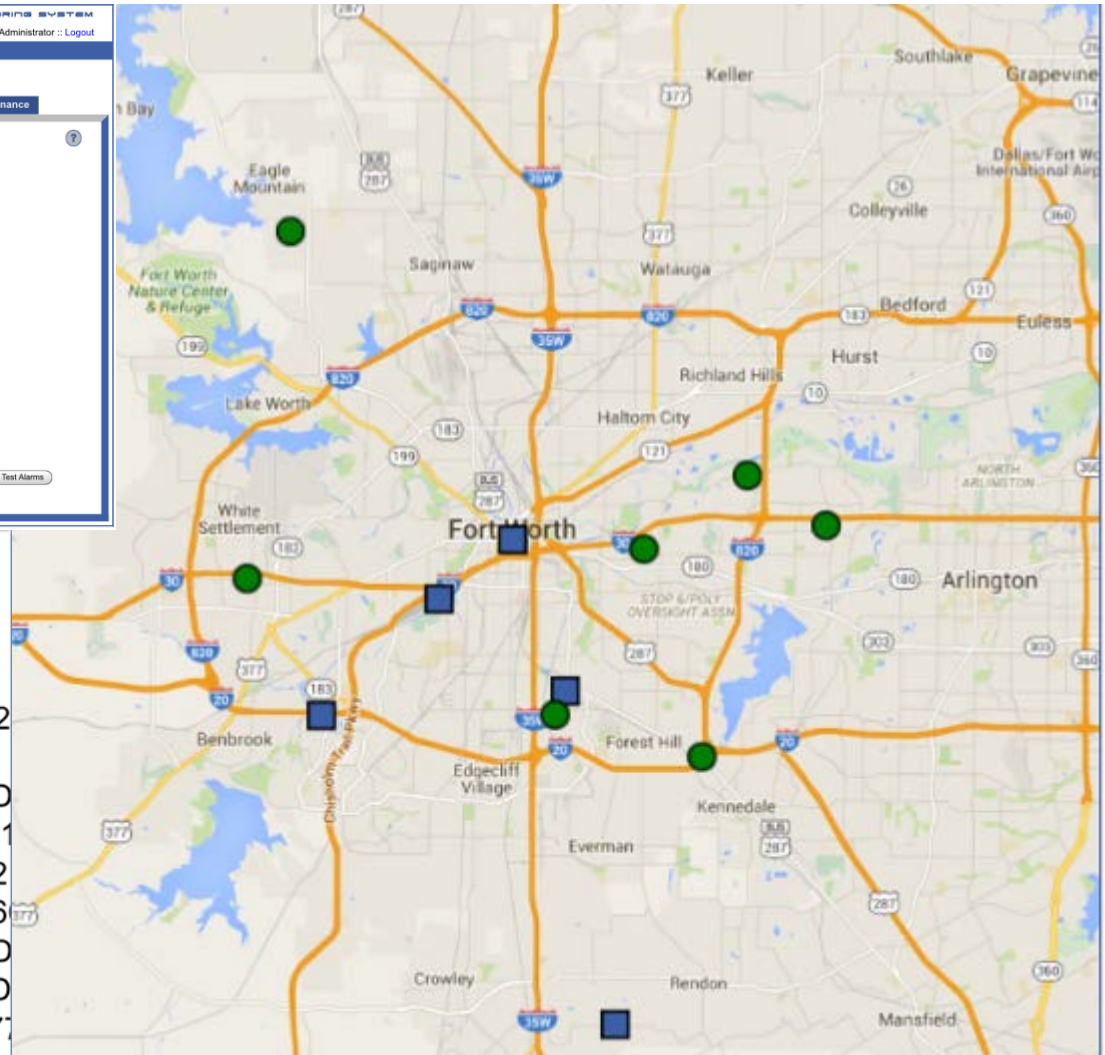
Set Holdoff: Select

Off Until: n/a

All Units:

Update

Test Alarms



LOCATIONS

- 1420 Elva Warren ID 26929
- 1604 Rogers Rd ID 10592
- 2104 Stratford Park ID 32211
- 2201 Burleson Retta Rd ID 46392
- 2600 Cherry Ln ID 20120
- CRITICAL 5317 Mansfield Hwy ID
- CRITICAL 1600 Cooks Ln ID 5911
- CRITICAL 209 W 8th St ID 22442
- CRITICAL 4370 Sahara PI ID 446
- CRITICAL 6300 Randol Mill Rd ID
- CRITICAL 6400 Overton Ridge ID
- Lake Country Golf Course ID 177

