Capacity, Management, Operation & Maintenance (CMOM) Program

CITY OF TYLER

Tyler Water Utilities

October 2017

PIPELINE ANALYSIS LLC
WASTEWATER COLLECTION SYSTEM ENGINEERS

Capacity, Management, Operation and Maintenance (CMOM) Program

Forward:

This CMOM Program is a reference document for current and planned procedures and practices within the City of Tyler Water Utilities Department. The document should be reviewed by staff every two years and updated as procedures or processes change. Revisions should be logged and distributed to each of the staff members designated.

Document Distribution List

Copies of the CMOM Program have been distributed to the following:

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CMOM Plan Update Log

Rev. No.	Date	Section/Page	Description
1	10/2/2017	Ver.1.0	CMOM Program
2	4/4/2018	Page 5	CMOM Program – Change Section 1.2 Reference form 2.11 to 2.12
3	4/4/2018	Appendix D	Updated SSORP Narrative Only per EPA comments. Now Version 2.
4	2/22/2019	Page 50	Updated Table 4, Appendix A SOP Description
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Tyler Water Utilities
CMOM Plan

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Tyler Water Utilities
CMOM Plan

SECTION 1

CMOM Background

1.1 Introduction

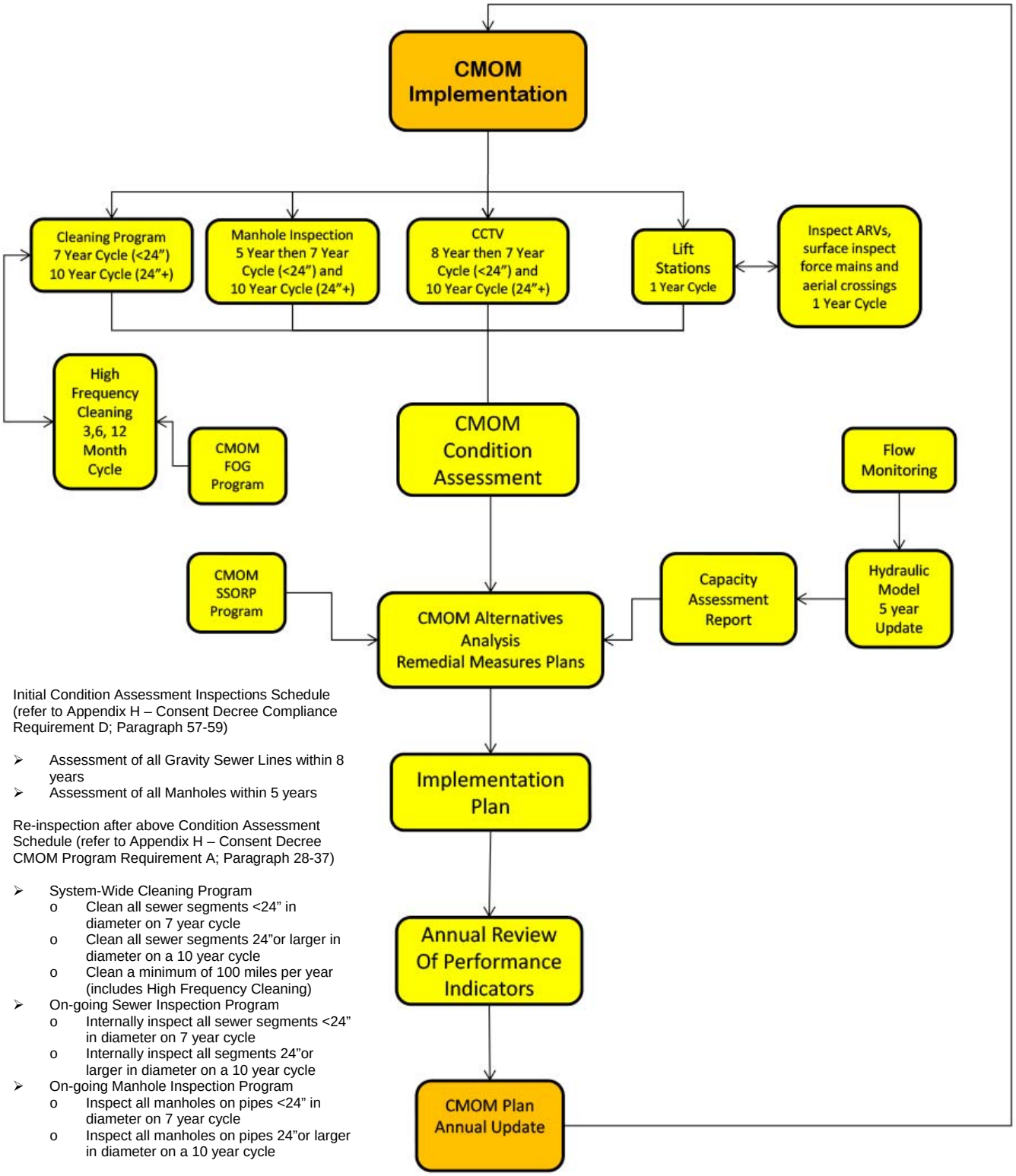
The Environmental Protection Agency (EPA) has prepared various guidelines to address Sanitary Sewer Overflows (SSO's). This CMOM Plan documents processes and procedures that impacts how the City manages and maintains its wastewater collection system. A major component of the EPA's SSO abatement program relates to the Capacity, Management, and Operation & Maintenance (CMOM) Plan. The CMOM Plan is intended to provide a structured plan for collection system management. The objective is to optimize system performance and develop specific plans for capital improvement and maintenance activities needed to operate, manage, and maintain collection systems and avoid SSO's. Figure 1 shows the relationship of the CMOM Plan within a comprehensive collection system renewal program.

Figure 2 and Table 1 present a summary of Tyler Water Utilities (TWU) wastewater collection system assets. The wastewater collection system currently consists of 655 miles (3,455,989 linear feet) of gravity sewers, 8,241 manholes, 20.5 miles (108,257 linear feet) of force mains and 24 sewer lift stations. The system provides service to approximately 110,500 residents. Stretched end to end, the Tyler mainline sewers would reach from Tyler to Atlanta, Georgia. Note that this mainline sewer length does not include the private lateral sewers that would approximately double the miles of sewer in the system. The majority of mainline sewer is vitrified clay pipe. The need to proactively manage this valuable asset becomes increasingly important as the system ages. The City collection system has a replacement value of approximately $518 million.

The Consent Decree (CD) requirements (refer to Appendix H) include strict guidance and timelines that must be followed during the term of the consent decree. The CMOM Plan is intended to be an ongoing program and will be used to manage the collection system both during and after the CD term.

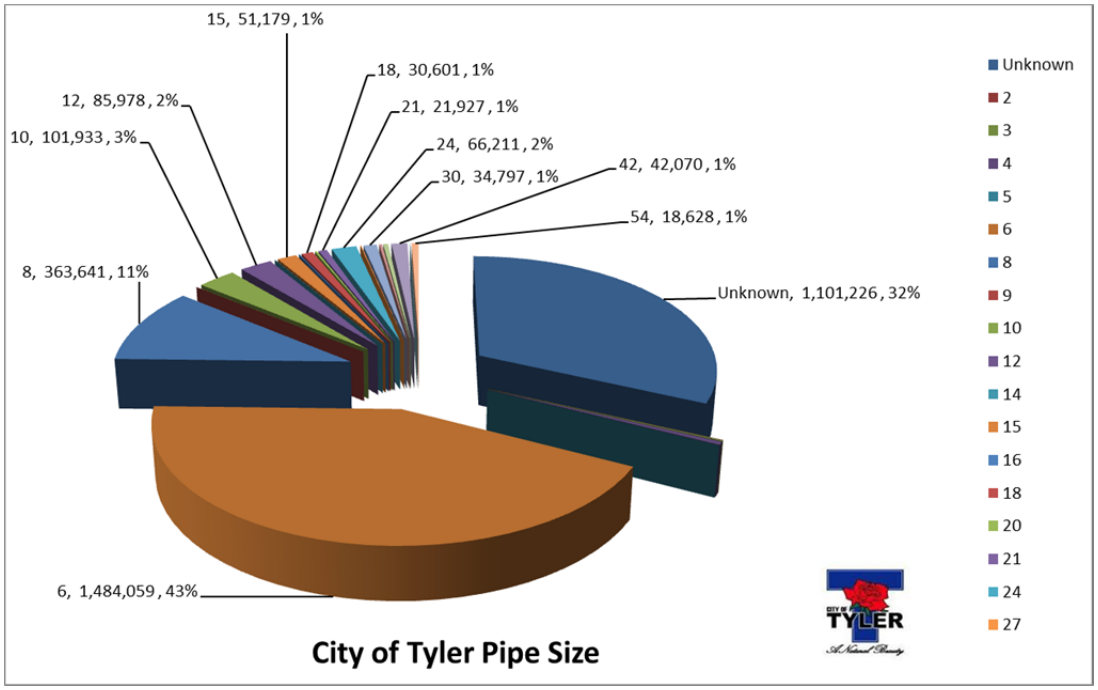
If any discrepancy is noted between the CMOM Plan and the consent decree, then the consent decree will take precedence and the CMOM Plan will be updated to correct or clarify any discrepancy.

Figure 1 - CMOM Process Diagram



1. Initial Condition Assessment Inspections Schedule (refer to Appendix H – Consent Decree Compliance Requirement D; Paragraph 57-59)
   - Assessment of all Gravity Sewer Lines within 8 years
   - Assessment of all Manholes within 5 years
2. Re-inspection after above Condition Assessment Schedule (refer to Appendix H – Consent Decree CMOM Program Requirement A; Paragraph 28-37)
   - System-Wide Cleaning Program
     - Clean all sewer segments <24" in diameter on 7 year cycle
     - Clean all sewer segments 24"or larger in diameter on a 10 year cycle
     - Clean a minimum of 100 miles per year (includes High Frequency Cleaning)
   - On-going Sewer Inspection Program
     - Internally inspect all sewer segments <24" in diameter on 7 year cycle
     - Internally inspect all segments 24"or larger in diameter on a 10 year cycle
   - On-going Manhole Inspection Program
     - Inspect all manholes on pipes <24" in diameter on 7 year cycle
     - Inspect all manholes on pipes 24"or larger in diameter on a 10 year cycle

Figure 2
Wastewater Collection System Summary



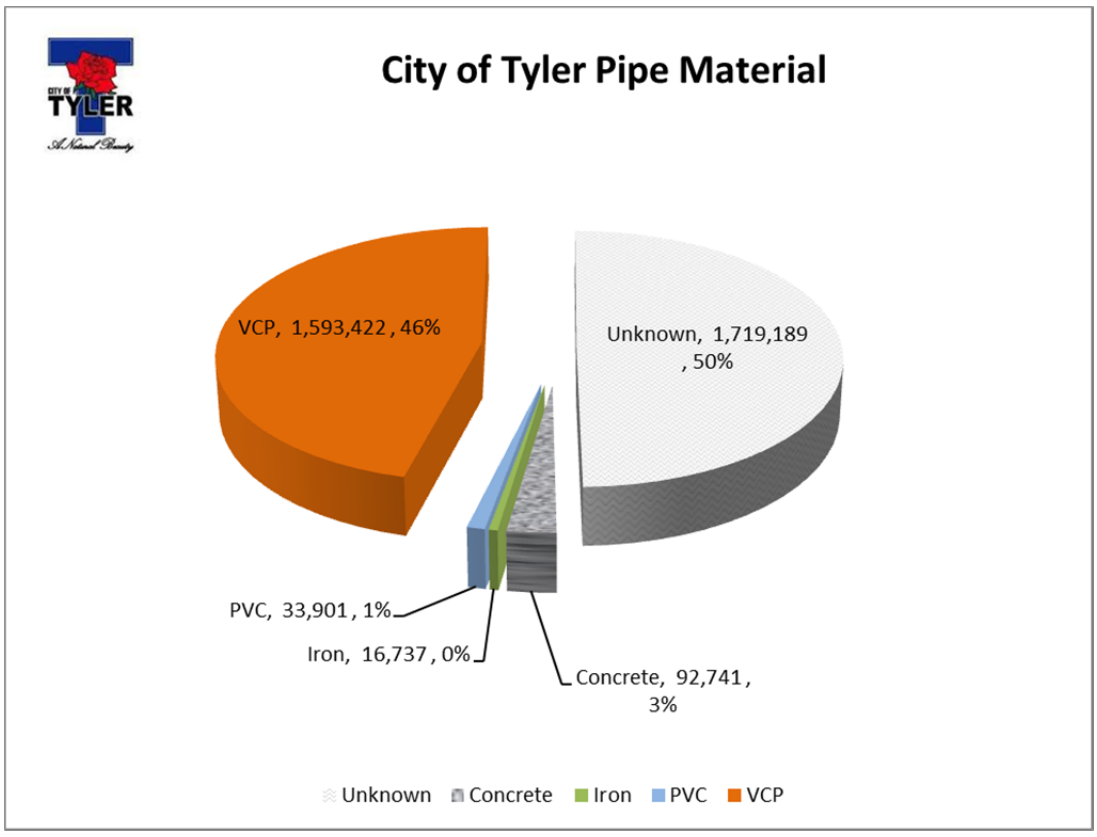


Table 1
Collection System Inventory by Pipe Size and Material

Pipe Size	Length
2	1,197
3	3,903
4	14,532
5	114
6	1,484,059
8	363,641
9	482
10	101,933
12	85,978
14	394
15	51,179
16	2,808
18	30,601
20	6,181
21	21,927
24	66,211
27	2,529
30	34,797
32	7,451
36	13,102
42	42,070
48	1,048
54	18,628
Unknown	1,101,226
Total	3,455,989

Data Source: GIS Asset Database.

MATERIAL	Total	%
Unknown	1,719,189	50%
Concrete	92,741	3%
Iron	16,737	0%
PVC	33,901	1%
VCP	1,593,422	46%
Total	3,455,989	100%

Iron includes Cast Iron, Ductile and Corrugated

1.2 CMOM Plan Version

CMOM is a comprehensive endeavor to optimize collection system performance at minimum cost. This CMOM Plan is dynamic and will change over time as deficiencies are addressed and new priorities and processes established to advance the efficient management of the collection system. The CMOM Plan should be reviewed annually and updated as needed to address new concerns. The performance indicators presented in Section 2.11 will be used to measure progress and where revisions to process or procedures are needed. New performance indicators may be developed to track specific activities. Staff will use the CMOM Plan as guidance in performing day to day activities. Where specific expanded narrative is helpful, then SOP's (Standard Operating Procedures) will be developed or revised, and included in Appendix A. Keeping this CMOM document up to date will provide a sustainable resource for future supervisors and management.

1.3 Tyler Water Utilities 's Mission and Purpose of the CMOM Programs

Mission Statement:

> *Tyler Water Utilities is dedicated to providing safe drinking water along with sanitary sewer services for the citizens of Tyler, while at the same time providing the highest level of Customer Service.*

Program Objectives

- *Identify, evaluate, and address areas of excessive infiltration and/or inflow in the wastewater collection system*
- *Develop and maintain adequate capacity in the wastewater collection system*
- *Proactively inspect, assess, and maintain wastewater collection system assets to increase reliability and extend asset service life at the least cost to customers*
- *Develop and implement standard operating procedures (SOPs) and train staff on an ongoing basis to support succession planning and effectively manage operations and maintenance.*
- *Maintain records of work performed on the wastewater collection system to measure CMOM performance*
- *Adequately fund wastewater collection system operations, maintenance, and capacity development*
- *Communicate with and educate the public about how their activities can impact the wastewater collection system*

1.4 Report Organization

The CMOM Plan contains detailed information associated with the management of the wastewater collection system. The narrative section of the report is supplemented with additional information in the referenced appendices. On an annual basis, the CMOM Plan Report should be reviewed and updated. The distributed reports should each be updated with the revised pages. The Document Update Log in the front of the report should specify the pages that were updated, the date and description of the updated materials. It should not be necessary to reprint the entire manual, rather only those pages that have been modified. Depending on the magnitude of the changes, then it may be necessary to reprint and issue a new revision number.

1.5 CMOM Program Activities, Resources and Enhancements

TWU currently has a number of successful utility support programs that will require very little integration into the overall framework of the CMOM. The following current programs/activities have been identified as having functions needed on an on-going basis:

- Geographic Information System (GIS)

  The GIS Department provides support to all city departments. GIS support includes:

  - Maintain GIS data layers
  - Create maps of data for different projects and departments
  - Detailed analysis of City data and infrastructure
  - Provide support to data users
  - Maintain an inter-local agreement between East Texas 911, Smith County Appraisal District and the City
  - Financial reporting of City data to the public (OpenGov)
  - Automation of Business Intelligence of various departments
  - Compare benchmark data to improve City processes (ICMA)
  - Field collection of City assets
  - Computerized Maintenance Management System (CMMS)

  CityWorks™ work order software is currently utilized by TWU and the mapping interface is supported by the GIS Department. New Edge Services LLC hosts the CityWorks™ software for the city and provides system administration. This software governs assets, maintains inventory and work orders, automates tasks and tracks information to assure assets and costs are accurate. Work orders are generated for maintenance activities. Equipment tracking, inventory management and vendor data are maintained within the system.

- Hydraulic Modeling

  TWU historically outsources hydraulic modeling in association with the Sewer System Master Planning efforts. Capacity assessment is an on-going effort that is generally performed on a 5-year cycle in association with the master planning effort. Capacity assurance is an on-going effort that is generally performed on an as needed basis for areas of high growth and as new industrial demands is identified.

  The city-wide hydraulic wastewater system model provides TWU staff with the tool for analyzing system conveyance capacities, bottlenecks, and potential overflow locations. The hydraulic model facilitates system analysis, aids in development of system improvements, produces informational maps/exhibits, and predicts the system's response to future improvements.
  The city-wide hydraulic model is SewerGEMS developed by Bentley Software. SewerGEMS is a fully calibrated dynamic sanitary sewer modeling program that is used by staff for:

- Wastewater Flow Capacity Evaluation
- Overflow Management
- Infiltration/Inflow Modeling
- System Deficiency Identification
- Consent Decree Compliance
- CIP Development/Costs
- New System Design

- Record Drawings and Standard Specifications

  Utilities and Public Works maintain record drawings and provide the design manuals for regulating construction within the City. The City provides documents so that developers, engineers and contractors can plan, design and construct successful projects within the City and its Extra-Territorial Jurisdiction (ETJ). These documents apply to streets, drainage, water and sewer facilities that are either privately funded facilities that will be dedicated to the public or publicly funded facilities. The following documents are available for download from the City web site at http://www.tylerpublicworks.com/City-Standards:

  - Design Guidelines
  - Standard Specifications
  - Standard Details
  - Approved Contractors List
  - Construction Contract Documents

- Budgeting and accounting procedures

  The Finance Department is responsible for developing, implementing, and maintaining financial and accounting systems in conformity with generally accepted accounting principles; processing and disbursing funds for payments; conducting internal financial audits; managing investments of cash balances; publishing appropriate financial statements and reports; and, managing bonded indebtedness. The Finance Department produces financial reports to management. In addition, the Finance Department acts as liaison to the City's underwriters, investors, trustees, and other outside parties in the sale of bonds.

  The goal of the Finance Department is to provide comprehensive and transparent financial and fiscal management by maintaining. Every effort is made to ensure that financial information related to the municipal government is easily accessible and readily available.

- Closed-Circuit Television (CCTV) Inspection

  TWU uses in-house staff and contractors to visually establish the sanitary sewer pipeline conditions. Any structural problems are recorded along with a detailed log. Infiltration occurs when groundwater seeps into sewer pipes through cracks, leaky pipe joints and/or deteriorated manholes. Inflow is storm water that enters the wastewater system through roof drains, area drains or foundation drains illegally connected directly to a sanitary sewer pipe. Internal

inspection of gravity sewer lines will determine the best repair options which in turn will reduce overall project costs. Field documentation, using the Pipeline Assessment Certification Program (PACP) and digital video are used to document all findings.

- High Frequency Cleaning and Root Removal Program

  The City maintains a listing of sewer pipe that requires periodic cleaning to prevent blockages that may lead to SSOs or spills. The "High Frequency Cleaning Program" list (see Appendix E) is part of the preventive maintenance program to reduce the number of SSOs within the city. The list is maintained by the Wastewater Collection Superintendent. Specific line segments are placed on a 3 month, 6 month or 12 month cleaning cycle. The list is revised and updated based on cleaning findings and as line segments undergo re-inspections and rehabilitation.

- Safety and Training

  Staff safety assurance and training activities are monitored by the Operations Manager and Safety Committee. Each department has specialized safety concerns that are addressed during scheduled safety meetings. Both formal classroom and informal on-the-job discussions are used to promote safety.

- Sanitary Sewer Overflow Response Plan (SSORP)

  The Sanitary Sewer Overflow Response Plan (SSORP) is designed to ensure that each confirmed report of a sewer overflow and spill is dispatched to the appropriate crew so the impact of the overflow can be minimized with respect to public health, adverse effects on water quality, aquatic life and customer service. The procedures are outlined in the manual and provide guidance to staff in responding to SSOs/Spills and documents procedures to evaluate the cause of SSOs/Spills. The SSORP also includes provisions to ensure appropriate notification and reporting to local, state and federal authorities where necessary. Appendix D presents the TWU SSORP.

- Fats, Oil and Grease (FOG) program

  The TWU is responsible for maintaining 655 miles of publicly owned sanitary sewer pipelines and 24 lift stations. To keep its sewer system functioning properly, the TWU has implemented a Fats, Oils, and Grease (FOG) Control Program to minimize blockages in the sewer lines that may cause sanitary sewer overflows (SSOs). Appendix C presents the TWU FOG Program Manual.

TWU has implemented many of the programs necessary for sustained maintenance of the wastewater collection system. As these various support programs are modified and expanded, the CMOM Plan will be updated to include program revisions.

1.6 Guidance Documents and Industry Standards

The following reference documents were utilized during the development of the CMOM Plan:

- USEPA Guide for Evaluating Capacity, Management, Operation and Maintenance Programs for Sanitary Sewer Collection Systems; Office of Enforcement and Compliance Assurance. EPA 305-B-05-002; January 2005.
- Region IV EPA CMOM Self-audit Checklist
- USEPA Report on Condition Assessment of Wastewater Collection Systems, Office of Research and Development, EPA/600/R-10/101, August 2010.
- USEPA Condition Assessment of Wastewater Collection Systems, State of Technology Review Report, Office of Research and Development, EPA/600/R-09/049, May 2009.
- Core Attributes of Effectively Managed Wastewater Collection Systems, WEF, July 2010.
- USEPA Planning for Sustainability, A Handbook for Water and Wastewater Utilities, EPA-832-R-12-001, February 2012.
- Sanitary Sewer Overflow Solutions, ASCE Guidance Manual, April 2004.
- USEPA Computer Tools for Sanitary Sewer System Capacity Analysis and Planning, Office of Research and Development, EPA/600/R-07/111, October 2007.
- USEPA Review of Sewer Design Criteria and RDII Prediction Methods, Office of Research and Development, EPA/600/R-08/010, January 2008.
- USEPA Condition Assessment of Wastewater Collection Systems White Paper, EPA/600/R-09/049, May 2009.

SECTION 2

Collection System Management Plan

2.1 Background

Descriptions of the roles of personnel and participants are crucial to understanding how a project will proceed. Each participant's role will continue to evolve and updates to the management plan will address this evolution of staffing, technological changes and revisions to the overall CMOM Plan. The management plan addresses the following:

- An outline of the program's goals, requirement under the consent decree and objectives
- Descriptions of the roles involved in the CMOM
- Procedures to recruit and train participants
- Procedures to acquire and maintain equipment
- A timeline for various stages of the CMOM Implementation (refer to Table 4)
- A process to handle CMOM modifications
- Consideration of the CMOM's broader impacts on budget and rates

2.2 CMOM Program Goals

The CMOM mission statement and objectives are described in Section 1.3. Table 2 presents a summary of the various components and goals of the CMOM Plan.

Table 2
CMOM Program Components & Goals

Components	Major Goals
Goals	• Properly manage and operate the system • Provide capacity to convey peak flows • Minimize the frequency of SSO's • Mitigate the impact of SSO's • Comply with TCEQ and EPA regulations • Maintain assets cost-effectively through risk-based asset management • Improve or maintain system reliability • Provide superior customer service • Reduce the potential threat to human health and adverse effects to the environment, water quality and aquatic life as well as possible citations from the regulating state and federal agencies resulting from sewer overflows • Manage infiltration/inflow • Provide safe workplace for workers and public • Provide a sustainable CMOM Program supported by adequate funding and schedule • Maintain annual cleaning and inspection programs • Optimize collection system performance
Organization	• Identify personnel responsible for implementing, managing, and updating CMOM • Chain of communication for reporting SSO's
Legal Authority	• Control of prohibited discharges into the sewer • Design and construction • Installation, testing and inspection
Measures and Activities	• Updated collection system map • Resources and budget in support of CMOM activities • Prioritized preventive maintenance • Scheduled inspection and condition assessment • Contingency equipment and replacement inventories • Training • Education of Homeowners and Businesses • Outreach to plumbers and building contractors
Design and Construction Standards	• Standards for installation, rehabilitation and repair • Standards for inspection and testing

2.3 Organizational Structure

Figure 3 presents the organizational charts for the TWU - Wastewater Collection and Treatment Departments. The organization chart shown presents those staff responsible for implementing, managing and updating the CMOM programs. This includes those staff responsible for managing the SSO/Spill response, investigating the cause and reporting the SSO/Spill to the appropriate regulatory agencies. Coordination with other City Departments (such as Engineering, GIS, Finance, etc.) and other TWU divisions (such as Environmental Compliance, Water Quality, etc.) will continue to be an ongoing process.

Operations Manager– Establishes operations policy, plans strategy, leads staff, allocates resources, delegates responsibility, authorizes outside contractors to perform services and may serve as public information officer. Prepares wastewater collection system planning documents; manages capital improvement delivery system; prepares itemized budgets; and coordinates development and implementation of various water and sewer programs.

Superintendent– Manages field operations and maintenance activities, provides relevant information to management, prepares and implements contingency plans, leads emergency response and field crew assignments, investigates and reports SSOs/Spills, and oversees field crew training. Provides over-site and establishes priorities and goals of sewer maintenance, infiltration/inflow and sewer repair crews. Reviews performance indicators, maintains sewer lift stations and telemetry systems.

Crew Leader – Oversees maintenance and repair at the crew level. Performs maintenance activities, mobilizes and responds to notification of stoppages and SSO's or Spills, inspects and tests manholes and mainlines for infiltration/inflow and performs sewer repairs.

Manager of Water Quality – Manages treatment plant and lift station operations policy, plans strategy, leads staff, allocates resources, delegate's responsibility, authorizes outside contractors to perform services and may serve as public information officer. Prepares treatment documents; manages capital improvement delivery system; prepares itemized budgets; and coordinates development and implementation FOG programs.

The existing organizational structure will be used to facilitate the programs associated with CMOM; however, additional personnel and/or outsourcing specific program tasks will be required to fully implement the CMOM Plan. An aging sewer infrastructure will require increased resources to proactively maintain the collection system at least cost.

Figure 3 Organization Chart - Waste Water Collection

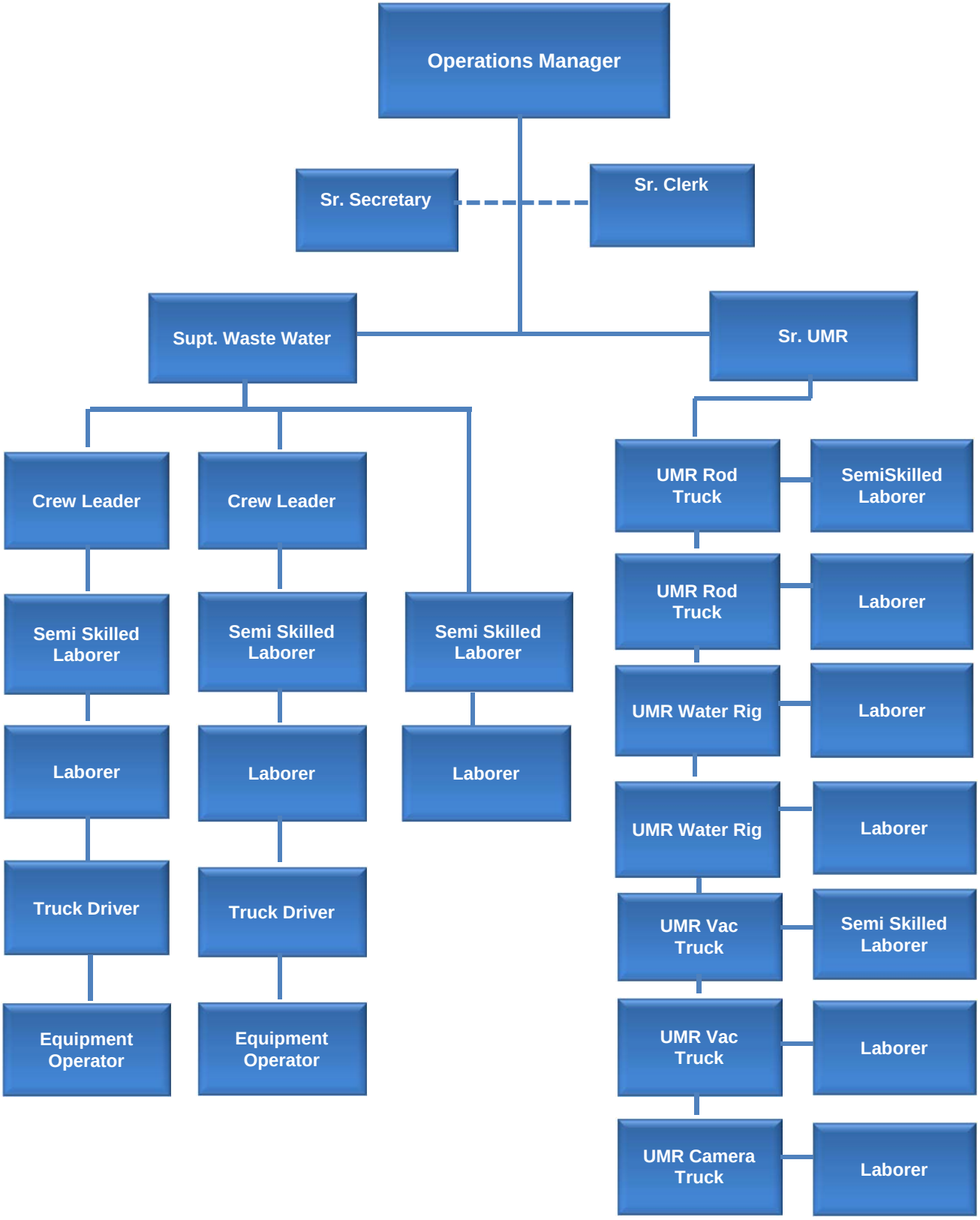
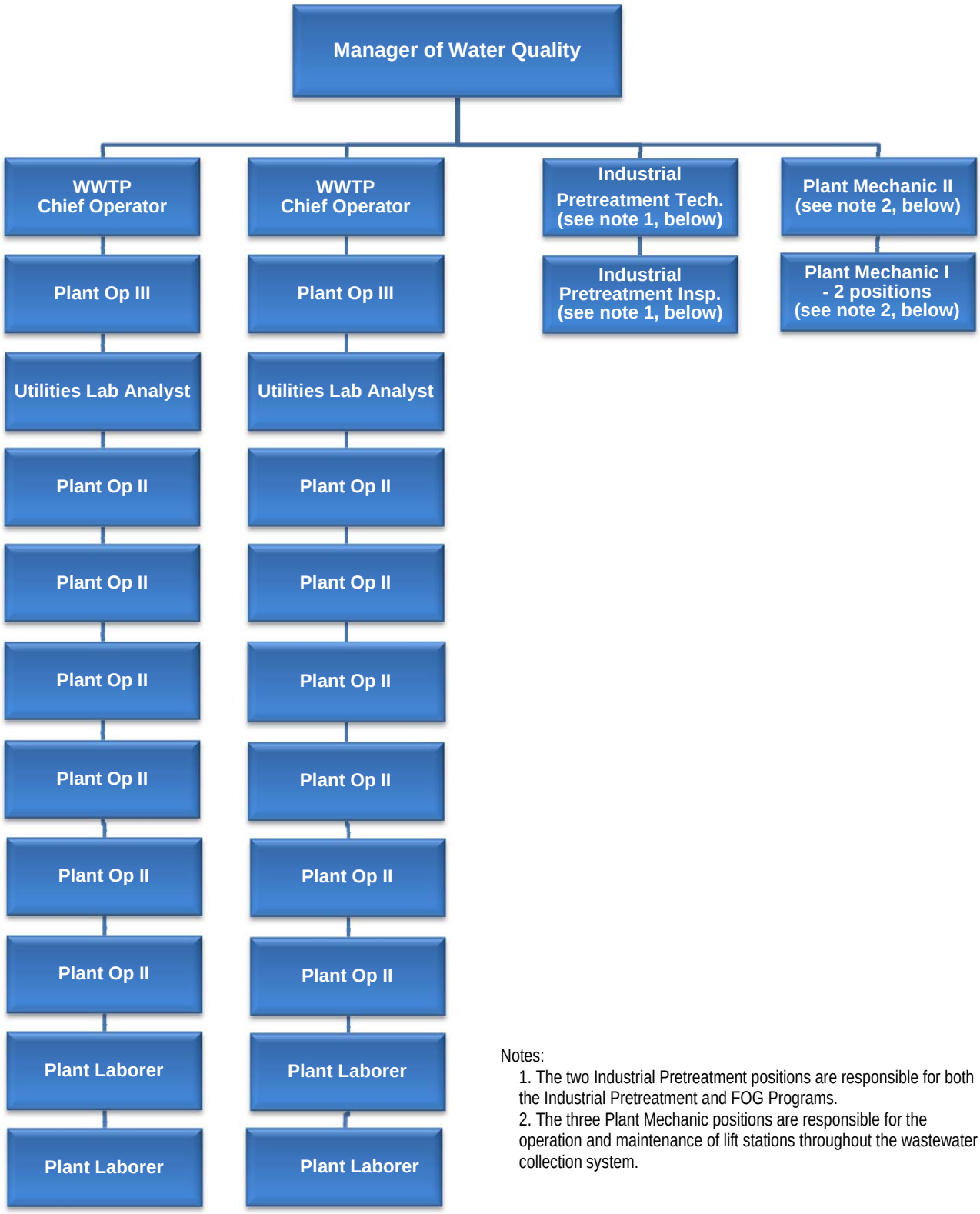


Figure 3 – Organization Chart (Continued) – Waste Treatment



Notes:

1. The two Industrial Pretreatment positions are responsible for both the Industrial Pretreatment and FOG Programs.
2. The three Plant Mechanic positions are responsible for the operation and maintenance of lift stations throughout the wastewater collection system.

2.4 Management of Assets

The CMOM Plan presents details for those activities needed to manage the collection system assets. The consent decree requirements (refer to Appendix H) specifically present detailed timelines for completing various asset management functions. The consent decree requirements will be used by the City during the term of the consent decree. A general discussion of the CMOM components can be found in Sections 3 through 7. Activities that TWU will use to manage the collection system assets include:

1. System Cleaning - The sanitary sewer cleaning program requires cleaning the sanitary sewers on at least a seven (7)-year cycle for sewers less than 24 inches in diameter and on a ten (10) year cycle for lines 24 inches in diameter and larger. The purpose of sewer cleaning is to remove buildup material from the inside of mains and may be undertaken for any of the following reasons:
    a. Blockages (obstructions resulting in a virtual cessation of flow that may lead to a backup or slow service). These generally are dealt with on an emergency basis using a high pressure jetter or jet-vac cleaner.
    b. Hydraulic capacity. In some cases, sediment, roots, protruding taps or other foreign bodies (bricks, cables, rock, etc.), grease, encrustation and other foreign material restrict the capacity of a sewer, causing surcharge. Cleaning the sewer may alleviate these problems permanently or at least temporarily until specific projects are implemented to correct the lack of capacity.
    c. Odor caused by the retention of solids in the system for long periods resulting in, among other things, wastewater turning septic and producing hydrogen sulfide.
    d. Sewer inspections, where the sewer needs to be cleaned before inspection. This requirement most often occurs when using in-sewer CCTV inspection techniques.
    e. Sewer rehabilitation where it is necessary to clean the sewers immediately before the sewer is rehabilitated.

    Predominate cleaning methods include jetting and jet-vacuum. Other methods include manual rodding, cutting, and manual or mechanical digging. The method usually is determined in advance and is normally contingent on the pipe type and size and on the conditions expected in the pipe. In order to maintain 7 and 10 year cycles of system cleaning, TWU must clean approximately 100 miles (including high frequency cleaning) of unique sewer mainline each year.

2. High Frequency Cleaning – Certain line segments are more susceptible to blockages and may be put on the city high frequency cleaning list as a preventive measure. The frequency of cleaning is determined by the superintendent based on observed conditions. For example, if the cleaning crews notice that little to no debris is being removed from a line segment on a three month cleaning frequency, then the superintendent may recommend the line segment be placed on a less frequent cleaning cycle. The frequency of high frequency cleaning will vary based on local observations. In some instances, the cleaning frequency will be established to prevent blockage while a more permanent repair solution is designed and constructed. The current high frequency cleaning list is summarized in Appendix E and consists of approximately 54 miles of sewer. Appendix E

is updated as needed, or at most on an annual basis, along with the frequency of cleaning for each sewer segment on the high frequency list.

3. Condition Assessment - TWU uses a variety of tools and activities to determine the existing condition of system assets. This information will be even more critical as asset management practices are implemented over the next several years. Section 8 of the CMOM Plan details the various activities the staff uses to determine asset condition including manhole inspection, cleaning, CCTV inspection, dye flooding, smoke tests, engineering inspection, etc. The requirement of the consent decree is to initially perform manhole and gravity sewer assessments within five (5) years and eight (8) years respectively. Following this initial condition assessment the cycle of condition assessment changes to a 7 year (less than 24 inch pipe) and 10 year (equal to or greater than 24 inch). To maintain this re-inspection cycle, it will be necessary to inspect/test approximately 100 miles and 1,400 manholes annually.

4. Capacity Assessment - Sanitary sewer systems are modeled in order to develop least cost alternatives to 1) infiltration/ inflow problems 2) determine system capacity 3) assess the impact of sanitary sewer overflows and 4) provide a capacity assurance plan for future demand. The hydraulic wastewater system model equips staff with the tools for analyzing system capacities, bottlenecks, and potential overflow locations. The hydraulic model facilitates system analysis, aids in development of system improvements, produces informational maps/exhibits, and predicts the system's response to future improvements. The hydraulic model enables the city to assess and predict potential capacity requirements and develop least cost strategies to optimize system performance.

5. Flow Monitoring - A goal of TWU is to develop long-term solutions to sanitary sewer overflows (SSO's)/Spills. The first step in achieving this goal is to establish the hydraulic characteristics of the system. Analysis of recorded wastewater flows provides both the information necessary to identify areas of excessive wet weather inflow and establishes the storm event level of protection that is critical to ensuring future capacity needs. The timing of flow monitoring is based on field observations, new development and planning needs. Comprehensive flow monitoring was completed in 2017 utilizing 25 flow meters and 8 rain gauges. Data collected was used to calibrate the hydraulic model and prioritize areas of excessive rainfall dependent infiltration/inflow.

6. Smoke Testing - Smoke testing provides detailed information on wet weather inflow sources both on public and private sewers. In order to identify inflow defects in the lines, non-toxic smoke is forced into the sewer. Breaks in the sewer will allow the smoke to escape. Areas where smoke testing is warranted will be based on flow monitoring Infiltration/Inflow Analysis results. The City monitors wet weather flows and staff recommends areas that are targeted for smoke testing.

7. Dye Testing -Dye water flooding assists in the location of specific defects during an evaluation. The procedure consists of introducing non-toxic dye into defects located during smoke testing, field investigations and manhole inspection. The path of the dye is then documented and system defects and illegal taps/tie-ins into the sewer lines are

confirmed. Manholes with evidence of inflow/infiltration, mainline defects, cross-connections, roof drains and area drains can all be investigated using the dye testing procedure.

8. CCTV Inspection - Internal CCTV inspection (using PACP codes) is used to determine the exact nature of specific defects during mainline sewer condition assessments. CCTV may be recommended based on smoke test findings, post-SSO root cause analysis, recurring stoppages and physical inspection findings. Using high definition color cameras, the CCTV operator inspects the interior of sewer pipes looking for defects. Analysis of the CCTV results aid in the determination of the most cost effective rehabilitation methods. There are other determining factors considered when determining repair strategy such as flows, location, conflicting conditions such as other utilities, easement access, traffic, etc. The CCTV goals for TWU are:

    a. CCTV after each Sanitary Sewer Overflow or chronic blockage to establish the cause and repair (if necessary to prevent future SSOs)
    b. Following the initial 8 year inspection cycle, CCTV all small diameter mainline pipe less than 24 inches on a seven year cycle and all 24 inch and greater pipes on a 10 year cycle. Note that CCTV normally requires preparatory cleaning and the cleaning footage associated with the CCTV should be credited toward the annual CMOM performance goals unless it has already been cleaned within the same 7 or 10 year period.

9. System Rehabilitation - A review of the field inspection and testing results and local conditions will result in rehabilitation recommendations and preparation of a remedial measures plan to address system deficiencies. The report prioritizes repairs so limited funds are budgeted and targeted where they will have optimum impact. Some defects identified during the condition assessment activities may require immediate repairs while others can be bundled to provide sufficient quantities for lower contractor unit pricing bids. Rehabilitation methods available to extend the life of collection system assets (renewal of assets) include trenchless technologies that minimize the impact to customers. Manhole rehabilitation may include lining, sealing, installing water tight ring and covers, raising buried manholes to grade, replacing vented covers, etc. Mainline sewer rehabilitation may include cured-in-place pipe (CIPP), slip lining and upsizing or pipe replacement by pipe bursting.

2.4.1 Asset Inventory

This component is the most important element of asset management since it is impossible to manage assets that you do not know exist or where they are located. For collection systems, the inventory of assets provides the basis for developing maintenance plans and budgets. TWU has an inventory of manholes, sewers, force mains, etc. that is maintained within GIS. Attribute data attached to the asset such as size, location, construction material, age, etc. is critical information that will require continual updating as assets are repaired or replaced. The work order system works in conjunction with the asset inventory to ensure work performed is assigned to the proper asset. Figure 2 and Table 1 (see Section 1) present examples of the collection system asset inventory information maintained within the GIS mapping system. The Spatial Data Management System (SDMS) will be the primary data

location for the management of the collection system components. Refer to CMOM section 2.9 for information on the SDMS.

2.4.2 Level of Service (LOS)

Defining the level of service establishes how TWU wants the collection system to perform. The level of service is a fundamental part of how the system is operated now and long-term. Therefore, determining and detailing the level of service that the system is going to provide is a key step in the overall process of asset management. Establishing the level of service provides a direct link between cost and service.

The level of service can be one factor in determining critical assets. If a particular line segment is in a very difficult to access location, then this asset may have a higher inspection frequency due to the time to make repairs and the number of customers that may be affected. The following are levels of service goals established:

- SSO and Spills will be responded to within 1 hour
- Customer complaints will be responded to within 1 hour
- System will meet all state and federal regulations

During the CMOM Plan review the level of service goals will be reviewed to determine if customer expectations are being met and what modifications to the CMOM Plan are needed to meet the level of service goals. There is a direct link between the level of service provided and the cost to the customer. When a higher level of service is provided, the costs to the customers are likely to increase. This relationship provides an opportunity for TWU to have an open dialogue with its customers regarding the level of service desired and the amount the customers are willing to pay for this level of service. The level of service may need to be adjusted periodically.

2.4.3 Life Cycle Costing

This component is the most complex part of asset management. It is difficult to gather all the asset attributes data necessary for a sophisticated analysis of life cycle costing. There are several components of developing a life cycle strategy for asset management plans. Most communities can easily begin with one or two of these components. The lifecycle components include:

- Asset Planning
- Asset Creation/Acquisition/Design
- Financial Management
- Asset Operation and Maintenance
- Asset Condition and Performance Monitoring
- Asset Rehabilitation/Renewal
- Asset Disposal
- Asset Audit and Review

The following options deal with the assets over time:

- Operate and maintain the existing assets
- Repair the assets as they fail (run to failure)
- Rehabilitate the assets
- Replace the assets

Choosing to do more or less of one impact how much of the others is done. For example, choosing to spend more on operating and maintaining assets will decrease the need to repair the asset and will increase the amount of time until the asset requires replacement. Choosing to rehabilitate an asset will eliminate the need to replace the asset in the short term and will extend the useful life of the asset.

2.4.4 Long-term Funding Strategy

The first four components of the asset management strategy lead to discovering what actions are most appropriate to take to manage the system at the desired level of service at the lowest life cycle cost. The final factor in the asset management strategy is determining the best manner in which to fund the operation and maintenance, repair, rehabilitation, and replacement of assets. There are several possible sources of funding available to TWU for the overall operation and maintenance of the wastewater system including asset repair, replacement, and rehabilitation:

- System revenues
- Fees & Service Charges
- System reserve funds
- Emergency reserves
- Capital reserve fund
- Debt reserves

System revenues are a major component of an asset management plan. The system revenues will fund the operation and maintenance of the system. There generally are no other outside funding sources for routine operation and maintenance of the utility. In addition, the rates will need to fund reserve accounts for emergencies, repairs, and debt coverage. The user rate structure will take into account needs for the current year as well as future years, through reserve accounts. The rate structure should also anticipate routine replacements of parts, particularly those parts that wear out regularly. If a system engages in asset management as it sets rates, the rates may increase as the system moves from traditionally being underfunded (i.e., collecting insufficient revenues to cover all expenses) to being properly funded. However, rates that are set based on sound asset management principles are very defensible to the local rate payers. Asset management brings transparency to the process so that it is clear what the rate is based on. The more clearly the rate can be defended, the more likely it is to be accepted by the public.

2.5 Customer Service

The Service Center normal business hours phone number is 903-531-1285 and after hours/emergencies is 903-597-6541. The Water Service Center is primarily responsible for receiving phone calls from the public and dispatching them to the appropriate staff. Staff is responsible for responding to calls of possible sewer overflows from the wastewater collection system and transmission system (e.g., sewer

pipes and lift stations) and for notifying the appropriate personnel in the City. The following table presents contact phone numbers for customer inquiries:

Table 3
Primary Contract Phone Numbers

For Questions Concerning	Contact	Phone Number
Emergencies After 5:00 p.m. or on Weekends or Holidays	• Golden Road Water Treatment Plant	(903) 597-6541
Billing or Account Information; Setting Up New Service; Transferring or Disconnecting Existing Service	• Water Business Office	(903) 531-1230
Water Leaks (mains, meters, fire hydrants); Sanitary Sewer Stoppages, Overflows or Odor Complaints	• Water Service Center	(903) 531-1285
Water Pressure Complaints (too high, too low)	• Water Service Center	(903) 531-1285
Water Quality Complaints (taste, odor, dirty water)	• Water Utilities Administration	(903) 531-1238
Assistance with Locating Existing Utilities or Service Lines	• Water Service Center	(903) 531-1285
Applying for a Water or Sewer Service Tap	• Development Services Department	(903) 531-1171

Residents can contact TWU or receive information from the City using the following methods:

1. Water Service Center: For water emergencies call 903-531-1285 during regular business hours; for after hour emergencies call 903-597-6541. These numbers are posted on the City web site, publications and provided to media.

2. On-line Services: The City web site, www.cityoftyler.org, provides information on each department, frequently asked questions and notification numbers. In addition, Tyler Public Works maintains a web site, www.tylerpublicworks.com, specific to the utility. Tyler Public Works is a joint effort between the Engineering Department and TWU to highlight capital improvement projects, city standards, consent decree information and ongoing public works projects.

3. Social media accounts: Facebook, Twitter, YouTube, Pinterest and LinkedIn are used by various City departments to keep citizens up to date on current issues that may affect their services.

4. Newsletters: The City publishes electronic newsletters that residents can receive or download from the city web site. The My Tyler email newsletter was launched in 2003 as a tool to keep citizens better informed about their municipal government. The email newsletter is produced

by the Communications Department and sent out periodically to those who register on the My Tyler page on the City website. The emails include the latest information, announcements and programming updates from all City Departments.