Sewer Stops (First Responders)

- Respond to customer concerns and complaints
- First Responder to all sewer system back-ups, flooded homes and businesses due concerning wastewater.
- Trace out service lateral and locate city side clean outs
- Routine degrease, root-cut and manhole inspections



Preventative Maintenance CCTV Inspection

- Televisize Immediately After Overflow Or Stop Is Controlled
- Determine Cause



Structural Rankings

Structural Ranking based on defects

Rating	Description
5	Structural failure has occurred and/or line has collapsed. Pipe has deteriorated beyond the ability to make intermediate repairs. Replace/rehabilitate immediately.
4	Structural failure identified failure imminent and/or partial collapse exist. Spot repairs difficult due to condition/deterioration/age. However pipe could possibly be maintained for 12 to 24 months +/-
3	Pipe is in poor condition. Major structural defects observed. Estimated time before failure 2-6 years +/-
2	Pipe is in fair condition with minor to moderate structural defects documented. Estimated time before failure 6 - 10 years +/-
1	Pipe in good/excellent condition. Estimated time before failure greater than 10 years.

Sewer Mains

- Repair leaks and breaks
- In-House replacements
- Repair, rebuild, replace and adjust existing manholes



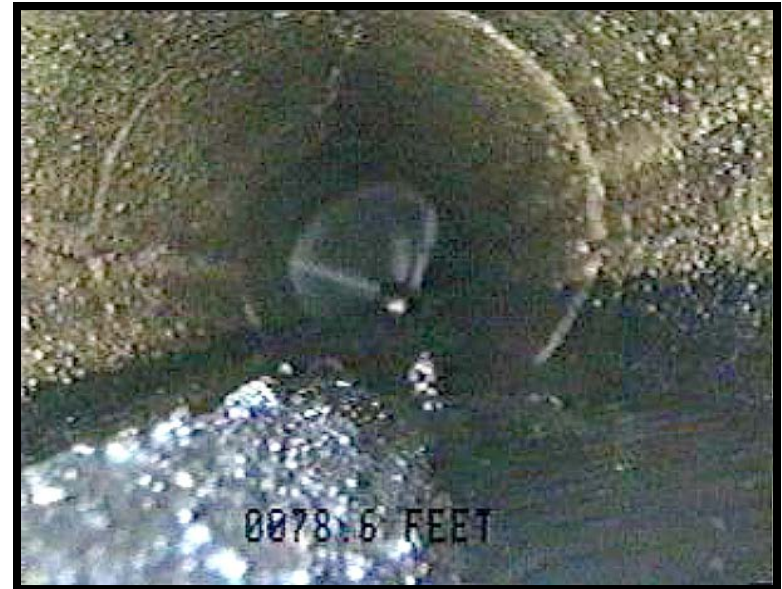
Sewer Taps & Services

- Repair, replace/renew and/or adjust existing services
 - (Long and Short Side Services)
- Install new taps, cleanouts, services and manholes