For possible sanitary sewer overflows or spills, the Water Service Center obtains information offered by the caller and requests other relevant information regarding the possible overflow, including:

a. Time and date the call was received
b. Specific location of possible sewer overflow
c. Time possible overflow was noticed by the caller
d. Caller's name and phone number
e. Observations of the caller (e.g., odor, duration, back or front of property)
f. Other relevant information that will enable the responding crews, if required, to quickly locate and respond to the caller's observation

The Service Center enters the possible overflow/spill information into the service request and dispatches the appropriate personnel. In the event possible overflow/spill calls outnumber the available response staff, calls will be prioritized in the following manner:

1. Sewage in a creek; sewer overflow or lift station overflow to dry land with immediate and direct public access. This is the highest priority. The dispatcher will IMMEDIATELY DISPATCH this call to the appropriate crew leader responsible. If the dispatcher is unable to contact the crew leader, he/she will continue calling until a crew leader or superintendent is reached, regardless of his/her area of responsibility.

2. Sewer Overflow, Lift Station Overflow or Spill to Dry Land with no immediate and direct public access. Order of Priority:
    a. Sewer pipes damaged/suspected damage
    b. No reported damage
3. Utilities damaged by a construction activity
4. Locating utilities. When receiving such calls, confirm whether or not the call is for emergency related locating of utilities. For non-emergency locates, customer service requests may come first.
5. Customer service requests

The Water Service Center dispatcher prepares a service request and provides notification of potential sewer overflows directly to the appropriate field crew leader.

Collection system field crews and their activities is the most visible segment of any wastewater organization. For this reason, personnel are trained in what to expect in public situations. For example, collection system supervisory staff is trained to address resident concerns when working within the areas around public rights-of-way and easements to which their field crews must gain access to service assets. Additionally, crew leaders know how to deal with the public when approached.

Public outreach is used extensively to inform and educate residents of construction, FOG impacts on the collection system and non-flushable control measures. Before major construction or maintenance work begins, TWU will notify homeowners where properties may be affected. Methods of notification may

include door hangers, newspaper notices, fliers, signs, or automated phone calls (Code Red System). The emphasis on grease disposal will usually be prior to Thanksgiving and Christmas.

2.6 Legal Authority

The City retains the legal authority necessary to regulate the collection system, including residential, commercial and industrial connections. The legal authority takes the form of sewer use ordinances, contracts, service agreements, and other legally binding documents. The Tyler Code of Ordinances is available on-line at:
http://library.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:tyler_tx

The City has the authority to ensure that new and rehabilitated sewers and connections have been properly designed, constructed, and tested before being put into service. This authority takes the form of design and performance specifications in a sewer use ordinance or other legal document such as a statute. The ordinance or legal document contains, at a minimum, general prohibitions, adequate grease control requirements and measures and new construction standards. Prohibitions on inflow and infiltration from storm water are addressed in the 2006 International Plumbing Code adopted by the City. The following excerpt from the 2006 IPC addresses the prohibited introduction of storm water into the sanitary sewer:

> *Chapter 11- Storm Drainage*
> *1101.3 Prohibited drainage. Storm water shall not be drained into sewers intended for sewage only.*

The grease control section of the 2006 International Plumbing Code contains the requirement to install and sizing of grease interceptors at appropriate facilities (e.g., restaurants).

> *Chapter 10 – Traps, Interceptors and Separators*
> *1003.1 Where Required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, public sewer, the private sewage disposal system or the sewage treatment plant or processes.*

The City maintains strict control over the connection of private sewer laterals to sewer mains. These connections have significant potential as sources of infiltration/inflow. Standards for new connections are specified by code, ordinance and standard construction details. The sewer use ordinance contains provisions for inspection and approval of new connections.

The National Pollutant Discharge Elimination System (NPDES) program prohibits discharges of pollutants from any point source into the nation's waters except as authorized under an NPDES permit. EPA and TCEQ NPDES inspectors evaluate collection systems and treatment plants to determine compliance with permit conditions including proper Operation & Maintenance (O&M). The permit conditions are based on regulation in 40 CFR 122.41(e): "The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit." When violations occur, the City can face fines and requirements to implement programs to compensate residents and restore the environment.

2.7 Fiscal Programs

Detailed budgets are prepared and tracked by staff for each department. The budget is available in its entirety at:

https://www.cityoftyler.org/Departments/FinanceDepartment/FinancialReports/AnnualBudget.aspx

Water and sewer costs are separated from other utility services. The current user rates are sufficient to fund wastewater operations. Rates are reviewed annually and adjustments presented to the City council for approval. Capital Improvement Plan (CIP) projects are prioritized by staff and city council and undergo quarterly review and re-ranking as needed.

2.8 Information Management System (IMS)

The ability of TWU to effectively manage the collection system is directly related to its ability to maintain accurate and current information concerning the facilities, equipment and system asset condition. Operational information provides updates to asset attributes and establishes the financial information necessary for the policy makers to establish realistic budgets. The management information system provides the following:

- Maintain preventive maintenance and condition assessment inspection schedules
- Maintain condition assessment data collected from sources such as manhole inspection, CCTV inspection, cleaning, smoke testing, lift station inspection, ARV inspection, force main inspection, etc.
- Maintain history of maintenance and repairs associated with consent decree remedial measure
- Maintain SSO data
- Provide accurate costs for budgetary justification
- Track repairs and work orders
- Record customer service inquiries, complaints, or requests
- Provide measurement of effectiveness of program and O&M activities
- Provide CMOM performance indicator data
- Provide TCEQ/EPA regulatory reporting data
- Maintain databases for linking to GIS

CityWorks™ maintenance management software is in use for a city-wide maintenance management system. New Edge Services LLC hosts the CityWorks™ software for the City and provides system administration. Computer Maintenance Management Systems (CMMSs) are designed to manage the data needed to track the collection system's O&M performance. Geographic Information Systems (GIS) are used to map and locate facilities and, because of computer-based compatibility, can easily be integrated within CityWorks™.

The TWU work management system integrates GIS maps, work order management and asset management by sharing databases. Support to update and provide technical services for maintaining the system is provided by both in-house staff and outside programming consultants.

2.9 Spatial Data Management System (SDMS)

The Geographic Information System (GIS) Department provides mapping support, analysis, training, and database management to city departments while maintaining all the GIS databases (digital maps). GIS applications such as geographic data collection, field inspection, and the special mapping requests are prepared in-house and distributed to city departments. Utilities staff relies heavily on spatial maps for dispatching crews, performing maintenance and tracking performance. The integration of GIS mapping with the work order system allows staff to access detailed maps of where service requests are located.

The City participates in a consortium of data with Smith County 911, Smith County Appraisal District and Smith County Government. From the Smith County web map site (www.smithcountymapsite.org) users can download published maps and data collected and maintained by local governments. The map site hosts interactive maps and viewers as well as smartphone apps. For data that is not included online (aerials, utility lines and contour data), contact the GIS Department at (903) 531-1241.

ESRI ArcGIS offers a unique set of capabilities for applying location-based (spatial) analysis to collection system operations. Linking data to GIS provides for spatial data visualization. The GIS Department provides the following services:

- Maintain GIS data layers (including SSO locations, work order queries, asset locations and attributes)
- Create maps of data for different projects and departments
- Detailed analysis of City data and infrastructure
- Provide support to data users
- Maintain an interlocal agreement between East Texas 911, Smith County Appraisal District and the City
- Financial reporting of City data to the public (OpenGov)
- Field collection and updating of City assets (including sanitary sewer collection system, lift stations, force main, ARV, etc.)

Although the Spatial Data Management System is fully operational, TWU will continue to coordinate with the GIS Department to improve spatial data needs as it relates to the EPA Consent Decree reporting requirements. For example, spatial mapping and data summaries of pipelines cleaned, CCTV inspections, manhole inspections, SSO locations, etc. will be required for annual reporting to EPA and TCEQ. TWU, working with the GIS Department, will develop the tools and databases necessary to effectively collect and spatially visualize system data.

The SDMS provides for the electronic entry and management of all collection system assets including the following associated spatial data:

1. Attribute data for Sewer Segments, including:
    - known or estimated date of installation (from record drawings where available);
    - pipe length (from GPS where recorded);
    - inverts at manholes (from record drawing or field measured);
    - slope (from Hydraulic Model output);

- diameter (from record drawing and field observations);
- type (e.g., gravity or pressure);
- material (if available; confirmed by field observations);
- nominal capacity (i.e., manning) design (data source Hydraulic Model output);
- geographic location (from GPS, field survey, aerial mapping).

2. Attribute data for structures including:
   - structure type (e.g., siphon, manhole, junction box, force main, air relief valve);
   - invert elevation (from record drawing or field measured);
   - geographic location (from GPS, field survey, aerial mapping); and
   - known or estimated date of installation (from record drawings where available).

The collection system GIS attribute data relating to location and size is generally accurate and up to date. All pipelines 10 inches in diameter and larger have been GPS surveyed as part of the hydraulic model development. Newly added assets are GPS surveyed and maps are updated within 30 days. During condition assessment activities (2017 thru 2025) the various collection system asset attribute data will be updated. Each annual condition assessment will generate a report with collected attribute data. These report spreadsheets will be used to update the SDMS and IMS within 90 days. The SDMS attribute data will be fully up to date for the entire collection system upon completion of the first cycle of condition assessments (2017 thru 2025).

2.10 Engineering Standard Design, Construction and Inspection

Utilities and Public Works staff provides planning, records management, contract administration, major capital infrastructure maintenance, addition and/or replacement activities to the City's infrastructure as well as planning for the most efficient funding of these activities. Civil engineering plans are prepared by engineers hired by land developers for private development projects. Civil engineering plans for rehabilitation and CIP projects are typically prepared by engineers hired by the City, or in some instances prepared by City staff. Plats and site plans are also generally included in the plans submittal that includes the following:

- Paving
- Water
- Drainage
- Grading
- Sanitary Sewer
- Erosion Control

Utilities and Public Works provide support services and is responsible for:

- Implementation of CIP projects, which consists of the design, construction, and inspection of public works infrastructure including water, sewer, streets, alleys and drainage facilities
- Review and oversight of construction of all private development and CIP projects, including erosion control
- Providing a safe, convenient and efficient transportation system

- Design, construction, operations and maintenance of City buildings
- Providing engineering and surveying support to other departments
- Maintaining and updating the City Standard Construction Details and Design Manuals
- Coordinating federal, state, county, and local projects in the City

2.10.1 As-Built Plans

Record drawings (as-built plans) are maintained by Utilities and Public Works and system maps updated by the GIS Department. As-built plans are used to update the collection system maps within the GIS. Record drawings are electronically available by contacting Utilities and Public Works. Upon completion of new construction, the GIS Department routinely updates, normally within 30 days, the GIS system maps. New assets are GPS surveyed and unique ID's assigned each asset.

2.10.2 Asset Inventory

The GIS Department maintains a complete inventory of collection system assets within GIS. Attribute data fields are populated and updated as system additions or revisions are implemented. Pipe size and pipe material, for example, are maintained in separate attribute fields that facilitate sorting. Table 1 and Figure 2 (see Section 1) present the collection system inventory within GIS. Condition assessment activities will identify corrections to the maps fill gaps in and attribute data. As the condition assessment reports are finalized, then the GIS attribute data will be updated within 90 days of acceptance of the final reports.

2.10.3 Gravity Sewer Design

Most new gravity sewer design projects are outsourced to local consulting engineers who use the City standards and TCEQ Chapter 217 for design and materials. Depending on the project, consultants may perform some hydraulic evaluation for sizing of pipelines. The City standard design requirements and details are available online at:

http://www.tylerpublicworks.com/City-Standards

Restaurants or food related projects require the Northeast Texas Public Health District (NetHealth) approvals prior to Building Services approving and releasing permits for construction. Various permitting requirements and applications are available on-line at:

http://www.cityoftyler.org/Departments/BuildingServices/FormsandApplications.aspx

2.10.4 Construction Inspection

Development Services oversees the safe and timely construction of public works improvements (i.e., utilities, streets and drainage) for residential and commercial projects, ensuring compliance with applicable technical and regulatory requirements, and serving as a resource for construction-related issues. The goal of the construction inspection group is to provide citizens with quality assurance with respect to standard city design criteria through the daily on-site inspection over all public works construction. This includes: residential and non-residential development improvements implemented within the City's right-of-way or within easements.

Construction inspection of public works improvements for capital improvement projects is typically provided by outside consultants hired by the City, or in some cases is performed by City staff.

2.10.5 Hydraulic Modeling

TWU provide oversight on future hydraulic modeling of the wastewater collection system as it relates to the wastewater master planning effort. Hydraulic modeling will generally be performed on a city-wide basis on a 5 year cycle or when growth requires system analysis to ensure adequate capacity.

Dynamic hydraulic modeling is a tool used by engineers to simulate the complex responses of wastewater collection systems. Sanitary sewer systems are modeled in order to develop least cost alternatives to 1) infiltration/ inflow problems 2) determine system capacity 3) assess the impact of sanitary sewer overflows and 4) provide for future capacity.

2.11 Training and Safety

The commitment of management to training is critical for successful CMOM program implementation. It is important to recognize training as a budget expense item that needs to incorporate new technology (software, equipment, procedures, etc.). Appendix B presents a summary of training requirements by job description.

TWU generally provides formal and on the job training in the following areas:

- Safety during confined space entry
- Routine line maintenance
- Traffic control
- Electrical and instrumentation
- Pipe repair
- SSO Response
- Trenching/Shoring
- Public relations
- TCEQ regulations
- Operator certification

Various written documentation is made available to assist in the training of staff. Detailed written manuals have been prepared that include:

1) TWU SOPs (Appendix A)
2) Safety Handbook (See Appendix B)
3) FOG Program Manual (See Appendix C)
4) Sanitary Sewer Overflow Response Plan (See Appendix D)
5) Condition Assessment Guidance and Sample Forms (See Appendix F)

Safety is of paramount importance because upon it hinges the well-being of the employees and residents. Safety is within the responsibility of each department and operating division. TWU has prepared a general safety manual (Appendix B). Employees are held responsible for both their personal actions and safe conditions in their work areas. Any unsafe condition or procedure is reported to their immediate supervisor for corrective action.

The primary purpose of the Safety Training Program is to keep employees aware of hazards associated with the nature of their job. Standard safety equipment includes:

- Confined space permits
- Safety Data Sheets (SDS)
- Gloves
- Ventilation Equipment
- Hard hats, safety glasses, boots
- First Aid kits
- Tripods
- Fire extinguishers
- Gas detectors (oxygen, hydrogen sulfide, combustible)
- Body harness
- Protective clothing
- Traffic control equipment

Safety meetings are required and documented with sign-up sheets. Training in confined space entry, trench safety, self-contained breathing apparatus, first aid, trench safety, etc. is part of the comprehensive program. Each employee must successfully show competence in specific work tasks and comply with required training, including job safety. Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets-MSDS, is maintained for chemicals commonly used by staff.

Gas detectors for use in confined space are calibrated per the manufacturer recommendation. A priority of the Operations Manager is the review and updating of safety policies. Various utility associations (American Water Works Association, Rural Water Association, National Association of Sewer Service Companies (NASSCO), Water Environment Association of Texas, Texas A&M Extension, Water Environment Federation, etc.) have considerable training materials available to supplement the on-the-job training. Field superintendents and crew leaders provide on the job training and oversight.

The training program includes technical and skills training for TWU employees. Appendix B presents a training matrix by employee job description and includes training on sewer investigation, maintenance, and repair techniques and policies as well as SSO response policies and procedures. The training program includes a focus on TWU's standard operating procedures (refer to Appendix A - SOPs) for the operation and maintenance of the system. Periodic training of staff on responding to and preventing SSOs is undertaken in accordance with the approved Sanitary Sewer Overflow Response Plan (SSORP), Appendix D.

TWU utilizes Kaizen Software Solutions Training Manager software to track employee training. This software creates a database to track employee training records and has the following features and capabilities:

- Track training records and status.
- Assign required training by individual, job function, or group.
- Require retraining based on calendar time, course version, or one time only.
- Schedule and manage class sessions.
- Record attendance, training completion, and cancellations.
- Record training credits, training hours, and assessment scores.
- Print status reports to demonstrate training compliance.
- Print employee transcripts.
- Print employee training plans.
- Export data and reports to various formats.
- Send class session reminders by email.

As part of each annual report required by the TCEQ/EPA consent decree, TWU is required to report a summary list of documented training activities completed by each category of employee in the format provided in CMOM Appendix B. The training required under the consent decree includes:

a. Technical and Skills Training. The technical and skills training includes the following components:

1. applicable regulations and permits;
2. SSO prevention, response, and elimination measures;
3. sewer cleaning, FOG inspection, sewer inspection;
4. constructed SSO location identification;
5. replacement and rehabilitation techniques;
6. data collection, information management, reporting and recordkeeping.

b. SSO Response Training. The City provides SSO response training that includes:

1. how to make a determination of whether an SSO has occurred;
2. presents the elements of and required implementation of the Sewer Overflow Response Plan;
3. how to document and report SSOs and Spills pursuant to the TCEQ Reporting and Documentation Procedures; and
4. how to document and report noncompliance with Tyler's TPDES permits.

2.12 Performance Measures

Data collected by the City staff is used to establish operational benchmarks for monitoring the effectiveness of the CMOM program elements. Reviewing the performance indicators on an annual basis will determine the trend and possible reorganization of program resources. As the CMOM Plan is implemented the trends should become stable and outliers can be further evaluated to determine if

changes to various CMOM programs are warranted to address specific concerns. For example, if SSOs associated with grease trend upward, then FOG inspections and public outreach may be increased to address the grease issue. This trending analysis is a gauge to monitor the CMOM Plan effectiveness in reducing SSO/Spill numbers and volume. Appendix G summarizes the CMOM Performance Indicators that will be used to monitor the program.

2.13 Internal Communication/Human Resources

Communication within the department and across other departments and outside agencies is essential to ensuring that collection systems run efficiently and effectively. Effective communication requires the top-down, bottom-up, and lateral exchange of information amongst City staff. Examples of top-down communication are regular staff meetings, e-mail or informal discussions, etc. Examples of bottom-up communication may include, e-mail, direct communication via cell phone or radio, tailgate discussions, or direct open discussions.

The Human Resources Department maintains written descriptions for every position within the various departments. Where certification requirements are required by the State, they are included in the job descriptions. Due to the specialized training requirements of wastewater staff, on-the-job training will continue to be the preferred training method. On the job training is the most efficient method of training staff on the impact of local soils, pipe materials, access to manholes and pipelines and those repair methods that are field proven.

TWU is heavily dependent on skilled labor to safely operate and maintain the wastewater collection system and the pay system needs to support this effort to retain experienced staff. Human Resources support the city departments in attracting and retaining a qualified, capable, and diverse workforce to provide high quality services to the citizens of Tyler.

2.14 Satellite Communities

The Tyler collection system has no satellite communities that discharge into the system.

SECTION 3

Collection System O&M Plan

3.1 Background

TWU crews are responsible for all maintenance necessary to ensure the safe delivery of high-quality potable water and the efficient collection and transfer of wastewater to the Westside and Southside Wastewater Treatment Plants. The water system includes pump stations, ground storage tanks, elevated storage tanks and a distribution system including mains, valves, hydrants, service lines and meters. The wastewater system includes lift stations, mains and services, manholes and clean-outs.

O&M programs are performed by both in-house staff and outsourced to contractors depending on the nature of the work required. Various activities that impact operation and maintenance include:

1) Pipeline CCTV Inspection
2) Manhole Inspection
3) Sewer Cleaning
4) Code Compliance
5) Smoke Testing
6) Dye Water Flooding
7) System Repairs and Rehabilitation
8) Condition Assessment
9) Capacity Assessment

3.2 Pipeline CCTV Inspection

Internal closed circuit color television (CCTV) inspection is used to visually establish the pipeline conditions as the camera is propelled through the pipeline. Any structural, maintenance problems or defects are recorded digitally along with a detailed inspection log. Internal inspection of sewer lines aids in the determination of the best repair options which in turn will reduce overall costs. Other factors that will impact repair options include existing utilities, peak flows, customer and traffic inconvenience and safety. TWU requires any outsourced CCTV contractors to utilize the national Pipeline Assessment Certification Program (PACP) codes and PACP compliant database. TWU staff is trained in PACP and CCTV software is PACP compliant. Appendix F presents information on the processes used by TWU during condition assessment activities.

The Operations Manager is responsible for performing the initial inspection of all gravity sewer by 2025 (refer to Appendix H – Consent Decree Paragraphs 57-59) and re-inspection of all wastewater mains less than 24 inches on a seven year cycle and all 24 inch and larger mainline sewer on a ten year cycle. As condition data is gathered the City may establish re-inspection frequencies based on future asset management practices. Condition assessment data is used to schedule pipeline repairs and rehabilitation.

3.3 Manhole Inspection and Map Update

Accurate maps are important in order to manage the wastewater collection system. Having each manhole and pipeline accurately depicted along with unique asset (manhole and pipe) identification is required to manage work orders and repairs. System maps are field verified during field inspections. Manhole inspection is used to verify system asset location, size, and materials of construction and identifies map corrections. Manhole inspections are performed both in-house and outsourced to local consulting firms. The Consent Decree requires initial inspection of all manholes by 2022 and re-inspection under CMOM of all manholes on less than 24 inch pipelines on a seven year cycle and all remaining manholes on a ten year cycle. Refer to Appendix H – Consent Decree (Paragraphs 28-37 and 57-59) for detailed requirements associated with the condition assessment of assets.

Maintaining updated collection system maps is a high priority in order to establish sub-basin boundaries, directions of flow and length of pipe within each service area. Other important information resulting from manhole inspection includes determination of debris levels in pipes, and verification of pipe sizes and materials of construction. This information is important in preparing subsequent rehabilitation plans and cleaning requirements to restore capacity.

During manhole inspection, each of the following types of information is obtained:

- Basin Designation
- Manhole/Cleanout Unique ID
- Inspection Status
- Address
- Surface cover, grade, type of cover (paved, yard, etc.)
- Material of construction – brick, concrete, etc.
- Area and Internal photo of manhole
- All incoming and outgoing pipe depths from rim to invert
- All incoming and outgoing pipe digital photographs
- All incoming and outgoing pipe diameters and material of construction
- Debris depth
- Defects – Active, Evidence or No Infiltration/Inflow with digital photographs
- Field corrections to collection system map

3.4 Code Compliance

The sewer use ordinance (SUO) Sec. 19-73 (General Sewer Use Requirements) and the 2006 International Plumbing Code contain specific information, such as general prohibitions of fire and explosion hazards, oils or petroleum, corrosive materials, materials that may cause interference at the wastewater treatment plant, and obstructive materials. They also contain procedures and enforcement actions for controlling fats, oils, and grease (FOG), infiltration/inflow (I/I), building structures over the sewer lines and storm water connections to sanitary lines. The SUO contains procedures for inspection standards, pretreatment requirements and building/sewer permitting. TWU is primarily responsible for recommending changes to the SUO.

The prohibited discharge of storm water or inflow into the wastewater collection system is monitored periodically by the City. Wastewater flow meters and lift station run times are periodically used to collect wet weather data and determine or identify areas of the system experiencing elevated inflow. Smoke testing is the primary method to identify defects that allow the introduction of inflow in violation of the existing ordinance. Documentation is sufficient to allow code compliance to require, encourage or compel repairs to private property and mitigate the inflow source.

3.5 Sewer Cleaning Program

Cleaning of sanitary sewers is an extremely important maintenance function and is a requirement under the consent decree. Detailed requirements are presented in the Consent Decree included in Appendix H (Consent Decree paragraphs 28-33). Internal cleaning is a daily requirement to 1) restore interrupted service due to blockages; 2) remove root intrusion; 3) remove grease blockages; 4) remove settled debris; 5) obtain an unobstructed view of the pipeline for CCTV inspection; 6) remove debris from lift station wet wells; and 7) perform high frequency cleaning (scheduled cleaning to restore capacity and minimize SSO's and Spills).

Cleaning equipment is essential in providing good customer service. The City owns both cleaning jetters and jet-vacs that perform system cleaning and maintenance. Operators use jetters with a high pressure hose and nozzle that spray water at high velocities to remove blockages and perform regular cleaning of lines. Various nozzles are available depending on the types of debris being removed. Root cutters can also be installed on the hose reel to cut roots. The jet-vacuum truck uses a high lift vacuum to remove debris from the cleaning operation. Liquid that is vacuumed can be returned to the sewer while the collected debris is hauled to a disposal site. Cleaning associated with customer complaints or SSOs is immediate and follows the SSORP procedures when applicable. The following cleaning programs are used to minimize repeat SSOs and address problem line segments:

1. High Frequency Cleaning Program – Appendix E summarizes line segments that have been identified to require more frequent cleaning to minimize SSOs and spills. In general those line segments that have experienced repeat SSOs (more than one SSO in two calendar years), history of stoppages, CCTV findings identify need, previous sewer cleaning findings, lines on minimum slope with low flow causing deposition of solids and FOG related issues may be added to the high frequency cleaning list. Once on the list the segment will remain until the cause has been remediated or findings justify removal. TWU currently employs the sewer high frequency cleaning program (sometimes referred to as hot spot or trouble spot cleaning) to remove debris from the sewers and to prevent blockages that may result sewer backups or SSOs/Spills. Sewer lines may be on a 3, 6 or 12 month cleaning cycle. The program consists of cleaning on a site specific frequency. Based on the results of the cleaning, the cleaning cycle may be revised to a more frequent or less frequent cycle. The high frequency cleaning list will vary and Appendix E will be updated with the current list during CMOM updates. The Operations Manager maintains the most current list of high frequency cleaning line segments.

2. City-Wide Cleaning Program - The city-wide sewer cleaning cycle will be initially accomplished on the frequency established by the consent decree and includes: 1) clean each unique sewer segment in the collection system with sizes less than twenty-four inches in diameter not less frequently than once every seven calendar years; 2) clean each unique

sewer segment in the collection system with sizes twenty-four inches and larger in diameter not less frequently than once every ten calendar years; and 3) clean a minimum of one hundred (100) miles of gravity sewer each calendar year. To comply with this minimum 100 miles annual requirement, TWU may additionally count each cleaning of a sewer segment cleaned under the high frequency cleaning program. The CityWorks™ work order system maintains information on the nature of material removed from each sewer segment (*e.g.*, FOG, roots, debris) and classifies the amount of such material removed (*e.g.*, heavy, moderate, or minimal).

As part of the TCEQ/EPA consent decree annual report, TWU must include the following to demonstrate that at least one hundred (100) miles of the total gravity sewer lines were cleaned:

a. the total miles of unique gravity sewer lines cleaned during the reporting period and map(s) depicting the locations of sewer segments that were so cleaned;
b. the total miles of gravity sewer lines cleaned during the reporting period, including all lengths of gravity sewer lines cleaned in accordance with the High Frequency Cleaning Program.; and
c. an identification of whether particular sewer segments were added or removed from the High Frequency Cleaning Program based upon information gathered on the nature and classified amount of materials removed during the System-Wide Routine Cleaning program.

3.6 Smoke Testing Program

Smoke testing is another tool that the City uses to identify sources of inflow and potential defects on both public and private sewers. Flow monitoring data is gathered during Infiltration/Inflow Analysis to determine the impact of wet weather inflow into the system. During these flow monitoring cycles, data is being reviewed to determine the extent and magnitude of Rainfall Dependent Infiltration/Inflow (RDII). Analysis of this data is used to prioritize areas of the city with excessive inflow to determine if smoke testing is warranted. The smoke testing procedure consists of identifying areas of the collection system with elevated and excessive inflow. Study area maps are generated in GIS and notification of residents is initiated generally thru the use of door hangers. The City Police Department and Fire Department and area residents are notified when performing smoke testing. The City normally outsources smoke testing to local specialty consultants. Both public and private sector defects are documented and repair recommendations and costs established. City staff, along with the consulting engineer, reviews the recommendations and reconcile them with other programs that may influence final implementation such as capacity improvements, mainline remediation efforts, CIP projects, etc.

Field documentation of the defects is extremely important and includes sketches of each system defect along with pertinent information for prioritizing the defects. Data documentation is sufficient to establish the exact location of each defect and determine the best repair method. Photographs are taken to document each defect during the smoke test. The location of the defect is documented by measurement from permanent objects (corner of house, power pole, etc.). The data collected in the field is sufficient so that the defects identified can be readily listed by priority for subsequent repair. Additionally, smoke-testing information is used to generate a list of line segments that require internal CCTV inspection to further identify the inflow source.

Smoke testing results may be combined with the CCTV and manhole inspection data to obtain a comprehensive repair plan for both public and private sector defects.

3.7 Dye Water Testing

Dye water testing is used to assist in determining the location of specific defects during internal television inspection and to trace sewers for map updating and connectivity checks. Nontoxic dye is introduced as a powder or liquid. Cross-connections, roof drains and area drains that are suspected of being connected to the sanitary sewer may positively be confirmed using the dye tracer procedure.

3.8 Lateral Inspections

Laterals are the sewer pipelines that convey wastewater from the house to the mainline public sewer. Lateral sewers are generally small diameter and are the responsibility of the property owner to maintain. TWU utilizes smoke testing to identify defects on the private lateral lines that allow the introduction of inflow. Section 3.6 above describes the process used for identifying defects on private laterals. Those defects identified on private laterals are repaired by the property owner. TWU personnel communicate with property owners to encourage repair of defects identified on private laterals. If necessary, Code Enforcement is notified to facilitate compliance by residents.

SECTION 4

Capacity Plan

4.1 Background

TWU is in the preliminary stage of developing a comprehensive hydraulic model of the wastewater collection system. The schedule for completion is driven by the consent decree schedule (see Appendix H). The capacity plan presented in this section describes the anticipated process staff will use to ensure system capacity. This section will be reviewed and updated on an annual basis and incorporate process changes as the model is developed. The consent decree includes specific requirements for the hydraulic model development process for performing capacity assessments of the collection system. Refer to CMOM Appendix H – Consent Decree (paragraphs 50 thru 55 and Consent Decree Appendix F and G) for requirements and descriptions.

TWU is committed to having sufficient future capacity both during dry and wet weather. Managing the system capacity requires collecting system hydraulic data and performing analysis to isolate areas of the collection system where capacity constraints exist. This includes identifying areas, during wet weather events, where excess flow from rainfall dependent infiltration/inflow (RDII) may create difficulty to transport peak flow rates.

4.2 Capacity Constraints

To identify potential capacity constraints, a hydraulic analysis of the wastewater collection system will be performed to evaluate dry and wet weather wastewater flows recorded from flow meters placed at key locations within the collection system. The hydraulic analysis effort identifies various potential capacity constraints that are then documented for further detailed evaluation. TWU currently outsources the hydraulic modeling and associated flow monitoring for model calibration to consultants.

Specific projects are then developed to address “confirmed capacity constraints” following detailed field verification and engineering analysis where necessary. These hydraulic improvements, in association with the on-going system condition assessments and rehabilitation programs, will extend the life of the collection system assets and provide reliable service to residents. Under the CMOM Plan, a comprehensive hydraulic model of the wastewater collection system will be developed and utilized in optimizing the collection system hydraulic performance and for analyzing various alternatives.

The CMOM on-going capacity assurance plan will address short and long-term capacity issues. Short-term capacity analysis may be required to address new development while long-term capacity analysis includes future population growth. The hydraulic model will be the primary tool used for performing preliminary evaluations for capacity assurance and alternatives analysis. To ensure accurate model results, it is anticipated that portions of the model may require periodic re-calibration based on when and where future development occurs. Areas of the City that are built-out will require less re-calibration.

4.3 Wastewater Flow and Rainfall Monitoring Program

Flow monitoring has historically been performed in conjunction with the master plan development and hydraulic model calibration. Flow and rainfall monitoring is critical to the development of the hydraulic model and to analyze system capacity. The collected data is used to establish the areas of the collection system that contribute to excessive RDII and provide data for engineering design. Comprehensive flow monitoring will be required periodically to maintain model calibration and establish the effectiveness of infiltration/inflow reduction programs.

4.4 Hydraulic Analysis/Master Planning/Capacity Assessment

Hydraulic wastewater system evaluation (including flow metering and capacity evaluation) provides TWU the tools for analyzing system conveyance capacities, bottlenecks, and potential overflow locations. The hydraulic analysis helps facilitate system performance evaluation, aids in development of system improvements, produces informational maps/exhibits, and predicts the system's response to future improvements. The hydraulic evaluation enables the City to assess and predict capacity requirements and develop least cost strategies to optimize system performance. Data generated from the hydraulic evaluation will be shared and provide the necessary information to ensure interceptors have adequate capacity to transport and treat wastewater flows now and into the future. The detailed hydraulic model update process currently in use by TWU is described in the consent decree (CMOM Appendix H).

SECTION 5

Sanitary Sewer Overflow Response Plan (SSORP)

5.1 Background

The Sanitary Sewer Overflow Response Plan (SSORP) is designed to ensure that each report of a sewer overflow or spill is dispatched to the appropriate crew so that when confirmed the impact of the overflow can be minimized with respect to public health, adverse effects on water quality, aquatic life and customer service. The procedures are outlined in the manual "Sanitary Sewer Overflow Response Plan" included in CMOM Appendix D. This manual provides detailed guidance to staff in responding to SSOs/Spills and documents procedures to evaluate the cause of SSOs and Spills. The SSORP also includes provisions to ensure appropriate notification and reporting to local, state and federal authorities.

This manual along with SOPs are used by staff to inform and provide direction for SSO and spill reporting and follow-up procedures to maintain the City's compliance with Federal and State regulations as they apply to overflows and spills from the wastewater collection system.

The SSORP will be reviewed with the CMOM Plan and updated as needed to adapt to changing conditions, address new concerns, address regulatory changes and implement new standard operating procedures. TWU maintains written procedures indicating the entities, (e.g., drinking water purveyors, the public, public health officials, and the regulatory authority) that will be notified in the event of an SSO that meets public notification requirements. The procedure indicates the chain of communication used to notify the proper personnel of an SSO/Spill event for reporting and remediation. The procedure includes the titles, phone numbers, and responsibility of all personnel involved. The written procedures allow for different levels of response for different types of SSOs. For example, the TCEQ regulatory authority allows that sewer spills less than 1000 gallons that do not reach waters of the State (including other criteria) to be reported on a monthly basis. The TCEQ guidelines are included in the SSORP.

Regulatory compliance and notification issues associated with the collection system are the responsibility of the Operations Manager and Manager of Water Quality. A written standard operating procedure has been prepared on SSO response and reporting. A comprehensive SSORP document is presented in Appendix D for use in training staff in responsibilities and procedures. Refer to Appendix D for detailed information associated with SSO/Spill notification procedures.

SECTION 6

Fats, Oils and Grease (FOG) Plan

6.1 Background

TWU is responsible for maintaining 655 miles of publicly owned sanitary sewer pipelines and 24 lift stations. To keep its sewer system functioning properly, the City has implemented a Fats, Oils, and Grease (FOG) Control Program to minimize blockages in the sewer lines that may cause sanitary sewer overflows (SSOs) that could affect public health or cause contamination of receiving streams. The Manager of Water Quality manages the FOG Control Program and coordinates with NetHealth (Northeast Texas Public Health District; 815 N. Broadway Ave, Tyler, Texas 75702) as needed. The Manager of Water Quality will implement the grease interceptor inspection program and NetHealth will continue to perform food service establishment health inspections.

City ordinances impose various requirements for commercial sewer system users including the installation and maintenance of grease interceptors, oil/sand interceptors, and related devices (Grease Reducing Devices or GRDs) within the sewer system. Grease traps generally refer to small under the counter devices. A grease interceptor is generally a large outside, normally underground, multi-compartment tank that reduces the amount of FOG in wastewater before discharge into the wastewater collection system. Regular staff inspections minimize the discharge of FOG and educate facilities regarding program requirements. Those facilities found to be non-compliant will be re-educated on the requirements. Enforcement actions may be initiated which could result in suspension or termination of service, injunctive relief, civil penalties and criminal prosecution in accordance with City ordinances.

By working together with users of the city's sewer system to reduce the amount of FOG that enters, TWU can minimize blockages, cleaning costs, odors and potential SSOs. The purpose of the FOG Manual (see Appendix C), is to provide written documentation of the FOG Control Program. The various components of the FOG Control Program include:

- Public and Commercial Education and Outreach
- Provisions for proper FOG disposal
- Legal Authority to Prohibit Discharges
- Requirements to install and maintain GRDs
- Development and implementation of source control measures
- Coordination with NetHealth on FOG related problems

Key program elements are:

1. Permits and Ordinances
2. Inspections
3. FOG requirements
4. FOG Haulers
5. Education and Outreach
6. Enforcement
7. FOG Program Performance Indicators

SECTION 7

Root Control Program

7.1 Background

Roots can enter a sewer pipe through pipe cracks, open joint, service laterals, etc. Once in the pipe, roots have an optimum environment to grow and flourish. As these roots grow, they collect grease or other debris and grow in size often going unnoticed. When roots get to a size that disrupts the sewer flow or cause damage to pipe, it can lead to SSOs or spills.

Ways that TWU determines root problems in the sewer collection system include:

- Maintenance histories where cleaning staff identified roots creating blockage or slow service.
- SSO cause analysis results will indicate sewer lines that have experienced a stoppage with the cause of stoppage being roots. Each SSO location undergoes CCTV inspection to establish the condition causing an overflow or spill, unless the cause was established by other methods.
- Sewer line CCTV reports will provide accurate evidence of root problems during condition assessment activities. These reports will be used to generate root removal locations for chemical and/or mechanical root removal.

Conditions that increase the likelihood of root problems in a particular sewer section:

- Sewers located near other sewers with known root problems.
- Pipes located near the surface, closer to tree roots.
- Lines located off-road in wooded easements, in tree-lined streets, or at the curb line near trees and roots. In general, sewer lines in residential areas are more susceptible to root problems than lines in industrial areas.
- Lines with many lateral connections per lineal foot, affording greater opportunity for root intrusion.
- Sewer lines constructed with loose-fitting joints or outdated joint packing construction material.
- Asbestos-cement pipe, orangeburg pipe, and clay tile sewers with oakum joints are more susceptible to root penetration. Pipe with air-tight gaskets and seamless pipe are less susceptible.

7.2 Root Control Methods

There are several chemical and mechanical sewer line root control methods used by TWU. In some cases, chemical treatments cannot be used, especially when near wastewater treatment plants or because of some other environmental or safety consideration. In these cases, non-chemical methods must be used.

a. Non-Chemical Root Control Methods

Control of roots in sewers can be minimized by system design and construction inspection. Such controls must be implemented before roots become a problem by

careful installation and inspection of sewer lines during construction. Inspection and acceptance testing of new construction minimizes defects that can allow root intrusion.

Physical root control measures for sewer lines involve isolating the sewer pipe from the roots around or near the sewer pipe. Three examples of physical root controls are tree removal, pipe replacement, and pipe re-lining. These root control methods are generally limited to site specific locations where mechanical or chemical controls are not possible.

Mechanical control is the most common method of control used by TWU. It involves the use of cutting tools, hydraulic cutters or other devices that cut and remove roots from sewers. Its main advantage is that it is the only method for immediately relieving a root blockage. Sewer stoppage is a priority and the utility maintains mechanical root control devices for correcting such problems. The main disadvantage of mechanical control is that it provides no residual control or long-term effectiveness. Root masses generally grow back heavier each time they are cut. Tap roots continue to grow in diameter and, in time, place stress on sewer pipe. Good results are obtained if the roots are cut flush with the joints; however, offset joints and cut-in laterals can prevent the use of full-gauge cleaning tools. Mechanical controls often used by TWU include:

- Rodding Machine - Rodding machines are flexible steel rods with rotating blade cutters, augers, or corkscrews. Rodding machines are most effective in small diameter sewers, up to 12". TWU has two rodding machines with root cutters.

- Jetters, also known as flushers, flush trucks, jet rodders, jet trucks, vacuum trucks and hydraulic sewer cleaners, consist of a high pressure water pump, water tank, hose reel, and ½" to 1" sewer cleaning hose. Water shooting through orifices in the rear of the nozzle propels the hose through the sewer, blasting it through obstructions. As the hose and nozzle are retrieved, debris is hydraulically flushed back to the insertion manhole for removal. Jetters can also be equipped with water-propelled spinning root cutters. TWU has two jetters and two vacuum jetters with various cleaning and root cutting nozzles.

b. Chemical Root Controls - Root control products, like all chemicals used to kill plants, are herbicides. Herbicides for sewer root control kill plants by contact. Contact herbicides, like metam-sodium or diquat-based herbicides, have a localized effect and cause quick dieback only of the parts of the plant that they touch. Using proper application methods and correctly calibrating equipment can assure the most effective use of root control chemicals. Proper use of chemicals and equipment minimizes the operation costs for the applicator and protects the health and safety of the applicator, the public, the environment, and the wastewater collection system. The TWU Operations Manager compiles a listing of chemical root control line segments and outsources the chemical root control treatments.

7.3 Root Control Reporting

The Operations Manager prepares the annual summary report on the total miles of gravity sewer lines where preventive and reactive root controls were conducted. The sources for those pipes in need of root control are the CityWorks™ work management system, SSO follow-up CCTV inspection cause analysis, cleaning records, CCTV records, FOG records and condition assessment records. For the annual report required by the consent decree, the Operations Manager provides the following:

a. Identify root control sewer segments
b. Identify by percentage of total if chemical or mechanical means were used for root control
c. Identify total miles of gravity sewer where root controls were conducted

SECTION 8

Condition Assessment

8.1 Background

The CMOM Plan is a continuing program with no defined end, but can and will be modified as the system is evaluated, repaired and updated. The sustainability of CMOM requires periodic inspection and re-inspection of the collection system assets to establish condition and repair/replacement needs. This proactive asset management process will ultimately identify system defects early while the repairs are generally less expensive and less intrusive. After going through a cycle of inspection and testing required by the consent decree, both the number and cost of repairs should decrease.

TWU has historically outsourced to local specialized consultant's condition assessment activities. The final reports from these field investigations include recommended repairs and estimated costs. Although field forms and report formats vary among consultants, the general information gathered is similar and conforms to industry standard manuals of practice published by the American Society of Civil Engineers (ASCE) and Water Environment Federation (WEF).

Figure 1 (see Section 1) presents a general process diagram for the condition assessment activities. Typical procedures and example field forms are presented in Appendix F. Note that the condition assessment activities and reporting must follow the consent decree requirements. Refer to CMOM Appendix H for the consent decree requirements.

TWU staff will review existing information and determine the initial prioritization of areas to move forward with the city-wide condition assessment. In general the following factors are used in establishing the priority and timing of the condition assessment:

- Frequency and location of historical SSOs
- Maintenance history
- Infiltration/Inflow Analysis results
- Pipe age and materials of construction
- Criticality of sewer
- Street or alley improvements
- Nearby utility improvements

Staff reviews all relevant data and evaluates best management practices before implementing field inspections. Refer to Appendix F for example condition assessment guidance and example forms.

8.2 Pipeline Sewer Condition Assessment

Under CMOM, sewers will be internally inspected to determine asset condition on a timeline and cycle established by the consent decree. Other department's programs may impact the scheduling of pipeline condition assessments. For example, if a street overlay or replacement is planned, the CCTV inspection of the sanitary sewer under the planned improvements should be scheduled well ahead of construction to fully evaluate the pipeline condition and arrange for rehabilitation/replacement or upsizing based on hydraulic modeling results.

As the pipelines undergo condition assessment, the findings will be compiled and remedial measures will be established where required. Depending on the condition, those lines not requiring immediate action will be placed on a re-inspection cycle based on the observed condition.

8.3 Manhole Condition Assessment

Each manhole location, condition and attributes is critical for managing the collection system. The manhole condition assessment will initially be a 5 year program (completed by 2022) and then will be performed on a 7 and 10 year cycle based on pipe diameter. Although the procedures used by consultants varies somewhat, the attribute data and condition information gathered is similar.

During the manhole inspection, the collection system maps are updated along with manhole and connecting pipe attribute data. Utilities and Public Works maintain a comprehensive electronic as-built drawings database. As map updates are identified, and then the GIS Department will correct the existing maps. The data gathered is incorporated into the remedial measures plan and establishes the base data necessary to accurately determine rehabilitation alternatives and costs. Other attribute data gathered from this work are the determination of debris levels in pipes, verification of pipe sizes and materials of construction. This information is also critical in constructing the hydraulic model and preparing subsequent rehabilitation plans. The comprehensive remediation plan will coordinate with other CIP needs and other CMOM activities.

8.4 Lift Stations, Force Mains, Aerial Crossings and ARV Condition Assessment

The TWU wastewater collection system has 24 lift stations. Each lift station is critical to transporting wastewater to the two treatment plants. The lift stations require periodic inspections to maintain reliability, to identify maintenance needs and to establish the condition of these critical components prior to failure. Staff and/or consultant will periodically perform condition assessments at each lift station following the general procedures developed for the condition assessment (refer to Consent Decree in CMOM Appendix H - Condition Assessment):

The lift station condition assessment checklist will generally include the following major categories:

a. General Facility Information
b. Building Foundation/Slab Condition
c. Dry Well/Wet Well Information and Condition
d. Security features and status
e. Safety features and status

f. External appearance
g. Building Structure
h. Instrumentation and Pump Controls
i. Other site mechanical information
j. Electrical and Switch Gear
k. Motors and Pump Information
l. Lift Station Valves and Piping
m. Force Main Information
n. Odor Control Facilities

Force mains convey the wastewater flows under pressure and represent about 3 % (108,257 linear feet) of the city's wastewater system. Air release valves (ARV's) are normally installed at the high points along the line and due to corrosion often fail to function as originally intended. Annual inspection of force main and ARV valve(s) will identify developing issues.

Aerial crossing are also inspected by accessing the location and inspecting the pipeline condition, debris buildup and structural supports. Creek banks are inspected for erosion that may impact the aerial crossing integrity.

The following describes the inspection process:

A. Conduct an annual inspection of all sanitary sewer force mains. The inspection will consist of walking the entire length of each force main's path as well as physical inspection of all ARV (air relief valves) installed on the given force main. Records documenting each inspection will be maintained in the work management system.

B. Force Main Right-of-Way Inspection – Visually inspect the force main right-of-way for indications of possible changes that may impact the condition of the pipeline. Visual observations will include but not be limited to the following:

    1. Examination of the soils adjacent to the pipeline horizontal location looking for wet spots, unusual vegetative growth, or other indicators that may indicate a possible leak.

    2. Observation of any recent construction or road repairs that may have affected the structural integrity of the force main pipeline.

    3. Observations of soil movement or unusual settling indicating possible structural damage to the integrity of the pipe.

C. Aerial Crossing Inspections - Visually inspect each aerial crossing for indications of possible changes that may impact the condition of the pipeline. Visual observations include debris against the aerial crossing pipeline or structural supports, bank erosion that may impact structure, structural supports deterioration or undermining, pipe leakage, etc.

D. Valves, Fittings and Appurtenances – Inspect and conduct a functional analysis of, to the extent practicable, of all air relief valves, drains, connections, fittings, vault enclosures and any other

appurtenances associated with the air relief valve installation. Identify any possible conditions that may indicate potential damage such as corrosion that would present a risk of pipe failure or interruption of service for the force main.

8.5 Condition Remedial Measures

Wastewater collection system assets have a useful operational life of approximately 75 to 100 years. Whether manholes or pipelines reach their useful life are to a great extent based on the materials of construction, soil condition, construction bedding, hydrogen sulfide concentrations, root intrusion, and sound maintenance practices. Collection system renewal is a continual process of finding system defects, prioritizing them and fixing them. The results of the condition assessments will generate repairs to manholes and mainline sewers that will be incorporated into the remedial measures plan. Private sector defects will also be identified requiring repair and/or enforcement of local codes.

Rehabilitation methods available to extend the life of collection system assets (renewal of assets) include trenchless technologies that minimize the impact to customers. Manhole rehabilitation may include lining, sealing, installing water tight ring and covers, raising buried manholes to grade, replacing vented covers, etc. Mainline sewer rehabilitation may include cured-in-place pipe (CIPP), slip lining and upsizing or pipe replacement by pipe bursting. The remedial measures plan will provide the detail necessary to prioritize and budget needed system rehabilitation.

Knowing when a particular pipeline will require upsizing, from the master planning effort, will impact remedial measures plan. It may be more cost effective to defer rehabilitation (yet maintain the pipe) and replace the pipe as part of the capital improvement plan (CIP). The remedial measures plan will address such coordination and schedules. Also, the least-cost remedial measures plan may require deferring some rehabilitation until sufficient quantities are identified to reduce unit repair costs.