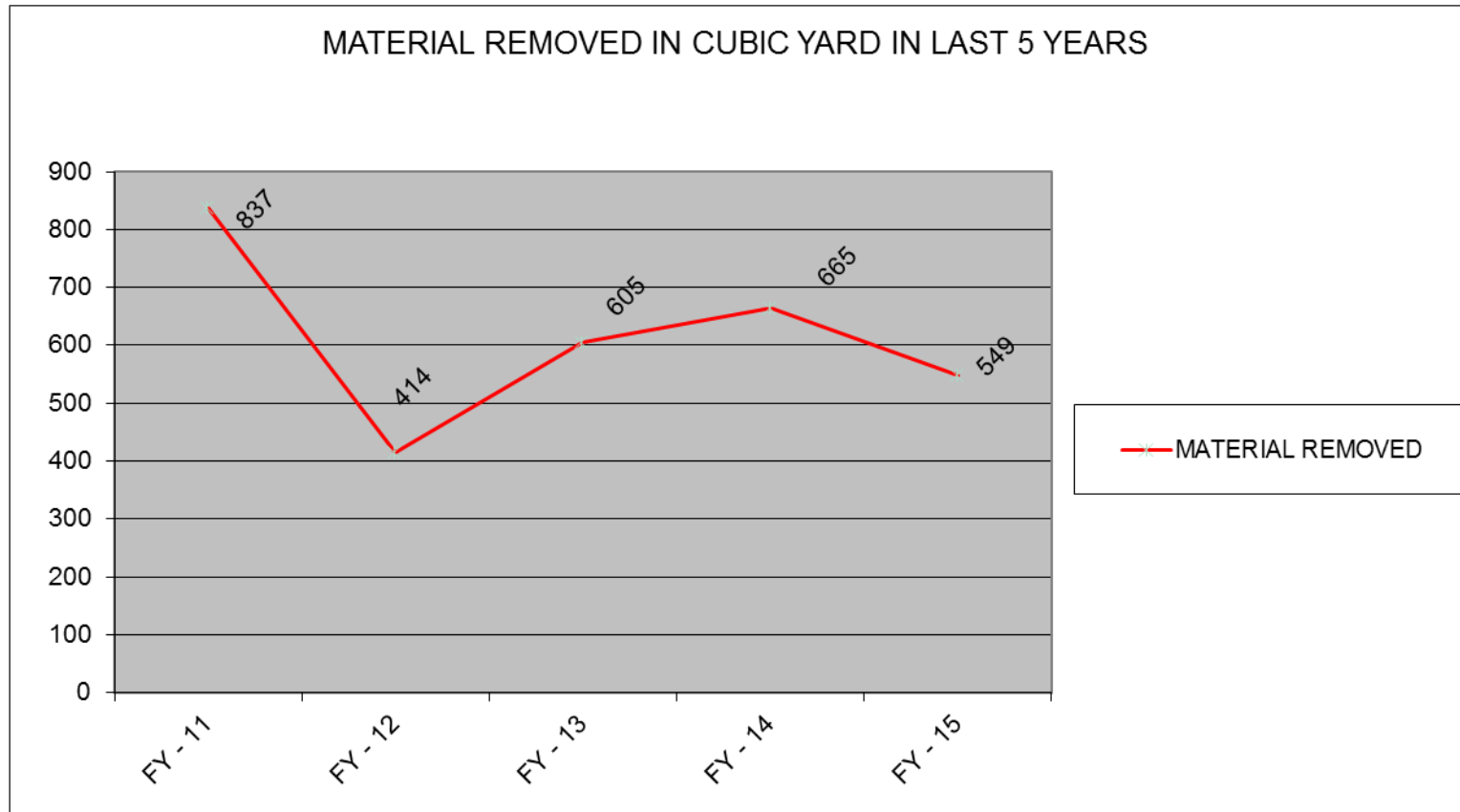
Preventative Maintenance Cleaning

- Cleaning
- Clean sewer lines of entire collection system on a pre-defined cycle (At present trying to clean entire system in 10 Year cycle)