The remedial measures plan provides recommendations to repair replace and, rehabilitate specific assets based on the results of the condition assessment. Since these programs are on-going efforts, the remedial measures plan will require updating annually as new condition, O&M and capacity data is obtained and analyzed.

SECTION 9

Communication and Reporting

9.1 Background

As a Council-Manager form of government, the Council is responsible for policy making and approval of the budget. The Council also appoints Boards and Commission members, Task Force and Committee members, and hires the City Manager. There are six Councilmembers, who are elected from districts, and a Mayor who is elected at-large. Councilmembers and the Mayor may serve up to three consecutive two-year terms.

The City Manager is responsible for the day-to-day operations of the organization and all other City employees report to him through the organizational structure.

9.2 Methods of Communication

The City website (www.cityoftyler.org) provides information on each department, council agenda, links to ordinances, on-line forms and access to a wide range of information. TWU also utilizes the Tyler Public Works website at www.tylerpublicworks.com as a portal to obtain detailed information on current projects, city engineering standards and consent decree status and reports. TWU provides specialized information for distribution to customers and the general public in various printed and electronic formats. Following is a summary of various media in use by TWU to notify and communicate directly with customers and residents:

a. Newsletters
b. Billing inserts
c. Direct mailings
d. Local television and radio station public service announcements
e. Presentations to local organizations
f. Facebook
g. Twitter
h. YouTube
i. Instagram
j. Pinterest
k. LinkedIn

9.3 CMOM Communication

CMOM-related topics that will require on-going discussions with regulators, council members, residents, businesses, customers and other stakeholders include:

1. Financial impact of program implementation
2. Identified problem areas in the system
3. Sanitary Sewer Overflow/Spill locations and trends
4. Communication to stakeholders

5. Meeting the CMOM program goals
6. Future system capacity needs
7. Updates to CMOM Plan

TWU works with the City Communications Department in identifying media contacts and preparing public notification narrative.

9.4 Reporting Methods

As part of the Communications Plan, staff has reporting requirements to other entities as outlined in the Sanitary Sewer Overflow Response Plan (SSORP), FOG Manual and TCEQ/EPA compliance reporting. Current reporting requirements are presented in CMOM Appendix D (SSORP) and Appendix H (Consent Decree). The reporting requirements presented are important to the overall management of the CMOM Plan.

SECTION 10

CMOM Annual Review and Reporting

10.1 Annual Review and Reporting

This CMOM Plan is meant to be a working document and will be updated as procedures are revised that reflect TWU's experience with its implementation. The CMOM Plan will also incorporate any revisions or clarifications to the program requested by TCEQ/EPA in any discretionary comments that may have been provided during the review process.

A CMOM annual review is necessary to ensure that the CMOM goals, consent decree requirement and objectives are met and performance measures are reviewed, evaluated, and updated on a regular basis. The CMOM Plan provides the framework and documentation to implement the programs that TWU feels will best serve its customers. The following will be completed during the CMOM review:

1. Review the CMOM Plan Protocols and program elements for applicability and relevance. Revise as necessary to detail current practices.
2. Review CMOM budget for adequacy to meet recommendations
3. Monitor performance indicators and interpret results. Revise Appendix G- Performance Indicators based on annual review.
4. Determine if goals remain applicable to the TWU.
5. Provide recommendations to SOP's or recommend new SOP's.
6. Update the CMOM Plan with revision number and date.
7. Prepare summary report on review findings and recommendations.
8. Collect and update each CMOM Plan and re-distribute to appropriate staff.

10.2 Regulatory Compliance

The City is currently under a TCEQ/EPA consent order. CMOM Appendix H will be updated as needed with the latest TCEQ and/or EPA regulatory compliance correspondence and schedules to track compliance. The City may modify its CMOM program as needed to improve management of the collection system and meet the CMOM objectives provided that any such modification is made in accordance with the consent decree (CMOM Appendix H, Paragraph 139). TWU will incorporate modifications to the CMOM program document by creating a Revised CMOM program and posting that document to the public document repository required by the consent decree (CMOM Appendix H, Paragraph 5) within fourteen (14) days after: 1) TCEQ/EPA and City mutual agreement of modification, for non-material modifications that are made pursuant to Paragraph 139; or 2) the Court's order approving the modification, for material modifications that are requested and so ordered pursuant to Paragraph 139.

10.3 Implementation Schedule

Many of the CMOM elements have been fully implemented while other elements are partially implemented due to their dependency on completion of various tasks that are consent decree dependent, require revisions to City ordinance and require EPA review and approvals. Table 4 presents the CMOM schedule including deadlines for implementation of each CMOM Program major component.

Table 4
CMOM Program Implementation Schedule

Capacity, Management, Operation and Maintenance (CMOM) Program Elements		Full Implementation
1)	Training Program	Implemented
2)	Sanitary Sewer Overflow Response Plan (SSORP)	Implemented
3)	SSO Reporting and Documentation Procedures	Implemented
4)	System-Wide Routine Cleaning Program	Implemented
5)	Revised High Frequency Cleaning Program	Implemented
6)	Sewer System Internal Inspection Program	Implemented
7)	Sewer System Manhole Inspection Program	Implemented
8)	Lift Station Preventive Maintenance Plan	Implemented
9)	Fats, Oils, and Grease (FOG) Control Program	Implemented
10)	Root Control Program	Implemented
11)	Information Management System (CityWorks)	Implemented

Appendix A

Standard Operating Procedures (SOPs)

The following written SOPs are representative of the procedures currently followed by staff.

Appendix A

Tyler Water Utilities

Standard Operating Procedures

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Standard Operating Procedures

Annual Test on Sewer Lift Station By-Pass Pumping	
Origination Date: 09/08/2017	**Policy Number:** Wastewater-001
Revision: New	**Approved:**

Statement of Policy:

It is the policy of the Wastewater Division to train staff on testing of By-Pass Pumping at each sewer lift station.

Applicability:

This policy applies to all Tyler Water Utilities employees.

Responsibility:

It is the responsibility of the Tyler Water Utilities Manager of Water Quality or his designee to ensure adherence of this policy.

Personnel:

The number of personnel required will depend on the nature and complexity of each job assignment but at a minimum of two crews which consist of: two Crew Leader (2), two Equipment Operator (2), and two Maintenance Worker (2).

Equipment:

- All Safety Equipment Required for Compliance with the Safety Program
- Assorted Hand Tools
- Sewage By-Pass Pump (mobile trailer mounted supplied by local vender)
- Discharge Hose
- Suction Hose with Strainer
- Trash Pump with Suction & Discharge hoses
- Vactor Truck (if needed)
- Service Truck

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

1. Identify location using map, if necessary.
2. Ensure notification to Operations Manager of test being performed.
3. Dispatch Service Truck to location to pick up By-Pass Pump.
4. Start pump in accordance with O & M manual once verified pump starts turn off pump.
5. Hook up pump to Service Truck.
6. Load suction hose & discharge hose.
7. Arrive on site of lift station and position pump near wet well.
8. Disconnect pump from Service Truck.
9. Hook up suction hose to outlet coming out of wet well to By-Pass Pump.
10. Hook up discharge hose to By-Pass Pump and to force main By-Pass.
    a. **Note:** Ensure gaskets have been installed to prevent seepage from discharge hose.
    b. **Note:** Both hose connections must be connected with locking mechanisms to ensure proper seal.
    c. **Note:** Close gate valve and open emergency By-Pass valve.
11. Start Pump and verify prime is made and wet well level dropping.
12. Once test is complete contact Operations Manager with status.
13. Turn off By-Pass pump.
14. During pump/hose disassembly, make sure sewage is contained in wet well.
15. Roll hoses in a manner that will cause the sewage to flow into wet well.
16. Store hoses in designated location.
17. Open valve and close emergency By-Pass valve.
18. Turn pumps on Hand to ensure normal operations then back to Automatic
19. Secure site by locking all appropriate doors, panels, gates, hatches, etc.
20. Return pump and equipment back to service provider.

Collection System Smoke Testing	
Origination Date: 09/8/2017	**Policy Number:** Wastewater-002
Revision: New	**Approved:**

Statement of Policy:

It is the policy of the Tyler Water Utilities Division to perform smoke testing on sewers to determine I/I in the collection system.

Applicability:

This policy applies to all Tyler Water Utilities Division employees.

Responsibility:

It is the responsibility of the Tyler Water Utilities Operations Manager and Superintendent to ensure adherence of this policy.

Personnel:

One (1) Crew Leader, One (1) Equipment Operator and one (1) Maintenance Worker. The size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- GPS Equipment
- Flashlight
- Smoke Blower
- Inflatable plugs, air compressor and air tank
- Multi-level Gas monitor

Materials:

- Smoke Notice to Residents
- Smoke generators
- Survey flag to mark defects
- Documentation forms

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the City of Tyler. All traffic control measures shall conform to the *Texas Manual*

on Uniform Traffic Control Devices (TMUTCD). The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized to properly perform a smoke test.

1. Inform Fire Department and residents (door hanger and/or Code Red notification) prior to work being done.
2. Upon Arrival, secure work site in accordance with safety program.
3. Use sewer system GIS maps to locate manholes in the vicinity of the area to be tested.
4. Remove manhole lid.
5. Set up blower over manhole and apply applicant to start smoke test.
6. Check manholes, cleanouts and at various points upstream and downstream of the test area to observe and record (location sketch and GPS) evidence of the presence of smoke. Use survey flag to mark defect locations.
7. Once smoke test is complete notify Fire Department.
8. Before leaving the job site, thoroughly clear area of all surplus material, debris and tools.
9. Submit completed work order and any additional work requests, including description of findings by the same business day.

Smoke Test Notice To Residents

SMOKE TESTING
NOTICE TO RESIDENT

For the next few days, inspection crews will conduct a physical survey of the wastewater collection system. Utility workers will perform this testing, which involves opening manholes in the streets and backyard utility easements. Information gained from this study will be used to repair and improve the wastewater collection system.

One important task of the survey will be smoke testing of sewer lines to locate breaks and defects in the system. During this testing. white smoke will exit through vent pipes on the roofs of homes and through sewer line breaks. The smoke is non-toxic, leaves no residue, and creates no fire- hazard. The smoke should not enter your home unless defective plumbing exists or drain traps are dry.

If you have seldom-used drains, please pour a gallon of water in the drain to fill the drain trap. This procedure will help prevent the possibility of smoke entering your living areas through those drains. Field crews will perform testing of all sewers in the area. At no time will field crews have to enter your business or residence.

Your cooperation is appreciated. Should you have any additional questions concerning this study or if you desire special assistance. please phone:

Tyler Water Utilities

903-531-1285

PRUEBAS DE HUMO
AVISO A LOS RESIDENTES

Durante los próximos días, nuestro personal de inspección conducirá una revisión física del sistema de colección de agua de desecho. Un análisis en las tuberías existentes se le estará realizando pruebas, que implican abrir cámaras subterráneas en las calles y en servidumbres de utilidad en las yardas traseras. La información recopilada de este estudio será utilizada para reparar y mejorar el sistema de colección de agua de desecho.

Una tarea importante será la prueba de humo de líneas de alcantarilla para localizar rupturas y defectos en el sistema. Durante estas pruebas, el humo blanco saldrá por las aberturas en los techos de casas y por rupturas en líneas de alcantarilla. El humo no es tóxico, no deja ningún residuo, y no creara ningún peligro de incendio. El humo no debería entrar en su casa a menos que su plomería esté defectuosa o que las trampas de desagüe estén secas.

Si usted rara vez ha usado los desagües, por favor vierta un galón de agua en el desagüe para llenar la trampa del desagüe. Este procedimiento ayudará a prevenir la posibilidad de que el humo entre en las areas habitables de su casa através de los desagües. El personal de inspeccion realizarán pruebas en todas las alcantarillas en el área. En ningún momento nuestro personal entrará a su negocio o residencia.

Su cooperación es apreciada. Si usted tiene preguntas adicionales o preocupacion acerca de este estudio o si usted desea ayuda especial por favor comunicarse con:

Tyler Water Utilities

903-531-1285

Standard Operating Procedures

Lift Station Inspection	
Origination Date: 09/1/2017	**Policy Number:** Wastewater-003
Revision: New	**Approved:**

Statement of Policy:

It is the policy of the Wastewater Department to inspect and maintain sewer lift stations. The City of Tyler has twenty four lift stations which are inspected on a daily basis. The purpose of this procedure is to establish clear guidelines for inspecting and maintaining sewer lift stations.

Applicability:

This policy applies to all Water\Wastewater employees.

Responsibility:

It is the responsibility of the Manager Water Quality or his designee to ensure adherence to this policy.

Personnel:

A minimum of two crew members are required and this will depend on the nature and complexity of each job assignment.

Equipment:

- All equipment necessary for compliance with the safety program
- Assorted Hand Tools
- Crew Truck
- Gas Monitor as required

Materials:

- Lift Station Checklist

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized for daily inspections of lift stations.

1. Upon Arrival, secure work site in accordance with safety program.
2. Complete City of Tyler Lift Stations Checklist which includes the following:
    a. Run time hours for Pump #1, Pump #2, Pump #3
    b. Checked motor control center (electrical breakers, switches and controls in correct position) (Yes/No)
    c. Electrical generator in “Auto” and ready (Yes/No/NA)
    d. Remote monitoring equipment operating properly (Yes/No)
    e. Pump operating properly (check for vibrations, unusual noise and excessive heat) (Yes/No)
    f. Transducer clear of debris and operating (Yes/No)
    g. Level controller operating properly (Yes/No)
    h. Air bleed lines clear (Yes/No/NA)
    i. Checked oil levels (Yes/No/NA)
    j. Checked seals (Yes/No/NA)
    k. Checked force main check valves (Yes/No)
    l. Checked drive belts and couplers (Yes/No/NA)
    m. Inspected building, fence and grounds (Yes/No)
    n. Record any notes or comments
3. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris and tools.
4. Submit completed work order form by same business day. Inspection checklist should be filed with completed work order.

Standard Operating Procedures

By-Pass Pumping – Gravity Sewer System	
Origination Date: 09/1/2017	**Policy Number:** Wastewater-004
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to utilize portable pump sets to by-pass damaged or otherwise defective sections of the sewerage system as a temporary measure pending permanent repairs; thereby maintaining an adequate level of service to customers and eliminating the discharge of sewage into any lake, stream, natural waterways, or property.

Applicability:

This policy applies to all Water\Wastewater employees.

Responsibility:

It is the responsibility of the Operations Manager or designee to ensure adherence to this policy.

Personnel:

One (1) Crew Leader, One (1) Equipment Operator, Two (2) Maintenance Workers and One (1) Truck Driver. The size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Tools
- Inflatable Plugs
- Portable Air Compressor
- Portable Pump Set, 3", 4" or 6" Trash Pump as required.
- Appropriate suction/discharge hoses.

Materials:

- Disinfectant (HTH)
- Fuel
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for

implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program. The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized for by-pass pumping on a gravity sewer line.

1. Upon Arrival, secure work site in accordance with safety program.
2. Use GIS system maps to locate upstream and downstream manholes of obstructed area.
3. Identify any low lying buildings which may be subject to back-up.
4. Place portable pump and air compressor at manhole upstream of obstructed area.
5. Connect air hoses to plugs and compressors.
6. Connect required lengths of suction and discharge hoses to pump.
7. Lower plug into upstream manhole and install on the outflow side. (if required)
8. Inflate plug to seal downstream pipe.
9. Set throttle to desired level for pump operation.
10. Place discharge hose from pump into downstream manhole past obstructed manhole.
11. Operate pump in accordance with manufacturer's instructions.
12. Ensure all pipes/hoses are properly sealed and secured.
13. Monitor equipment/site continuously until bypass pumping is no longer required.
    (a) Monitor level of sewage in upstream manhole and adjust pump rates to ensure there is no overflow of sewage.
    (b) Monitor level of fuel and oil during operations.
    (c) Monitor the condition of the inflatable plug and re-inflate if necessary.
14. When bypass pumping is complete, deflate plug in upstream manhole and turn off pump.
15. Roll hoses in a manner which will cause the sewage to flow into manhole.
16. Remove and store hoses appropriately.
17. Before leaving the job site, the area should be appropriately cleaned and thoroughly cleared of all surplus material, debris, tools.
18. Submit completed work order by same business day.
19. Next work day clean hoses, plugs and any equipment before placing back in trailer.

Standard Operating Procedures

Sewer Stop-Ups –Private Lateral Service	
Origination Date: 09/1/17	**Policy Number:** Wastewater-005
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to respond immediately to the reports of service lateral stop-ups or blockages with a focus on restoring service to customers and eliminating the discharge of sewage into any natural waterways, property, or the general environment, as a matter of urgency. The City of Tyler is NOT responsible for the maintenance or repair of private sewer service laterals located within the public right-of-way or easement.

Applicability:

This procedure applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Operations Manager or designee to ensure adherence to this policy.

Personnel:

First response to a lateral service stop-up call will typically be handled by one (1) Water or Sewer crew. However, the Wastewater Supervisor may vary crew compositions depending on the nature and complexity of each work order.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Metal Detection Device, as needed
- Steel Tape
- Root Cutter
- Vac Truck or jetter as needed.

Materials:

- Degreaser
- Disinfectant
- Enzyme
- Lime
- High Test Hypochlorite (HTH)

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following procedures are applicable for reports on service lateral stop up calls:

1. Arriving crew will clean the mainline sewer and check if standing water is still present in the private lateral. If the mainline sewer is flowing normal, yet the private lateral is not, then the problem has been identified to be on the private lateral (from residence to mainline service tap) and the property owner should contact a licensed plumber to resolve the blockage. Note that TWU crews will, where possible, assist the property owner in troubleshooting the blockage and may offer to run the jetter hose in the private lateral in an attempt to resolve the blockage. If the blockage cannot be eliminated then the crew will advise the resident to contact a licensed plumber. City Staff shall typically not work on private sewer laterals; however, the City will practice good customer service by assisting citizens as a matter of public health and to prevent imminent SSO's. Crews should not enter any business or residence.
2. Record all relevant information such as name, address, and telephone number of citizen reporting the issue.
3. Call customer for any further details that may be required.
4. Identify location using GIS Maps.

5. Fill jet truck/trailer with water from City of Tyler hydrant.
6. Secure work site in accordance with safety program at all times.
7. If sewage is overflowing and entering a storm drain or flowing into a creek immediately attempt to divert overflow from these locations, attempt to contain, and contact Wastewater Supervisor ASAP.
8. Check main line manholes downstream of location to ensure there is no blockage within the main line. If no mainline blockage exists, then the crew may assist the resident to correct the problem.
9. Locate the cleanout within the City easement or ROW, if available.
10. Verify the location of the cleanouts/access points of the sewer service lateral and the requested City assistance with the property owner.
11. Follow manufacturer's directions and instructions in using jetting trailer or vac truck.
12. Using a cleanout or manhole, flush or use other acceptable methods to remove the blockage from the service lateral.
13. If unable to correct problem within one (30) minutes of arrival on site, call Wastewater Supervisor.
14. Upon completion, record the time of correction and the cause of the blockage, as far as is known.
15. Notify property owner upon completion of problem found.
16. Visually inspect the main line via the downstream manhole before leaving the site.
17. Thoroughly clean/remove debris from site and apply disinfectant to affected areas as needed.
18. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris and tools.
19. Prepare and submit completed work order by same business day.
20. Crew Leader shall contact property owner as soon as possible to discuss findings/recommendations.

Standard Operating Procedures

Sewer Stop-Ups – Main Line	
Origination Date: 09/1/2017	**Policy Number:** Wastewater -006
Revision: New	**Approved:**

Statement of Policy:

It is the policy of the TWU to respond immediately to reports of any main line stop-ups or blockages with a focus on restoring service to customers and eliminating the discharge of sewage into any lake, stream, natural waterways, property, or the general environment, as a matter of urgency.

Applicability:

This procedure applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Operations Manager or Wastewater Superintendent to ensure adherence to this policy.

Personnel:

First response to a main line stop up call will typically be handled during normal business hours by a (1) Crew Leader and (1) Equipment Operator. However, crew compositions depending on the nature and complexity of each job.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Debris Trap
- Jetting/Vacuum Truck
- Metal Detection Device

Materials:

- High Test Hypochlorite (HTH)
- Degreaser
- Disinfectant
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible

for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
b) TxDOT Barricade and Construction Standard Sheets
c) OSHA Standards regarding Personal Protective Equipment
d) Safety Manual
e) TEEX - Wastewater Collection Manuals

Procedures:

The following procedures are applicable for the response to main line stop up calls:

1. On receipt of report, record all relevant information such as name, address, location, and telephone contact number of customer on the work order.
2. Call Wastewater supervisor or Crew to respond to issue.
3. Fill jetting equipment with water from City of Tyler Fire hydrant.
4. Secure work site in accordance with safety program at all times.
5. If sewage is overflowing from a manhole, broken pipe, etc., call Wastewater Superintendent to report a potential sanitary sewer overflow (SSO) or spill *[a sanitary sewer overflow (SSO) or spill is defined as a discharge of sewage that reaches flowing waters of the State – Sanitary Sewer Overflow (SSO)].*
6. If the main line stop-up results in the overflow of sewage into a building (overflow in premise), call Wastewater Supervisor and refer to Standard Operating Procedures-Sanitary Sewer Overflow.
7. Use GIS maps to assist in locating manholes in the area.
8. Search for “dry” or “free flowing” manhole downstream of overflowing/surcharged manhole(s).
9. Flush upstream to remove blockage from main line.
    (a) **Note:** There are occasions when crews may be unable to access a free flowing or dry manhole. In such circumstances, it may be necessary to attempt to flush downstream to a surcharged or overflowing manhole.
10. If blockage is in the invert of the manhole, use flusher hose with nozzle and extension to prod and loosen materials.
11. Repeat flushing as necessary using appropriate attachments.

12. If problem is not resolved within one (1) hour from arrival on site the Wastewater Supervisor will be informed for further assistance and/or direction.
13. Upon completion, record the following into the work order system:
    (a) Time of correction
    (b) Cause of the blockage as far as is known
    (c) For SSOs, the size of the pipeline
    (d) For SSO's Estimated volume
    (e) CCTV will be required 2 manholes upstream and 2 downstream.
14. Remove debris from manhole(s) and properly dispose of all debris.
15. Thoroughly clean all surcharged manholes and surrounding areas.
16. Apply HTH, lime, and disinfectant to affected areas.
17. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris, and tools.
18. Finalize and submit completed work order form by end of same business day.
19. Wastewater Supervisor to review and formally close work order upon review for completeness and accuracy of the work order. If deficiencies are found in the work order, the Wastewater Supervisor should review and correct with Crew Leader before closing the work order.

Sewer Tap Installation/Repair – Main Line	
Origination Date: 09/1/17	**Policy Number:** Wastewater-007
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to expand services by installing sewer taps in accordance with City Standards and Ordinances.

Applicability:

This policy applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Operations Manager or designee to ensure adherence to this policy.

Personnel:

One Water or Sewer Crew; consist of One (1) Crew Leader, One (1) Equipment Operator, One (1) Truck Driver and Two (2) Maintenance Worker; the size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- Air Compressor
- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Backhoe
- Dump Truck
- Excavator
- Jack Hammer
- Jetting Truck
- Mechanical Saw
- Mechanical Tamp
- Metal Detection Device
- Pavement Saw
- Shoring Equipment

Materials:

- 1-inch Rock
- Assorted Fittings
- Assorted Pipe

- Backfill Material
- Non-Shrink Grout
- Disinfectants
- Gravel
- PVC Glue
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) OSHA Standards regarding Trenching Safety
c) Safety Manual
d) TEEX - Wastewater Collection Manuals
e) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
f) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized to install/repair sewer taps.

1. Upon Arrival, secure work site in accordance with safety program.
2. Check utility locates and if there are any missing, **do not excavate**. Call Dispatch to update/recall.
3. To prevent spills or the disruption of service until repairs are completed, By-Pass Pumping or implement other temporary measures as directed by Supervisor.
4. For pavement cuts that will require steel plates ensure they are installed properly to avoid any edges that may cause damage to the driving public.
5. For any excavation work around utilities, hand or hydro-excavation work shall be performed until all marked utilities have been exposed and secured.
6. Continue excavating using the trench safety guidelines for soil type.

7. Excavate a trench a minimum of 36-inches wide (dependent upon depth of cut, excavation shall conform to depth/trench box or shoring requirements) Trench shall be excavated to a depth to allow for 6-inches of bedding material.
8. Determine pipe material used in construction of sewer main line. Follow procedure of main line type below:

Vitrified Clay or Concrete Sewer Main

(a) Using a ratchet cutter or sawzall cut out section of sewer main large enough to install WYE fitting.
(b) Install WYE fitting using assorted PVC fittings, Fernco couplings, or other connection systems.

PVC Sewer or Ductal Iron Main

(a) Place saddle on sewer main at appropriate angle to ensure proper alignment to maintain integrity of drainage slope.
(b) Spray marking paint into saddle to mark area for lateral insertion.
(c) Remove saddle and drill 4-inch hole using mechanical drill. (Rib-Pipe)
(d) Install saddle per manufacturer's instruction.

9. Use non-shrink grout for encasing all rubber fittings to ensure structural integrity of sewer main line tap.
10. Install 4-inch sewer service lateral and cleanout to edge of easement or public road right-of-way.
11. Install 1-inch rock 6-inches around the circumference of the sewer main line.
12. Backfill appropriately.
13. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris and tools. If necessary, wash down street, sidewalks and driveways.
14. Crew leader should make a decision on whether to flush lateral/CCTV and clean sewer main.
15. Complete and submit work order and any additional supplemental work requests same business day.

Sewer Manhole Inspection	
Origination Date: 09/01/2017	**Policy Number:** Wastewater-008
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to undertake condition surveys of manholes as a basis for implementing preventative and corrective actions to maintain the integrity of the wastewater collection system.

Applicability:

This policy applies to all Water\Wastewater employees.

Responsibility:

It is the responsibility of the Water\Wastewater Superintendent or designee to ensure adherence to this procedure.

Personnel:

Manhole inspections may normally be carried out by two crew members, unless otherwise directed.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Measurement Devices
- Metal Detection Devices
- Portable Lights
- Multi Gas Detector, ladder
- Confined space equipment if required (SCBA, fresh air blower, etc.)
- Inspection forms

Materials:

- N/A

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized to perform the inspection of sewer manholes.

1. Use GIS maps to assist in locating manholes in the area.
2. Upon Arrival, secure work site in accordance with safety program.
3. Remove manhole lid and properly ventilate manhole before proceeding with the inspection.
4. To enable a proper inspection, ensure the surface of all components are free from dirt, grease, and debris.
5. If necessary to facilitate a proper inspection, clean manhole surface and remove debris from invert/bench.
6. Inspect manhole completing the attached Inspection Form.
7. Take note of surrounding area, manhole bench/invert, evidence of I/I (Infiltration Intrusion), defects, taps, and inside/outside drops.
8. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris, and tools.
9. Complete work order and submit along with Manhole Inspection Form by same business day.

Manhole Form

Date:_____ **Crew:**_____ **Basin:**_____ **Work Order #(Map No.)**_____

Project Name:_____**Project No.:**_____ **Sub-division (Sub.Basin):**_____

MH No.:_____ **Address:**_____

DS Length:_____ **Asset Type:** M CO EOL PS T **Status:** Y CNL CNO B LG D N S H

Lid Type: S V B O _____ **No. Vent Holes:**_____ **Asset Mat'l.:** B C F SB SC O_____

Grade: X A B **Inch:**_____ **Inflow Dish:** Y N Condition: __Good __Defective **Inflow Potential:** N L M S

Area Photo:_____ Internal Photo:_____ **Surface Cover:**____ **Surf. Mat'l.:** P__Asphalt __Concrete U__ **Debris**:___in.

GPS: _____ _____

MH Diameter:_____Std.=48 inch

C.O. Diameter: _____ inch

Defects:

Def#	Photo	Loc	Type	Rate	Roots	I/I

General Comments:

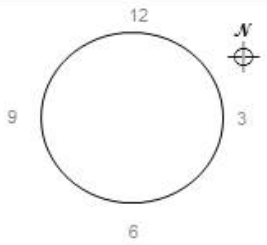
_____

_____

_____

_____

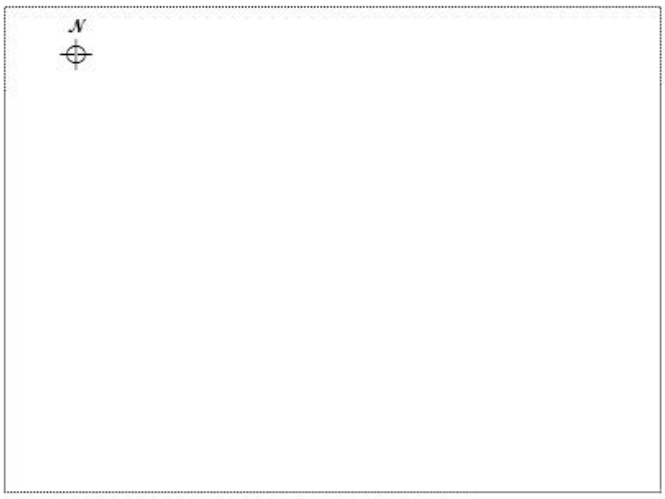
_____



Pipes:

Photo	In/Out	Size	Material	Clock	Depth	Drop	Surface Cov	Surface Mat'l	Debris	Connecting Pipe ID No. (or Connecting MH ID No.)

Map Update



Definitions:
Asset Type: M=Manhole; CO=Cleanout; EOL= End of Line; PS=Pump Station; T=Tee Connection

Status: Y=Yes; CNL=Could Not Locate; CNO=Can Not Open; B=Buried; S=Surcharged; N=No Access; D=Dog; LG=Locked Gate; H=Homeowner

Lid Type: S=Solid; V=Vented; B=Bolted; OT=Other (specify/comment)

Asset Mat'l: B=Brick; C=Concrete; F=Fiberglass; SB=Sealed Brick; SC=Sealed Concrete; O=Other (specify/comment)

Grade: X=At grade; A=Above; B=Below

Defect Rate: Light, Moderate, Severe
Roots: Light, Moderate, Severe
I/I Potential: N=None; L=Light; M=Moderate; S=Severe

Surface Cover: ST=Street; GU=Gutter; AI=Alley; DW=Driveway; SW=Sidewalk; FD=Field; TW=Trees/Woods; PL=Parking Lot; SH=Road Shoulder; DD=Drainage Ditch; CR=Creek; WB=Within Building; YD=Yard; OT=Other

Surface Mat'l: P=Paved (designate Asphalt or Concrete); U=Unpaved

Defect Location: LD=Lid; FR=Frame; FS=Frame Seal; CH=Chimney; CO=Cone; WA=Wall; ST=Steps; BN=Bench; PS=Pipe Seal; IN=Invert; CAP=Cleanout Cap; COP=Cleanout Pipe

Defect Type: BPS=Bad Pipe Seal; BRK=Broken; CRK=Cracked; CCL=Collapsed; DET=Deteriorated; HOL=Hole; JNT=Joint; LOO=Loose; MBR=Missing Brick or Mortar; MIS=Missing

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Rev. 7/22/2015

Standard Operating Procedures

Sewer Manhole Cleaning	
Origination Date: 09/01/2016	**Policy Number:** Wastewater 009
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to flush and clean sewer manholes as a preventative maintenance strategy to minimize the potential for blockages and possible discharge of sewage into any natural waterways, property or the general environment.

Applicability:

This policy applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Operations Manager, Superintendent or designee to ensure adherence to this policy.

Personnel:

One (1) Crew Leader, One (1) Laboror. The size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Gas Monitoring Equipment
- Silt/Debris Traps as necessary
- Vactor Truck

Materials:

- Disinfectant
- Enzyme
- Lime
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the

commencement of the work on every work site. All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program. The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following procedures are applicable for cleaning sewer manholes:

1. Identify location using GIS map, if necessary.
2. Use sewer system GIS maps to assist in locating manholes in the area.
3. Fill jetting/vacuum equipment with water from City of Tyler hydrant.
4. Upon Arrival, secure work site in accordance with safety program.
5. Remove manhole lid and I&I insert (if present) and allow ventilating for at least 5 minutes.
6. Use Multi-Gas Detector to check hazardous gas levels before commencing work.
7. Pace vacuum hose or debris trap immediately in front of downstream pipe.
8. Follow manufacturer's directions and instructions in using jetting/vacuum equipment.
9. Lower suction pipes from vacuum equipment into manhole.
10. Use handheld high pressure washer to thoroughly clean debris from manhole walls and invert.
11. While cleaning, vacuum debris from manhole into vacuum truck. If manhole is not accessible by vacuum equipment, use manual means to remove debris.
12. On completion of cleaning, demobilize jetting/vacuum equipment.
13. Apply disinfectant to any areas impacted by sewage.
14. Before leaving the job site, return I&I insert and manhole lid over manhole, the area should be thoroughly cleared of all surplus material, debris, and tools.
15. When debris tank is full or at the end of the shift, transport debris to approved location for disposal.
16. Dispose of debris and clean vacuum equipment using hand held hose on equipment. Continue washing until debris storage tank has been cleaned of debris.
17. Prepare and submit completed work order by same business day.

Standard Operating Procedures

Sewer Manhole Ring Adjustment	
Origination Date: 09/1/17	**Policy Number:** Wastewater-0010
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to adjust the level of manholes on the sewer system for visibility, facilitate access for maintenance, and ensure there is no adverse effect on traffic.

Applicability:

This policy applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Water\Wastewater Superintendent or designee to ensure adherence to this policy.

Personnel:

One Water or Sewer Crew; consist of One (1) Crew Leader, One (1) Equipment Operator, One (1) Truck Driver, and Two (2) Maintenance Worker; the size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- Air Compressor
- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Backhoe
- Gas or Hydraulic Saw/Grinder
- Dump Truck
- Jack Hammer
- Line Level/String
- Mechanical Tamp
- Metal Detection Device

Materials:

- Bituminous Sealer
- Cement
- Disinfectant
- High Early Strength Cement
- Joint Sealant
- Metal Ring & Cover
- Non-Shrink Grout

- Pre-Cast Concrete Risers
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized to properly adjust sanitary sewer manholes:

1. Upon Arrival, secure work site in accordance with safety program.
2. Check utility locates and if there are any missing, do not excavate. Call your Supervisor.
3. For pavement cuts that will require steel plates ensure they are installed properly to avoid any edges that may cause damage to the driving public.
4. For any excavation work around utilities, hand or hydro-excavation work shall be performed until all marked utilities have been exposed and secured.

Adjust/Repair less than 12-inches

a) For manholes within pavement, saw cut square around manhole 48 x 48 inches.
b) Excavate all material up to a minimum of 10-inches.
c) Remove manhole frame and cover to expose cone.
d) Add an appropriate number of pre-cast concrete spacers to cone.
e) If brick layers are found, remove brick and replace with concrete spacers.
f) Use at least ¾ inch non-shrink grout between spacers.

g) For manholes within paved areas, adjust spacers to ensure the manhole cover is flush with paved surface (see attached details).
h) Install bituminous sealer on top of last concrete spacer.
i) Replace manhole ring and cover.

Adjust/Repair for 12-inches and greater

a) Note: If it is necessary to extend or raise more than 12 inches, refer to Sewer Manhole Installation and Replacement.

5. Backfill appropriately.
6. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris, and tools.
7. Complete and submit work order and any additional supplemental work requests same business day.

Standard Operating Procedures

Sewer Manhole Installation & Replacement	
Origination Date: 09/1/2017	**Policy Number:** Wastewater-011
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to replace damaged, deteriorated or otherwise unserviceable sewer manholes to restore structural integrity and the desired level of service in order to protect public health.

Applicability:

This policy applies to all Water\Wastewater employees.

Responsibility:

It is the responsibility of the Water\Wastewater Superintendent or designee to ensure adherence to this policy.

Personnel:

One (1) Crew Leaders, One (1) Equipment Operators, Two (2) Maintenance Workers and One (1) Truck Driver. The size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- Air Compressor
- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Backhoe
- Dump Truck
- Jack Hammer
- Line Level/String
- Chop Saw
- Mechanical Tamp
- Manhole forms
- Concrete Vibrator

Materials:

- 1-inch Rock
- Cement
- Concrete Spacers
- Disinfectant

- Fiberglass Manhole
- High Early Strength Cement
- Joint Sealant
- Metal Ring & Cover
- Non-Shrink Grout
- Pre-Cast Concrete Risers
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) Confined Space Entry Competent Person – *if required*
b) Excavation Competent Person
c) OSHA Standards regarding Personal Protective Equipment
d) Safety Manual
e) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
f) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized to properly replace sewer manholes

1. Upon Arrival, secure work site in accordance with safety program.
2. Check utility locates and if there are any missing, do not excavate. Call Supervisor.
3. For pavement cuts ensure if street plates are required no sharp edges will be in the driving surface that could cause damage to vehicles.
4. For any excavation work around utilities, hand or hydro-excavation work shall be performed until all marked utilities have been exposed and secured.
5. Continue excavating using the trench safety guidelines for soil type determined by competent person onsite.

6. If replacement, excavate to expose manhole base. In the process of excavation remove cover, frame, cone, risers, spacers, etc. as they become exposed.
7. For brick manholes, use appropriate hand and mechanical tools to demolish and remove brick sections. Take care to prevent debris from entering downstream pipe.
8. Cut all sewer pipe intersecting manhole to be removed.
9. Remove manhole base.
10. Excavate a minimum of twelve (12) inches below level of manhole base and pipes.
11. Place 1-inch rock a minimum of twelve (12) inches below level of the bottom of manhole base/piping.
12. Ensure that bedding for manhole is level.
13. Measure and install sections of pipe removed from existing manhole.
14. Measure and cut manhole to fit re-installed pipes.
15. Schedule concrete truck with Streets & Drainage for pouring of manhole floor.
16. Upon arrival of concrete truck, pour concrete into manhole to build the manhole base.
17. Install manhole at proper elevation to ensure even grading with surface level. (Reference attached detail for fiberglass manhole).
18. Backfill appropriately.
19. Install appropriate number of pre-cast risers and spacers as needed for surface level grading. N**ote:** If this is a non-paved installation area, raise ring and lid 18-24 inches above grade.
20. Use at least ¾ inch non-shrink grout between spacers.
21. Finish joint seal such that it is smooth and uniform with the interior surface of the manhole risers.
22. Set ring and lid with at least ¾ inch non-shrink grout.
23. The ring and lid shall be flush with final road surface unless in non-paved area
24. Backfill appropriately.
25.
26. Once base is formed and concrete has cured, cut out inverts in sewer pipe.
27. Call to request for water/wastewater crew to flush and clean mains.
28. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris and tools. If necessary, wash down street, sidewalks and driveways.
29. Notify Streets & Drainage Division to restore pavement area around installed manhole.
30. Complete and submit work order and any additional supplemental work requests same business day.

Standard Operating Procedures

Video Inspection – Sewer Main Line	
Origination Date: 09/1/2017	**Policy Number:** Wastewater-012
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to undertake Video inspections to assess the physical condition of the sewer system as a basis for implementing preventative and corrective actions to maintain the integrity of the system.

Applicability:

This procedure applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Operations Manager or designee to ensure adherence to this policy.

Personnel:

One (1) Crew Leader, One (1) Maintenance Worker; the size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- All Safety Equipment required for compliance with the safety program
- Assorted Hand Tools
- Metal Detection Devices
- CCTV Inspection Equipment; Cues Van
- Mulit-level Gas monitor

Materials:

- High Test Hypochlorite (HTH)
- Lime
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following procedures are applicable for Video inspection:

1. Ensure inspection equipment is functioning properly.
2. Identify location on GIS maps.
3. If necessary to enable proper inspection, clean sewer lines.
4. Use sewer system GIS maps to assist in locating manholes in the area, if necessary.
5. Upon Arrival, secure work site in accordance with safety program.
6. With respect to inspection being undertaken as a result of a main line stop-up or SSO, inspection should normally be carried out to at least two manholes upstream and downstream from the SSO/blockage to allow for a complete investigation of the system under consideration.
7. Locate manhole downstream of section of pipeline to be inspected.
8. Determine whether depth of flow is sufficiently low to allow for camera to function. If not, make arrangements to reduce flows or reschedule work to a low flow period of time.
    a. **Note:** DO NOT attempt to maneuver equipment through fractured, damaged or collapsed pipes of joints offset more than one (1) inch.
9. Lower camera into place using rod and guide through channel towards the section of pipeline to be inspected. Record all inspections on DVR.
10. Using PACP coding and procedures record all observations including:
    (a) Manhole identification number
    (b) Depth of manhole
    (c) Manhole material
    (d) Location of taps (if any) in manhole
    (e) General condition of manhole
    (f) Evidence of inflows and infiltration
    (g) Buried manholes
    (h) Pipe size
    (i) Segment length

(j) Direction of flow
(k) Distance between joints
(l) Location and configuration of connections (taps)
(m) Debris, grease, roots or any other obstacles
(n) Damage or defects
(o) Any other observations
(p) Location (within pavement, not within pavement)

11. On completion, clean and disinfect camera unit and any areas impacted by sewage.
12. If major damage or potential collapse is identified, notify Operations Manager or Wastewater Superintendent to schedule immediate repairs.
13. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris, and tools.
14. Prepare and submit completed work order by same business day.
15. Submit all relative data into GIS Division for inclusion into the GIS system.

Standard Operating Procedures

Collection System Dye Test	
Origination Date: 09/1/2017	**Policy Number:** Wastewater-013
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to perform dye test on sewers to determine the direction of flow and connectivity within the sewage collection system.

Applicability:

It is the policy of the Wastewater Division to perform dye test on sewers to determine the direction of flow and connectivity within the sewage collection system.

Responsibility:

It is the responsibility of the Operations Manager or designee to ensure adherence of this policy.

Personnel:

One Water or Sewer Crew; consist of One (1) Crew Leader, One (1) Equipment Operator and One (1) Maintenance Worker; the size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Flashlight
- Jetting Truck
- Video Inspection Equipment
- Multi-level Gas monitor

Materials:

- Dye tablets, powder or liquid
- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps shall be utilized to properly perform a dye test.

1. Coordinate with property owners, if applicable.
2. Upon Arrival, secure work site in accordance with safety program.
3. Use sewer system GIS maps to locate manholes in the vicinity of the area to be tested.
4. Remove manhole lid and I&I pan insert or cleanout and allow to ventilate for 5 minutes.
5. Dispense dye into an opening such as a manhole, storm inlet, cleanout, etc. upstream of the section of the sewer system which is being tested. **Caution**: The dye is concentrated and should be used sparingly. The dye does NOT wash off with soap and water. Use gloves and protect all exposed skin and clothing to prevent semi-permanent staining.
6. Check manholes and cleanouts at various points downstream of the test area to observe and record evidence of the presence of dye.
7. Request video crew for assistance, if necessary, to detect the presence of dye within main lines and service laterals.
8. Use different colored dyes if necessary to assist in confirming flow directions and connectivity.
9. Before leaving the job site, thoroughly clear area of all surplus material, debris and tools.
10. Submit completed work order and any additional work requests, including description of findings by the same business day.

Standard Operating Procedures

Private Lateral Video Inspection (when necessary for mainline maintenance)	
Origination Date: 09/1/2017	**Policy Number:** Wastewater-014
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to undertake video inspections to assess the physical condition of service laterals as a basis for implementing preventative and corrective actions associated with the mainline sewer and in rare instances to assist property owners when appropriate. City Staff shall typically not work on private sewer laterals; however, the City will practice good customer service by assisting citizens as a matter of public health and to prevent imminent SSO's. Crews should not enter any business or residence. The private sewer lateral includes the pipe from the business or residence to the mainline connection.

Applicability:

This procedure applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Water\Wastewater Superintendent to ensure adherence to this policy and must approve any CCTV of private laterals.

Personnel:

One Water or Sewer Crew; consist of One (1) Crew Leader, One (1) Equipment Operator and One (1) Maintenance Worker; the size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Jetting Equipment
- Metal Detection Devices
- Tracing Device and Rodder
- Video Inspection Equipment (push camera)

Materials:

- Chemical Degreaser
- High Test Hypochlorite (HTH)
- Lime

- Water

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following procedures are applicable for Video inspection:

1. Ensure inspection equipment is functioning properly.
2. Identify location on GIS map.
3. Use sewer system GIS maps to assist in locating main lines and manholes.
4. Secure work site in accordance with safety program at all times.
5. Check for presence of cleanout located within the City's easement or right-of-way.
6. Clean main line, if applicable and section of service lateral to be inspected, if necessary. **Note:** DO NOT attempt to maneuver equipment through fractured, damaged or collapsed pipes of joints offset more than one (1) inch.
7. Lower camera into selected manhole or cleanout and guide towards the section of pipeline to be inspected.
8. Record all observations including:
    a. Pipe and cleanout sizes
    b. Distance between joints
    c. Debris, grease, roots or any other obstacles
    d. Damage or defects

   e. Buried cleanouts
   f. Any other observations
9. Using bleach, water, HTH, and lime clean and disinfect camera unit and any areas impacted by sewage.
10. Inform the property owner of findings/recommendations if appropriate.
11. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris and tools.
12. Prepare and submit completed work order by same business day.

Annual Load Test on Sewer Lift Station Generator Backup Power	
Origination Date: 09/01/2017	**Policy Number:** Wastewater-015
Revision: New	**Approved:**

Statement of Policy:

It is the policy of TWU to train staff on testing of backup generation pumping at each sewer lift station. These tests are practiced in the event of an actually emergency.

Applicability:

This procedure applies to all Water\Wastewater employees.

Responsibility:

It is the responsibility of the Manager Water Quality or his designee to ensure adherence to this procedure.

Personnel:

The number of personnel required will depend on the nature and complexity of each job assignment. The Plant Mechanic will establish personnel needs based on the lift station(s) being tested.

Equipment:

- All Safety Equipment Required for Compliance with the Safety Program
- Assorted Hand Tools
- Backup Generator
- Vactor Truck (if needed)

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the City of Tyler. All traffic control measures shall conform to the Texas Manual on Uniform Traffic Control Devices (TMUTCD). The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

Standard Operating Procedures

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a. OSHA Standards regarding Personal Protective Equipment
b. Safety Manual
c. TEEX - Wastewater Collection Manuals
d. Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e. TxDOT Barricade and Construction Standard Sheets

Procedures:

1. Identify location using maps if necessary.
2. Ensure notification to Westside or Southside Treatment Plan of test being performed.
3. Dispatch Lift Station Service Truck or maintenance truck to location of generator.
4. Complete the inspection sheet.
5. Start generator in accordance with O & M manual.
6. Ensure all cables are in good condition.
7. Ensure lift station pumps are in the off position before energizing power to the lift station control panel.
8. Turn off utility power to lift station
9. Confirm generator starts in accordance with generator operations manual.
10. Ensure generator voltage is correct.
11. Ensure voltage output display is correct voltage.
12. Move HOA switch on pump 1 to hand and verify pump start, place back in Automatic.
13. Contact appropriate treatment plant and inform them of status of operations.
14. When test(s) are successfully completed, set lift station pump to the off position.
15. Turn all breakers off at generator and shut down in accordance with O/M.
16. Set lift station transfer switch back to utility power.
17. Turn pumps on to manual to ensure proper working order then return to automatic setting.
18. Secure site by locking all appropriate doors, panels, gates, hatches, etc.
19. Contact treatment plant and inform them that lift station is back on utility power.

SSO Notification	
Origination Date: 09/01/2017	**Policy Number:** Wastewater-016
Revision: New	**Approved:**

Sanitary Overflow Notification Procedures

Refer to the Sanitary Sewer Overflow Response Plan (SSORP) for detailed procedures associated with SSO and Spill reporting and notifications. In general, notification of a sanitary overflow from a manhole, lift station or a significant discharge from a property lateral will follow the steps outlined below:

1. Service Center dispatches personnel to the scene of the possible overflow (manhole, cleanout, etc.)

2. Personnel arrives onsite and confirms overflow/spill and begins mitigation efforts.

3. Personnel will contact the appropriate Supervisor immediately. The Supervisor will then notify the Operations Manager for collection system overflows or the Water Quality Manager for lift station overflow. The Manager will notify TCEQ (if required). Notification should include location, amount of overflow and steps being taken for mitigation or as much information as possible at the time of notification.

4. Supervisor will travel to overflow site to determine the severity of the overflow, gather information. If a fish kill is verified, immediately notify TCEQ, TPWD, Operations Manager, Water Quality Manager and Communications Director with any updated information about the overflow. Post appropriate signage if necessary to control access. Upon this notification of TCEQ and TPWD, ask each whether or not there will be a site visit from any of their representatives. If either indicates that a site visit will occur, ask for contact information, an estimated time of arrival and document the information provided from each.