Collection System Debris





Preventative Maintenance

Business Plan Goals each Fiscal Year

- Cleaning Goal 1.5M Linear Feet
- CCTV Goal 1.5M Linear Feet

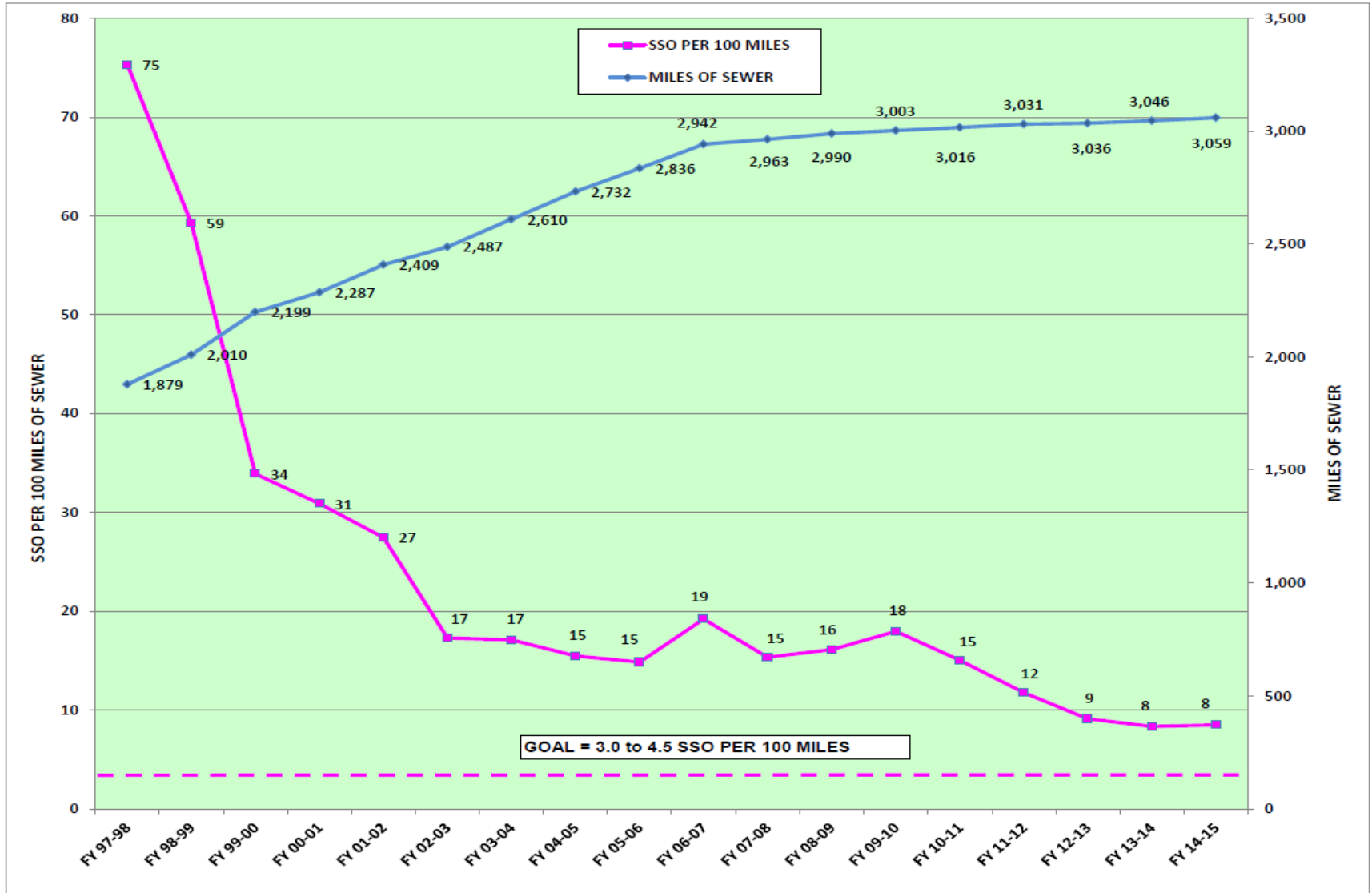
PM Section	FY11	FY12	FY13	FY14	FY15
Sewer Cleaning (LF)	1,722,969	1,415,580	1,727,816	1,641,863	1,510,775
Sewer CCTV inspections (LF)	1,703,394	1,522,724	1,580,236	1,531,533	1,577,817

Root Causes

Main Cause of Overflow	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15
Overflow due to debris build-up in line	243	127	114	134	100
Overflow due to grease build-up in line	161	119	127	90	76
Overflow due to heavy rain	2	67	0	0	56
Overflow due to roots in line	34	25	23	11	7
Overflow due to structural failure	13	16	7	14	15
Total Overflows (From Oct. 1 – to Sept. 30 of Next Year)	459	359	277	254	259/214 +1%
	-18%	-22%	-23%	- 9%	-16%



Fort Worth Sanitary Sewer Overflows per 100 Miles of Collection System Piping



Hazards

- Raw sewage
- Diseases
- Children, the elderly, and people with suppressed immune systems
- When SSOs contaminate public places and waters of the U.S

Additional Steps

- Sandbagging all overflows
 - Directing flows in specific areas
- Posting Caution Signs
 - Avoid citizens, animals, kids, etc.
- Flow Estimation Chart
 - Calculate overflow rates