5. After overflow condition is mitigated, clean up area to extent possible. Communicate with TCEQ and/or TPWD representative to establish a time to clear away all dead fish (identifying species and size) from affected area. Clear away all solids from overflow area. Use de-chlorination equipment and flush hydrant to flush clean water over area affected by overflow. Spray disinfectant and deodorizer on affected area after cleanup completed.

   If overflow is determined to have been caused by a blockage created from non- flushables such as paper towels, disposable mops, etc. advise the Supervisor. The Supervisor will then notify the offending property owner/management that non-flushables are to be disposed of properly (not through the sanitary sewer system).

6. As soon as is practical, and as safety and light permits, the creek adjacent to the overflow or the creek where the overflow runs into will be walked and inspected. This inspection will be for water quality conditions and to ensure fish kill has been thoroughly mitigated.

7. Manager or his designee must notify by phone or fax (within 24 hours): TCEQ Regional Office, phone 903-535-5137 (leave message if after hours) Fax 903-525-0384, TPWD Emergency Response Spill Reporting hotline (800)832-8224 and 24 hour communication Center at 512-389-4848 or at the number(s) listed below. Notification must include location, volume, content of discharge, time the discharge was stopped and what was done to mitigate the discharge.

a. If volume reaches 100,000 gallons, immediately notify Communications Director, at (903) 531-1272.

b. Within 48 hours after notifying the public, the Superintendent or his designee must report to the regional office that public notice has been given.

c. SSO meeting the requirements for public notification occurring outside of normal business hours, then the Superintendent or his designee should also notify the TCEQ Emergency Response Hotline (1-800-832-8224).

d. Submit field forms and notifications to Senior Utility Specialist.

8. Senior Utility Specialist will complete written report of Unauthorized Discharge using TCEQ Form 501 within 5 days and obtain Directors signature, then:

a. Send original hard copy via form letter per attachment #32 to:
TCEQ Region 5, Tyler
TCEQ Regional Office
Attn: Lisa Fisher
2916 Teague Drive
Tyler, TX 75701-3734
Tel: 903-535-5137
Fax: 903-525-0384

b. Send copy via form letter per attachment to:
TCEQ Water Compliance Monitoring Team
Enforcement Division
P. O. Box 13087
Austin, Texas 78711-3087

c. Send copy via form letter per attachment to:
Greg Conley, Pollution Biologist
TPWD Kills and Spills Team
11810 FM 848
Tyler, Texas 75707
Office (903) 566-2518
Cell (903) 520-3821
Fax (903) 566-2357
greg.conley@tpwd.state.tx.us

d. Copy the following on above letters:
Environmental Compliance Engineer
City Manager

FOG Grease Trap Inspections	
Origination Date: 09/01/2017	**Policy Number:** Wastewater-017
Revision: New	**Approved:**

Statement of Policy:

Grease from restaurants, homes, and industrial sources are the most common cause of blockages within a city's wastewater collection system. Grease is a problem because as it travels through collection system it solidifies and reduces the inside diameter of the pipe and blocks flow, leading to sewer overflows.

Controlling grease discharges will help the City of Tyler prevent these blockages and sewer overflows that attribute to public health and water quality problems. Currently the City of Tyler does not have a formal grease trap ordinance, but does have a grease trap inspection program. This program maintains an inventory of grease traps within the City and aids in identifying problem areas through inspections.

The City of Tyler has approximately 350 restaurants with grease traps. Sizes can range from no grease trap at all to as large as 2000 gallons and will be located under sinks, in the kitchen floor, above ground and in ground at various locations on the property.

It is the responsibility of the Pretreatment Inspector to inspect all grease traps at least once per year. Inspections are documented on the Sanitary Waste-Grease Trap Maintenance Inspection Report (Attachment A) and information from that report is maintained in a master list/database entitled Grease Trap Inspections.xls located on the "W" drive of the City's computer system. Inspections are performed utilizing past records, GPS location, and various tools.

Applicability:

This procedure applies to all Water\Wastewater Division employees.

Responsibility:

It is the responsibility of the Manager Water Quality or designee to ensure adherence to this policy.

Personnel:

One (1) Pretreatment Technician.

Equipment:

- All safety equipment required for compliance with the safety program
- Assorted Hand Tools
- Metal Detection Device, as needed
- Sludge Judge FOG measuring device
- Pick, shovel, etc.
- Sample bottles (if needed)

- Camera

Materials:

- Degreaser
- Disinfectant
- High Test Hypochlorite (HTH)

Safety Program:

It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State, and the City of Tyler. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

The City undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment

b) Safety Manual

c) TEEX - Wastewater Collection Manuals

d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)

e) TxDOT Barricade and Construction Standard Sheets

Procedures:

The following steps will be taken when performing a grease trap inspection:

1. Select traps to be inspected from the master list/database mentioned above and exampled below, record any notes helpful to performing the inspection, including grease trap GPS locations or sketches, etc. Review past inspections for those selected. Group inspections as close as possible to minimize travel time and fuel usage.

BUSINESS NAME	PUMPER	ADDRESS	# / Y	JAN	FEB	NOV	DEC	COMMENTS
A&W GROCERY	AAA	900 W. BOW	1					
ALBERTSONS	DALWOR	1900 ESE LOOP 323	2	1				Grocery Store
Adalante		1723 Troup Hwy	1					
All Saints School	DALWOR	2695 S.W. Loop 323	1					
ALTERRA STERLING HOUSE	LES	3505 UNIVERSITY BLVD.	2					
Andy's Custards		6106 S Broadway	1	1				

2. Prepare truck for sampling. Organize equipment to be used. (Pick, lid key, hammer, wrenches, etc.)

3. Upon arriving at designated inspection site, locate utilizing notes and GPS if necessary. Use appropriate tool(s) to remove lid.

4. For an outside trap, use white measuring rod to check the thickness of grease or visible floatables in the influent and effluent sides of the trap. If it is a small internal trap, remove lid and measure the thickness of grease or visible floatables when possible.

5. Enter all data collected onto the City of Tyler Sanitary Waste-Grease Trap Maintenance Inspection Report (Attachment A). Go over the inspection with the manager, have manager sign the inspection, and have manager post inspection at facility.

6. Move to the next facility.

7. Add all information collected to the database and file paperwork in appropriate file after returning to office.

Attachment A

SANITARY WASTE – GREASE TRAP
MAINTENANCE INSPECTION REPORT

Date: _____

Time: _____

SECTION I: General Information

Business Name: _____

Address: _____

Manager / Contact: _____ Phone#: _____

SECTION II: Facilities

Grease Trap Location: _____

Grease Trap Capacity: _____ Gallons

SECTION III: Visual Observations

Depth of Floatables: _____

Sample Point Description: Sample Port ☐ Cleanout ☐ Neither ☐

Size / Condition of Sample Point: _____ Good ☐ Bad ☐

General Condition of Trap: Good ☐ Fair ☐ Bad ☐ Poor ☐

SECTION IV: Manifest

Serviced By: _____

Last Date Serviced: _____ Gallons: _____ Disposed: ☐ Processed: ☐

Trap Cleaned: Monthly ☐ Qtrly ☐ Yearly ☐ Other ☐

Comments: _____

_____

_____

_____

_____ _____

Manager / Contact Pretreatment Inspector

Sanitary Sewer Overflow Inside A Building	
Origination Date: 09/1/2017	**Policy Number:** Wastewater-018
Revision: New	**Approved:**

Statement of Policy:
It is the policy of TWU to provide limited assistance when requested by the property and when the overflow occurs at or near the time maintenance is being performed on the public sewer system in the same geographic area. This assistance is provided to assist the resident to facilitate cleaning and disinfection of areas impacted by sewage overflowing inside private properties, and not pursuant to any legal obligation. This assistance is not, and should not be interpreted as, an admission of fault by TWU.

Applicability:
This procedure applies to all TWU employees.

Responsibility:
It is the responsibility of the Superintendent to ensure adherence to this policy.

Personnel:
One (1) Maintenance Supervisor as needed, and one (1) Crew Leader. The size and composition of the crew may, however, vary dependent on the nature and complexity of the assignment. Note: Under no circumstance are TWU employees to enter residences alone nor without permission of the property owner.

Equipment:
- All safety equipment required for compliance with the safety program
- Digital Camera

Materials:
- Cleaning and disinfection supplies

Safety Program:
It is important that all employees adhere to all safety regulations and requirements of OSHA, EPA, State and the TWU. All traffic control measures shall conform to the *Texas Manual on Uniform Traffic Control Devices (TMUTCD).* The supervisor or manager shall be responsible for implementing the Safety Program. A safety check shall be completed prior to the commencement of the work on every work site.

All employees are required to use personal protection equipment (safety boots, safety vests, hard hats, eye protection, ear protection, gloves, etc.) as is necessary for compliance with the safety program.

TWU undertakes to provide all relevant safety training to employees and facilitate certification with respect to flagging/traffic control. Incorporated in these standard operating procedures are the reference material and training manuals received by employees as part of the certification process. Reference materials include:

a) OSHA Standards regarding Personal Protective Equipment
b) Public Works Safety Manual
c) TEEX - Wastewater Collection Manuals
d) Texas Manual on Uniform Traffic Control Devices (TMUTCD)
e) TxDOT Barricade and Construction Standard Sheets

Procedures:

1. The City provides cleaning services when the back up of sewage into the property is likely caused by a blockage within the public sewer system or City of Tyler crews performing maintenance on the public sewer system. **The cleaning service is not provided for problems that are due to defects on the private service lateral.**
2. For backups occurring at or near the time City of Tyler crews are performing maintenance on the public sewer system, record relevant information such as:
   (a) Name of complainant/property owner
   (b) Address of property
   (c) Telephone contact number(s)
   (d) Location of areas impacted by sewage
   (e) Approximate depth of wastewater
   (f) Any other relevant information
3. Notify Wastewater Supervisor.
4. Collect evidence of damage such as photographs, video clips, etc. Do not enter the residence without permission nor by yourself.
5. Advise property owner of assistance the City may offer, with respect to the services of a cleaning contractor. **Note:** The City is generally not responsible, under Texas law, for damages to private property caused by a sewer back-up. Employees shall not commit the City to pay for any damages or admit liability of the City at any time.

6. Follow manufacturer's directions and instructions in using jetting truck to minimize pressure while clearing blockage causing backup.
7. If the property owner elects to use the services of commercial cleaning contractor provide details on how the property owner can make a claim.
8. Call City of Tyler Senior Utility Specialist office and inform them of the current situation. (903-531-1238)
9. Provide the property owner with information to the City of Tyler Senior Utility Specialist for the claim process and refer to City Ordinance on the process if necessary. (See appendix below for contact information and Claim Form)
10. Prepare and submit completed work order by same business day.

Attachment A – Contact Information/Claims

City of Tyler Senior Utility Specialist

903-531-1238

Sec. 2-61. Claims for sanitary sewer stoppages; overflows on premises.

The City Manager or designee is authorized, in situations where the City receives a claim for a sanitary sewer main stoppage that results in an overflow on private premises, to pay actual, documented clean-up and restoration expenses (excluding plumbing and lodging expenses) not covered by insurance up to and including an amount of five thousand dollars ($5,000). In no case does the City assume responsibility for overflows resulting from service line stoppages, nor is this procedure intended to acknowledge or suggest legal liability on the part of the City. Periodically, the City Council shall be notified of the status of all such overflow claims. (Ord. No. 0-98-21; 3/18/98) (0-2003-63, 11/26/03) (0-2006-102, 12/13/06) (Ord. No. 0-2017-20; 2/22/17)

CLAIMS NOTICE

City of Tyler Charter, Section 79 provides that notice must be in writing, duly verified (notarized) of the death, injury or destruction and shall be filed within thirty (30) days after same has been sustained.

NAME OF CLAIMANT _____

ADDRESS _____

PHONE (DAY) _____ (EVENING) _____

DATE OF INCIDENT _____ TIME _____ A.M. _____ P.M.

LOCATION OF INCIDENT _____

DESCRIBE DAMAGE TO PROPERTY (INCLUDE AGE AND VALUE WHEN NEW) _____

CURRENT LOCATION OF DAMAGED PROPERTY _____

DESCRIBE ANY INJURIES SUSTAINED: _____

NAME: _____ PHONE: _____

ADDRESS: _____

DESCRIPTION: _____

DESCRIBE HOW INCIDENT OCCURRED (GIVE FULL DETAILS; ATTACH ADDITONAL PAGES, IF NECESSARY.) _____

3/5/08 **Form 4-22** (page 1 of 3)

AMOUNT CLAIMED (ATTACH ESTIMATES OF REPAIRS) _____

DO YOU CARRY INSURANCE FOR THIS LOSS? Yes _____ No_____

IF YES, WHAT COMPANY? _____

TYPE: ____ HOMEOWNERS ____ STANDARD FIRE ____ AUTO ____ OTHER

POLICY No.: _____ AGENT: _____

HAVE YOU MADE A CLAIM AGAINST YOUR INSURANCE COMPANY? Yes __ No ____

DESCRIBE ANY EFFORTS BY YOU TO PREVENT THE INCIDENT OR TO MINIMIZE THE DAMAGES:

_____

_____

_____

WITNESSES

NAME: _____ PHONE (DAY) _____

ADDRESS:_____ PHONE (EVENING) _____

NAME: _____ PHONE (DAY) _____

ADDRESS:_____ PHONE (EVENING) _____

IF CLAIM INVOLVED ALLEGED DEFECT IN CITY STREET, EQUIPMENT, OR OTHER PROPERTY, COMPLETE THE FOLLOWING:

DESCRIBE DEFECT: _____

_____

_____

NOTIFICATION TO CITY PRIOR TO INCIDENT:

DATE _____ TIME _____ ___ A.M. __ P.M. EMPLOYEE NOTIFIED _____

NOTIFICATION TO CITY AFTER INCIDENT:

DATE _____ TIME _____ ___ A.M. ___ P.M. EMPLOYEE NOTIFIED _____

3/5/08 **Form 4-22** (page 2 of 3)

IF CLAIM INVOLVED A VEHICLE COLLISION, COMPLTE THE FOLLOWING:

WAS A PEACE OFFICER'S ACCIDENT REPORT MADE? Yes _____No_____

CLAIMANT:

VEHICLE YEAR MODEL: _____COLOR: _____

MAKE & MODEL: _____

VEHICLE I.D. NO.: _____LICENSE PLATE:_____

DRIVER'S NAME: _____PHONE: _____

ADDRESS: _____

_____

_____

OWNER'S NAME: _____ PHONE: _____

ADDRESS: _____

CITY:

VEHICLE YEAR MODEL:_____ PHONE:_____

MAKE & MODEL: _____

DRIVER'S NAME: _____

I HEREBY DECLARE THAT THE FACTS STATED IN THIS NOTICE ARE TRUE.

CLAIMANT'S SIGNATURE: _____

SUBSCRIBED AND SWORN TO BEFORE ME this the ____ day of _____, _____.

_____

Notary Public State of Texas

3/5/08 **Form 4-22 (page 3 of 3)**

Appendix B

Safety Handbook and Training

Training

TWU's training program provides a mechanism for educating employees and establishing their technical competence through the TRWA, TEEX, TWUA, or other training partner certification programs. Tyler Water Utilities utilizes a combination of in-house skill training and the purchase of specialized training through state and national associations, conferences and vendor training programs to enhance skills for performing daily work duties and provide certified operators continuing education hours. Skills training for the TWU employees includes, but is not limited to:

- Routine Line Maintenance
- Heavy Equipment Operation
- Maintenance Equipment Operation
- Line Testing and Inspection
- Infrastructure Installation
- Pump/Lift Station Operation and Maintenance
- Emergency Response
- Public Relations
- Safety

Tyler Water Utilities expects employee adherence to the following safety policies and procedures but not limited to:

- Confined Space Entry
- Hard Hat Policy
- Excavation Safety Policy and Program
- Chlorine Safety Policy
- Injury Reporting Policy
- Personal Protective Equipment
- First Aid
- Work Zone Safety & Qualified Flagger Policy (2011 Texas Manual on Uniform Traffic Control Devices (TMUTCD))
- Hazard Communication Program

Training records are maintained for each employee. TWU maintains appropriate safety equipment including: protective clothing, safety glasses, hard hats, gloves, respirators, filters, harnesses, tripods, hoists, fire extinguishers and self-contained breathing apparatus. TWU also maintains and calibrates atmospheric testing equipment.

Tyler Water Utilities
Wastewater Collection
Training Matrix

			Repair/Construction					Admin/Office/Supervisor						Preventative Maintenance			
	OUTSIDE VENDOR TRAINING *	Hours	Crew Leader	Semi Skilled laborer	Laborer	Truck Driver	Equipment Operator	Operations Manager	Superintendent - PM	Superintendent - Construction	Senior Clerk	Senior Secretary	GIS Data Analyst	Utilities Maintenance Repair	Laborer	Utilities Maintenance Repair - CCTV	Semi-Skilled Laborer
1	Basic Wastewater Operations	20	R	R	R	R	R	R	R	R	E	E	E	R	R	R	R
2	Wastewater Collection	20	R	R	R	R	R	R	R	R	E	E	E	R	R	R	R
3	Water Utilities Safety	20	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
4	Water Utilities Calculations	20	E	E	E	E	E	E	E	E	NA	NA	NA	E	E	E	E
5	Pumps & Motor Maintenance	20	R	E	E	E	R	R	R	R	NA	NA	NA	R	E	R	E
6	Wastewater Treatment	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	Wastewater Laboratory	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	Wastewater Technology	40	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	CCTV - PACP Training	20	NA	NA	NA	NA	NA	E	R	R	NA	NA	R	NA	NA	R	NA
10	Applied Confined Space Safety	8	E	E	E	E	E	E	E	E	E	E	NA	E	E	E	E
	CITY OF TYLER IN-HOUSE TRAINING																
	Sewer Overflows																
11	SSO Reporting Procedures		R	NA	NA	NA	E	R	R	R	R	R	NA	R	E	R	E
	Work Orders/Asset Collection																
12	Initial OneSolution		R	E	E	E	R	R	R	R	R	R	R	R	E	R	E
13	OneSolution Asset Management		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
14	GIS/GPS Data Collection		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
	Vactor																
15	Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
16	Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
17	Operator - Cleaning/Nozzle Setup		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
18	Decan/Cleaning Procedures		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
	Sewer Rodder																
19	Rodder - Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
20	Rodder - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
21	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	Water Jet Rig																
22	Jetter - Initial Setup/Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
23	Jetter - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
24	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	CCTV																
25	CCTV - CUE's Rover & Wincam		E	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
26	Camera Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
27	PACP Recertification - 3 years		NA	E	E	E	E	R	E	E	NA	NA	NA	NA	NA	R	NA

Notes:

* Outside Vendor Training provided by TEEX and other outside vendors

Legend:

R = Required by COT
E = Elective
N/A = Not Applicable

Rev Date: 5/21/15

Appendix B

Safety Handbook and Training

Training

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Training records are maintained for each employee. TWU maintains appropriate safety equipment including: protective clothing, safety glasses, hard hats, gloves, respirators, filters, harnesses, tripods, hoists, fire extinguishers and self-contained breathing apparatus. TWU also maintains and calibrates atmospheric testing equipment.

Tyler Water Utilities
Wastewater Collection
Training Matrix

			Repair/Construction					Admin/Office/Supervisor						Preventative Maintenance			
	OUTSIDE VENDOR TRAINING *	Hours	Crew Leader	Semi Skilled laborer	Laborer	Truck Driver	Equipment Operator	Operations Manager	Superintendent - PM	Superintendent - Construction	Senior Clerk	Senior Secretary	GIS Data Analyst	Utilities Maintenance Repair	Laborer	Utilities Maintenance Repair - CCTV	Semi-Skilled Laborer
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2	Wastewater Collection	20	R	R	R	R	R	R	R	R	E	E	E	R	R	R	R
3	Water Utilities Safety	20	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
4	Water Utilities Calculations	20	E	E	E	E	E	E	E	E	NA	NA	NA	E	E	E	E
5	Pumps & Motor Maintenance	20	R	E	E	E	R	R	R	R	NA	NA	NA	R	E	R	E
6	Wastewater Treatment	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	Wastewater Laboratory	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	Wastewater Technology	40	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	CCTV - PACP Training	20	NA	NA	NA	NA	NA	E	R	R	NA	NA	R	NA	NA	R	NA
10	Applied Confined Space Safety	8	E	E	E	E	E	E	E	E	E	E	NA	E	E	E	E
	CITY OF TYLER IN-HOUSE TRAINING																
	Sewer Overflows																
11	SSO Reporting Procedures		R	NA	NA	NA	E	R	R	R	R	R	NA	R	E	R	E
	Work Orders/Asset Collection																
12	Initial OneSolution		R	E	E	E	R	R	R	R	R	R	R	R	E	R	E
13	OneSolution Asset Management		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
14	GIS/GPS Data Collection		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
	Vactor																
15	Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
16	Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
17	Operator - Cleaning/Nozzle Setup		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
18	Decan/Cleaning Procedures		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
	Sewer Rodder																
19	Rodder - Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
20	Rodder - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
21	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	Water Jet Rig																
22	Jetter - Initial Setup/Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
23	Jetter - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
24	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	CCTV																
25	CCTV - CUE's Rover & Wincam		E	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
26	Camera Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
27	PACP Recertification - 3 years		NA	E	E	E	E	R	E	E	NA	NA	NA	NA	NA	R	NA

Notes:

* Outside Vendor Training provided by TEEX and other outside vendors

Legend:

R = Required by COT
E = Elective
N/A = Not Applicable

Rev Date: 5/21/15

SAFETY IS FIRST!

"No job is too important not to STOP, PLAN, and PERFORM it safely."

Employee General Safety Handbook

Rev. 1.0
August 2017

Note: This Safety Handbook provides general safety procedures. Specific questions regarding safety should be addressed by your immediate supervisor.

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INTRODUCTION

Safety is an important part of the employees work and must never be compromised. The purpose of this handbook is to introduce and summarize some of the safety requirements of the City of Tyler as it relates to the wastewater collection system. It does not provide detailed information about every job or operation. The contents constitute general safety requirements to assist employees in the safe performance of daily duties.

Your immediate supervisor will provide you with detailed and regulatory rules that apply to your job and should be used in conjunction with this safety manual.

Please take time to read this handbook even though some sections may not apply to an individual employee's work. All employees must familiarize themselves with the safety procedures so that they may be able to identify and report unsafe and/or hazardous conditions.

SAFETY GUIDING PRINCIPLES

1. Make safety first – both on and off the job!

2. Develop your "Sixth Sense" – your sense of safety. As with your other senses, recognize it as a natural and vital part in the prevention of accidents, which can cause injury or damage to material and equipment.

3. No job is too important not to STOP, PLAN, and PERFORM it safely.

4. Working safely is a condition of employment.

STATEMENT OF SAFETY POLICY

Dear Employee:

Safety begins with each of us. Together, the City of Tyler and our employees strive to create a safe work environment through support of our safety program.

Safety is the responsibility of every individual. Every one of us makes decisions, take actions, and react to situations that can affect our own safety and the safety of our co-workers. A good program with good training instills skills in all of us to improve our decision process and management of safety on the job.

Safety must be a part of every job, in the field and in the office. Each of us is empowered to stop any job that is not performed in a safe manner, and each of us is responsible for immediately reporting any unsafe acts, conditions, or incidents. We should openly discuss and evaluate job procedures to ensure that safety is adequately addressed. We should be observant of the safety of our co-workers, contractors, visitors and the public, as well as our own.

To ensure the success of our safety program, we must all give our full participation and support to the safety policies and procedures that have been developed to protect us. Working safely and in accordance with established safety policies is an absolute requirement for all employees and all levels of management.

Our goal is to establish an accident-free workplace and to create a zero accident standard. This can be done if everyone really believes *SAFETY IS FIRST AT THE CITY OF TYLER,* and everyone works together in a way that makes it happen!