Flow Estimation Chart

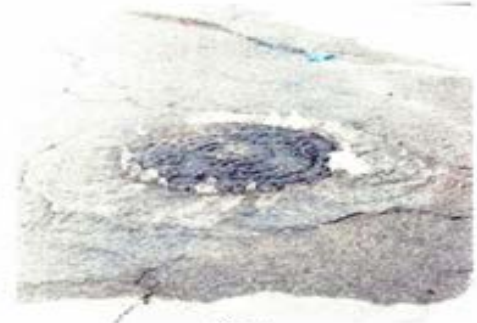
Flow Estimation Pictures



5 gpm



25 gpm



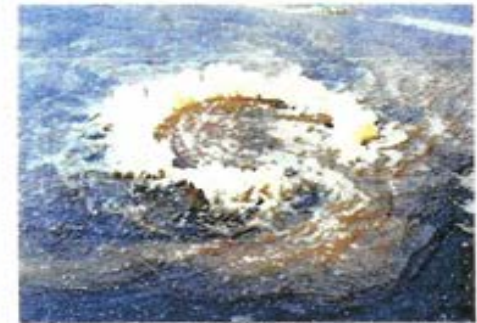
50 gpm



100 gpm



150 gpm



200 gpm



225 gpm



250 gpm



275 gpm

Rain Fall 2015

2015 Wettest Year Ever...

Year - **59.49"** * May - **16.96"** * November - **9.86"**





Sanitary Sewer Overflow Standard Operating Procedures

Sanitary Sewer Overflow (SSO) Response Procedure

- Introduction (Intent and Responsibilities)
- Reporting Responsibilities
- Normal SSO Reporting Procedures
- Reporting Schedules
- Internal Procedures and Notification
- Severe Rain Event Reporting

Appendix

- Notice of Spill from a Wastewater Facility
- Important Contact Information
- Water Quality Noncompliance Notification
- Flow Estimation Chart
- Public Education Coordinator Process
- TCEQ Chapter 319

Magnificent Seven

1. Wastewater Master Plan
2. Sewer Asset Management
3. First Responders
4. PM / ICAP (Data)
5. Root Eradication
6. Repairs and Renewals (CIP)
7. FOG

Team Effort Results

1. Wastewater Master Plan - Future
2. SAM - Clearing and Maintaining Access (Maintaining our easement for access purpose)
3. STOPS - Clearing Blockages (Stops – Stopped up lines are potential for SSO in future if not clean)
4. PM / ICAP – Cleaning & CCTV Inspection (Condition assessment & evaluating root cause of SSO as well as life expectancy of sewer lines)
5. Root Eradication – Eliminate the source of roots
6. SMAIN/SSERV - Fixing Root Causes with repairs or In-House Relay projects
7. Pre-Treatment Services - FOG

Motivation

Some need more than others!!!



Public Outreach

- Bill inserts
- Bill messages
- Booths at events
- Partner with North Central Texas Council of Governments through FOG initiative





Just as fat, oil and grease can cause blockages in your arteries, they can do the same to sewer pipes.

Garbage disposals and detergents that dissolve grease may just pass the problem down the pipe.



Grease comes from meat, salad dressing, butter, margarine, shortening, cooking oils, lard, dairy products, baked goods, food scraps and many other common delights.

October 2015

240,000

Call us first

If you do experience a sewer back up in your home, call the Fort Worth Water Department before calling a plumber.

817-392-4477

A crew will make sure the blockage is not in the city-owned sewer main. You will be notified of what is found and whether you need to call a plumber.

Ways you can help

- ✓ Always use a paper towel or spatula to thoroughly scrape food scraps and residue from plates and pans into the garbage before washing.
- ✓ Let melted oils used for cooking solidify in a container on the counter or in the refrigerator.
- ✓ Take all used solid and liquid cooking oil to the free Environmental Collection Center. Used grease can be recycled into other products. For information, call 817-392-1234.
- ✗ Never pour oil and grease down the sink or any household drain.
- ✗ Never pour oil and grease down a storm drain.

Public Notification



Public Notification

- TAC Chapter 319 - General Regulations Incorporated Into Permits
- **Subchapter C: Public Notice Of Spills Or Accidental Discharges From Wastewater Facilities Owned Or Operated By Local Governments**
- 319.301 - 319.303
- **Originally Effective - Dec. 30, 1999**
- **Revisions Effective - March 31, 2011**

???? Questions ???? ?