_____

Operations Manager

SAFETY RESPONSIBILITIES

MANAGEMENT'S SAFETY RESPONSIBILITIES:

Management is responsible for providing a place of employment that is free from recognized hazards that could result in injuries or accidents. Since it is impossible for managers to personally observe all employee activities, managers must assure that all supervisors are trained and are aware of their safety responsibilities. Other safety responsibilities include:

1. Provide leadership and direction concerning safety activities.
2. Participate actively in the continuous evaluation of the safety program in conjunction with the city Risk Manager.
3. Set goals concerning safety performance within your divisions.
4. Review losses for potential trends on a regular basis.
5. Enforce all safety rules.
6. Participate in facility and work site safety audits.
7. Participate and support all accident investigation activities.
8. Review accident reports and ensure corrective action is taken.
9. Ensure that monthly safety meetings/training is scheduled each month. Meetings/training shall be documented and forwarded to the city Risk Manager.
10. Provide orientation to all new employees to address the hazards of their position, safety rules, policies/procedures, equipment, etc., that are applicable to the new employee's area of assignment.

SUPERVISOR'S and "EMPLOYEE IN CHARGE" SAFETY RESPONSIBILITIES:

Safety is as much a part of the supervisor's responsibility as is getting the job done efficiently. Among the important safety responsibilities of each and every supervisor are to:

1. become familiar with and enforce the safety rules and regulations that have been established by applicable local, state and federal organizations. These regulations are intended to set minimum standards for safety and the contents of the regulations should be enforced as minimum safety requirements for all activities on our work sites or in our facilities.

2. Correct all reported hazards. Operating under known hazardous conditions will not be tolerated.

3. Make certain that new or inexperienced employees are not permitted to work with power tools, machinery or complex equipment without proper instruction and training.

4. Prohibit employees from working if there are reasonable grounds to suspect that an employee is either mentally or physically unfit to perform the assigned work.

5. Give adequate instructions. Do not assume that an employee knows how to do a job unless you personally have knowledge that the person can perform the task correctly.

6. Ensure tools, equipment and machinery being used in the workplace is in proper working condition.

7. Make sure that proper personal protective equipment is available and used by employees when necessary or required.

8. Always set a good example in safety, such as wearing the proper safety equipment (safety glasses, hard hats, etc.) following policies/procedures, using seat belts, etc.

9. Consistently enforce the requirements of the organization's safety program and any associated

rules or policies.

10. Ensure that all employees have access to a copy of the organization's employee safety handbook as well as the applicable section of the Divisional Safety Policy Manual.

11. Encourage safety suggestions from employees under your supervision.

12. Obtain prompt first aid for injured employees.

13. Investigate equipment damage under $250.00, bad locates, report only and first aid incidents involving your employees.

14. Conduct safety audits of all work areas and facilities on a regular basis in an effort to improve housekeeping, eliminate unsafe conditions and encourage safe work practices.

15. Conduct "tailgate" meetings to cover safety related topics prior to beginning each work assignment.

EMPLOYEE SAFETY RESPONSIBILITIES:

All employees bear a certain amount of responsibility in any safety program. You must be aware that your actions, mental state, physical condition, and attitude directly affect the safety of yourself and your fellow employees. All employees will:

1. Carefully study those safety rules that apply to your duties. Know your job, follow instructions and think before you act. If in doubt about safety, then ask your supervisor for clarification. Do not do anything you are not comfortable doing.

2. Personal Protective Equipment (eye protection, hard hats, gloves, etc.) must be worn on the job site upon commencement of work to protect against unforeseen potential hazards.

3. Work according to good safety practices as posted, instructed, and/or discussed.

4. Refrain from any unsafe act that might endanger yourself or your fellow workers.

5. Utilize all necessary safety devices required for your protection.

6. Report any unsafe situation or act to your supervisor immediately.

7. Assume responsibility for thoughtless or deliberate acts that may cause injury to yourself or your fellow workers.

8. Abide by all policies, procedures, rules, etc. associated with The CITY Safety Program.

9. Never operate equipment that you are unfamiliar with or not trained to use.

10. Refrain from using equipment that is in need of repair.

11. Report all accidents/incidents to your supervisor as soon as they occur.

12. Near miss accidents/incidents must be reported and are crucial in continuing development of safety policies and the safety program.

13. Keep your workplace clean and orderly.

14. Obtain clarification of any work that is not understood or for conditions not covered by this

manual.

15. Assume responsibility for the proper care of tools, equipment, and materials.

SAFETY COORDINATOR RESPONSIBILITIES:

1. Act as an assistant to the Superintendent and Supervisors in evaluating the effectiveness of the safety program.

2. Act as the liaison between Management in developing special control programs to reduce loss.

3. Provide recommendations for reversing adverse loss trends.

4. Attend all Safety meetings, provide written minutes and provide guidance to committee members.

5. Records of safety meeting minutes and agendas, safety meetings/training provided to employees, injury loss records, accident investigation reports and inspections shall be maintained by the Risk Manager with assistance if needed from the Human Resources Department.

5. Annually review the safety program for any changes and updates.

SAFETY COMMITTEE RESPONSIBILITIES:

1. Assist employees, management, and the Risk Manager by providing the guidance necessary to create a safe and accident free environment in which to work.

2. Assist in implementation and continuous update of the safety program to assure the effectiveness of the program in preventing injuries, occupational diseases, vehicle accidents, liabilities and damage to equipment and material.

3. Members will bring employee safety concerns and problems to the Committee for discussion.

4. Review on the job injuries involving medical treatment, vehicle collisions, property damage and near miss incidents by collecting evidence, interviewing employee(s) and witnesses involved, and weighing the evidence.

5. Define the cause of the accident and determine whether or not the accident was preventable.

6. Recommend the necessary corrective actions to prevent recurrence.

7. Participate in facility and work site safety audits.

8. Annually review injuries, mishaps, near misses, property damage, work site inspections and employee safety concerns as determined by the Risk Manager, to assess if injury or hazard trends are developing.

GENERAL SAFETY RULES

1. Each employee shall be required to understand and abide by the city Safety Program.

2. All accidents and near misses, no matter how minor, shall be reported immediately to your Manager or Supervisor.

3. All hazardous conditions, actions and/or practices shall be reported to your Manager or Supervisor.

4. Work areas, including the inside and outside of vehicles and buildings, shall be kept clean and orderly at all times.

5. Employees shall only operate equipment/tools that they are trained and authorized to operate.

6. Smoke only in designated areas.

7. Employees shall use all safety devices and personal protective equipment required for their protection.

8. Employees shall wear clothing and shoes (refer to safety toe boot program) suitable for the particular work they are doing.

9. Employees shall use assisted lifting devices or obtain assistance from a coworker when lifting heavy objects.

10. Guards shall never be removed except when authorized to make repairs or adjustments. Replace guard immediately upon completion of work.

11. Before starting work on any machine or equipment that is out of service, employees shall render the equipment or machine inoperative and attach a lockout device to the equipment control.

12. The use of drugs or alcohol is prohibited. Any employee reporting for work under the influence of alcohol or controlled substances shall be subject to disciplinary action.

13. Any employee taking prescription drugs or over-the-counter drugs that could impair assigned work shall report this fact to the supervisor as required by the Drug and Alcohol Policies.

14. Employees shall not engage in practical jokes or horseplay.

15. Employees shall not ignore or bypass a *danger, warning, caution or notice* sign.

16. Under NO circumstances shall safety be sacrificed in order to complete a job/task faster.

17. Unreported accidents or attempts to cover up accidents or influence investigations will constitute a violation of policy and subject any person involved to disciplinary action up to and including termination.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. Prior to using any PPE, employees shall be trained in the proper use, inspection, limitations, maintenance and storage according to manufacturer's recommendations.

2. All employees shall wear clothing suitable for their particular type of work. Loose clothing shall not be worn while working around or near moving machinery or equipment.

3. All city approved special protective clothing or protective devices shall be used by employees when their use is required.

4. Clothing that is soiled by oil or chemicals should be avoided to prevent skin irritations.

5. When work is performed in the vicinity of exposed energized parts of equipment, employees shall remove all exposed conductive articles, such as key or watch chains, rings, wristwatches or bands, if such articles increase the hazards associated with inadvertent contact with the energized parts.

6. Rings or jewelry shall not be worn while climbing on or off structures or vehicles while performing any task where the ring might get caught under or snagged by a projecting item. In addition, rings and wristwatches with metal case and watchbands shall not be worn while working on or near energized equipment or lines.

7. City approved gloves shall be provided to and worn by all employees when work site operations could cause injury to the hands.

8. Gloves and long sleeve cotton shirts shall be worn to protect hands and arms when handling cement, brush, sharp objects, hot materials, acids and other chemicals, or when there is a possible exposure to poison ivy.

9. City approved head protection must be worn on the job site upon commencement of work to protect against unforeseen potential hazards such as impact, falling or flying objects, or from electrical shock and burns.

10. Employees must wear City approved eye and face protection on the job site upon commencement of work to protect against injury from flying objects, glare, liquid splashes, weed eaters, edger, chemicals, grinding, sandblasting, and welding. Eye protection shall be kept in a sanitary and usable condition and shall be replaced when it becomes warped, scratched, or pitted.

11. City approved hearing conservation devices shall be provided to and worn by all employees working in areas where a danger of noise exposure exceeds acceptable levels.

12. Employees shall wear footwear in compliance with the safety toe boot program and suitable to the type of work being performed. Safety boots or shoes shall be worn when required. Wearing of sandals, thongs, tennis shoes, loafers or similar footwear shall not be acceptable during working hours for employees serving in labor, maintenance, construction, or inspection positions.

13. City approved life jackets or buoyant work vests shall be worn by all employees when working over or near water where the danger of drowning exists.

14. City approved respiratory protection shall be worn in areas where dangerous air contamination, chlorine, gasses, vapors, fumes, dust, or other hazardous contaminants exist.

15. Employees required to work in or near the roadway shall wear high visibility clothing, garments, or

reflective vests as stated in the Work zone and Traffic Control Policy.

16. City approved fall protection devices, such as harnesses, lanyards, etc., shall be used by all employees when working in an overhead position which may require use of both hands and when there is a danger of falling 4 feet or more.

MOTOR VEHICLE & EQUIPMENT OPERATION

1. Employees who are authorized to operate The CITY vehicles or personally owned vehicles on CITY business must have a valid Texas Driver's license for the class vehicle they operate and must notify their supervisor immediately should the license be suspended or revoked. CITY driving privileges will be suspended until the problem is resolved.

2. It shall be the responsibility of the employee to inform their supervisor as soon as practical, but not later than five (5) days, of any moving traffic citations received or accidents in which the employee is involved while driving on CITY business.

3. Motor vehicle annual record checks will be conducted on all employees who have driving or motorized equipment operation responsibilities. Should a routine record check be made that does not coincide with the information supplied to the employee's supervisor, the employee may be placing both his job and career with CITY in jeopardy.

4. The vehicle documents should be carried in all CITY owned vehicles.

5. All drivers of CITY vehicles must be familiar with and abide by all applicable state, federal and local traffic regulations.

6. All drivers/operators shall be responsible for the proper care and use of vehicles and motorized equipment. This includes maintaining vehicle/motorized equipment interiors and exteriors, regularly servicing these items and reporting maintenance needs to the supervisor.

7. A driver/operator shall not permit any unauthorized persons to drive, operate or ride in or on a CITY vehicle. Riders shall not be allowed on running boards, tailgates, fenders, bumpers, atop cabs, beds, on tow bars or towed equipment. (Exceptions may include operator trainees and mechanics sharing operator positions.)

8. Every accident involving personal injury or property damage shall be reported to Dispatch Operations immediately and the Wastewater Superintendent or Operations Manager. Mandatory drug and alcohol testing will be completed as soon as possible. Any employee who knowingly avoids such reporting will be subject to disciplinary action up to and including termination.

9. CITY vehicles must be equipped with seat belts (when applicable). Seat belts must be used by the driver and any passenger(s) when the vehicle is in operation. The size of the vehicle or equipment does not excuse the operator from the seat belt requirement. It shall be the responsibility of the driver to see that passengers wear their seat belts at all times.

10. All vehicles shall be equipped with the appropriate safety and emergency equipment, such as fire extinguisher, first aid kit, traffic cones, signs and reflectors. Equipment on all CITY motor vehicles must conform to state, federal, and Department of Transportation (DOT) regulations.

11. Extreme caution shall be exercised when backing any vehicle. If another employee is present, he/she shall act as a "spotter" to assist the driver in backing safely. Drivers shall stop immediately if they lose sight of the "spotter".

12. Back-up alarms are a useful warning device and should be used when possible, especially on larger vehicles and equipment that may severely restrict your view to the rear of the vehicle. If an alarm is not present, the operator should honk their horn to warn others of the moving vehicle.

13. Unsafe and discourteous driving practices such as disregarding the rights of pedestrians, violating traffic regulations, and deliberate recklessness of any kind are prohibited.

14. Entering or exiting vehicle/mobile equipment while it is in motion is prohibited, as is riding

anywhere on the vehicle/mobile equipment not designed for passengers. Do not get out of vehicle/mobile equipment and leave the motor running, or drive/operate with a door ajar.

15. Personnel should maintain three-points of contact with mobile equipment when entering and exiting to help in maintaining balance if a slip occurs. Many injuries occur as a result of slips and this should help control that exposure. In addition, the condition of handrails, steps, etc. should be inspected regularly.

16. Smoking is prohibited in all CITY vehicles/ mobile equipment and facilities.

17. Gasoline must not be carried inside passenger cars or the cabs of trucks. Gasoline shall be transported in approved safety containers and sealed tight to prevent the leakage of gasoline or gasoline vapors.

18. Garage doors must be opened for ventilation whenever a motor vehicle engine is running to help prevent the accumulation of carbon monoxide gas.

19. Keys shall be removed from unattended vehicles and equipment. Doors should be locked for security purposes when applicable.

20. Driving a vehicle under the influence of alcohol or any controlled substance will not be tolerated.

21. Never attempt to operate CITY vehicle/mobile equipment while taking over the counter medication or prescription drugs that may impair your ability.

22. Picking up hitchhikers is prohibited.

23. Before starting out in your vehicle in the morning, clear all windows of any frost, ice or dew. Cleaning only a small place on a windshield does not allow for proper visibility.

24. Employees must perform an “around the vehicle check” prior to driving off after stopping at a job site, service call, etc.

25. Driving is a full time job. Drivers should not engage in other activities, such as dialing a cellular telephone, updating records, etc. while operating a vehicle. The vehicle should be pulled safely off the road and stopped before performing these activities.

26. Driving at the maximum-posted speed limit can be too fast for safety in some situations. The drivers of all vehicles must use good judgment and proceed at a pace suitable to conditions of the vehicle, road, traffic and weather.

27. All vehicle cabs should be kept clean to reduce distractions to drivers and interference with the operation of the vehicle or equipment.

28. Trucks equipped with mechanical hoists and hydraulic tailgates require special driver instructions and crew cooperation. The supervisor will provide training in the use of such equipment to prevent accidents, injuries, and property damage.

29. When backing any vehicle the operator shall assign a spotter to direct them from outside the vehicle.

30. Before leaving the starting point, all operators must check the materials to be transported to avoid shifting, breaking, or falling of the material. Weight should be properly distributed. Material projecting beyond the body of the truck shall have a red flag. At night, a lighted red lantern must be used.

31. When any type of trailers such as, equipment trailers, air compressors, etc., are being pulled by a CITY vehicle, DOT requirements must be met.

INSPECTION OF VEHICLES AND EQUIPMENT

1. Drivers/operators shall utilize equipment checklists to inspect vehicles and equipment daily. Check windshield wipers, signals, horn, lights, reflectors, tires, fluid levels, etc. to determine if they are in good operating condition prior to operating the vehicle.

2. The driver/operator shall determine that brakes are in good operating condition before using the vehicle or equipment. If brakes are not working properly, they must be corrected before use.

3. The driver/operator shall report all defects promptly to maintenance personnel. Items that affect safety shall be repaired prior to continued use.

OPERATION OF VEHICLES AND EQUIPMENT

1. The operator of a motor vehicle shall clearly signal intention of turning, passing, or stopping.

2. Upon a signal from a vehicle approaching from the rear, the driver of a Utility vehicle shall yield the right-of-way.

3. Drivers shall be prepared to stop and yield the right-of-way in all instances when necessary to avoid an accident.

4. The driver of a vehicle shall be courteous toward other operators and pedestrians. The vehicle shall be operated in a safe manner, and the driver shall yield the right-of-way to pedestrians and other vehicles when failure to do so might endanger any person or another vehicle.

5. The driver shall maintain sufficient distance behind another vehicle to safely stop the vehicle in the clear distance ahead.

6. Drivers shall exercise added caution when driving through residential and school zones.

7. When entering or leaving any building, enclosure, alley or street where vision is obstructed, a complete stop shall be made and the driver shall proceed with caution.

8. Trucks on which derricks or booms are erected above traveling height shall not be moved except under the immediate direction of a designated employee, who shall give his undivided attention to the movement.

9. Before a vehicle is driven under or adjacent to energized equipment, especially in substation areas, the clearance shall be checked, especially that of the radio antenna, in order to ensure that proper clearances will be maintained between the vehicle and energized equipment.

10. All ignition systems shall be turned off and no smoking permitted while refueling.

11. When proceeding down grade, the clutch shall not be disengaged. Trucks, particularly if heavily loaded, shall be in a lower gear on steep grades.

PARKING

1. When vehicles must be parked on the roadway, they shall be parked on the right–hand side facing in the direction of traffic flow, whenever possible.

2. When parking on a roadway, vehicles shall park off the traveled road surface, whenever possible. When vehicles must park closer than 10 feet to the traveled road surface, appropriate warning devices shall be used.

3. Trucks or trailers stopped on any public roadway shall be protected by proper warning lights, reflectors, or red flags in accordance with state or local requirements.

4. Vehicles shall not be parked on bridges or over culverts except when necessary for work.

5. When it is necessary to park on an incline, the driver shall make sure the vehicle is left in a safe position. The engine shall be turned off, the vehicle placed in the lowest gear or “park” position, and the parking brake set. The front wheels shall be cut into the curb if a curb is present.

6. When possible, park so that backing is not required.

7. When parking a CITY vehicle it is a requirement that a traffic safety cone be placed at the front or rear of the vehicle on the side of the vehicle facing traffic. The use of a cone for a parked vehicle reminds the driver and the occupants to perform an inspection of the surrounding area before departing. This practice is not required when parking on CITY property.

8. Avoid parking large trucks and equipment in small commercial parking lots (such as fast food restaurants, etc.). Park on public roadway or larger parking lots with open areas.

STOPPING ON ROADWAYS

1. When it is necessary to stop on the roadway, extreme caution shall be used.

2. A beacon shall be used if so equipped.

3. Tail lights/emergency flashers shall be used if the vehicle/mobile equipment is not equipped with beacons.

4. If work is in progress, traffic control devices shall be used in accordance with the State of Texas.

VEHICLE BACKING

1. Avoid backing whenever and wherever possible. Plan routes to eliminate the need for backing.

2. When available, use parallel rather than head in parking.

3. If practical, pull around an area (or block) in the forward direction, rather than risk a blind backup.

4. When a guide is available, all truck drivers including drivers of pick-ups with side boxes, shall use one and only one guide for all backing situations. The driver will require the guide to use hand signals in a position visible to the driver's side mirror. Drivers must check all clearances in any case of doubt about the guide or signals. Should the guide be lost from mirror view, the driver should stop immediately. The driver and guide will both be held responsible in any backing incident.

5. If a spotter is not available, or the driver has any doubt of the guide's instructions, or is not familiar with the area or possible obstructions, he/she should walk around the vehicle prior to backing.

6. Drivers shall not back around corners unless no other means of changing location is available.

7. Drivers shall back slowly and only as far as necessary.

The proper and safe operation of any piece of CITY owned equipment is the sole responsibility of the CITY driver or operator of that piece of equipment.

ELECTRICAL SAFETY

1. Consider all wires as dangerous and do not permit any object being handled to come in contact with electrical lines. The insulation on the wire is no guarantee that it will not cause instant death. Employees other than electricians must never attempt to determine if a wire is energized.

2. All CITY electrical tools, equipment, extension cords etc. shall be inspected on a regular basis. All faulty equipment shall be reported immediately to your supervisor. Lockout or tag the equipment so that others are aware the equipment is damaged. The tool, equipment or cord shall not be used if it has any defects, such as bad insulation, missing grounds, loose prongs, etc.

3. All electrical equipment shall be properly grounded.

4. Extension cords should not be used in wet or damp areas. For adequate protection, a Ground Fault Circuit Interrupter (GFCI) should be used to protect employees in wet or damp locations.

5. All circuit breakers shall be identified as to use. Maintain clear access to electrical panels and main power sources at all times. Electrical panels and boxes should be securely fastened.

6. All electrical panel boards, boxes, disconnects, switchgears, etc. shall be covered or isolated to prevent accidental contact with energized parts and to protect equipment and wiring from potential contamination.

7. Before work begins at a work site, the location of electrical lines (underground and above) shall be determined and precautions taken to prevent accidental contact.

8. Electrical Lockout/Tag out procedures shall be used when circuits or electrical equipment are being worked on.

9. Electrical cables passing through work areas shall be covered or elevated to protect them from damage, which could create a shock hazard.

10. Metal ladders shall not be used when working near electrical circuits.

11. Exposed light bulbs or fluorescent tubes shall be guarded or recessed in reflectors to prevent accidental breakage.

12. To aid in the prevention of electrical shock, 120-volt, single-phase, temporary receptacles used at work sites should be used with a GFCI. If a GFCI is not available, assured equipment grounding conductor program may be used for added protection. Another option in protection from electrical shock involves the use of double-insulated equipment.

13. Because electrical shock can stop the heart and lungs from operating efficiently, be sure that workers involved in activities around hazardous energy levels know cardiopulmonary resuscitation (CPR) and rescue procedures. Any victim of electrical shock should be administered CPR immediately after the electrical shock if heart or lung failure is suspected. The CPR should be continued until the person is revived or medical personnel arrive at the site.

LOCKOUT/TAGOUT PROCEDURES

DEFINITIONS

Lockout and tag out are methods of preventing equipment from being set in motion unexpectedly, which in turn may endanger workers.

Lockout is the placement of a lockout device on an energy-isolating device to ensure that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device is a device that utilizes a positive means such as a lock, either key or combination type, to hold an energy-isolating device in the safe position thus preventing the equipment from being accidently energized.

Tag out is the placement of a prominent warning device, such as a tag, on an energy-isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag out device is removed. This method does not offer the physical protection of lockout.

An **energy-isolating device** is a mechanical device that physically prevents the transmission or release of energy. These devices can include, but are not limited to, electrical circuit breakers, disconnect switches, block valves, slip blinds, slide gates, etc.

Energy source refers to any sources of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or any other energy.

An **affected employee** is an employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tag out, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

An **authorized employee** is a person who uses locks and/or tags on machines or equipment while performing service or maintenance activities. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment, which must be locked and/or tagged.

EMPLOYEE RESPONSIBILITIES

All CITY equipment should be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Employees should never attempt to operate any switch, valve, or other energy-isolating device that is locked or tagged out. Employees should be trained on the importance of lockout/tag out procedures. Only authorized employees who have been trained in the procedures should be allowed to apply lockout or tag out.

PREPARATIONS FOR LOCKOUT/TAGOUT

Obtain the lockout/tag out procedures for the equipment. After a review of the procedure, determine if changes may be necessary in the procedure.

Identify all affected employees that may be impacted by the impending lockout/tag out.

Obtain necessary supplies, such as locks, tags, etc. that may be needed during the lockout or tag out.

SEQUENCE OF EVENTS TO IMPLEMENT LOCKOUT/TAGOUT

1. Notify all affected employees that servicing or maintenance is required on a machine or

equipment and that the machine or equipment must be shut down and locked out to perform the serving or maintenance.

2. The authorized employee should refer to CITY's written procedures to identify the type and magnitude of the energy that the machine or equipment utilizes. After identifying the type of energy source, the authorized employee should assure that he/she understands the hazards of the energy source and knows the methods to control the energy source.

3. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.).

4. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).

6. Use lock(s) and/or tag(s) as necessary to prevent the accidental or inadvertent operation of the energy isolating device(s).

7. Any stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, air pressure, steam pressure, gas pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

8. To ensure that the equipment is disconnected from the energy source(s), the authorized employee should follow these listed steps: (a) Check to make sure that no personnel are exposed to possible hazards; (b) Verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate; and (c) Return the operating control(s) to the "neutral" or "off" position after verifying the isolation of the equipment.

9. The equipment or machine should now be locked out.

SEQUENCE OF EVENTS TO RESTORE MACHINE OR EQUIPMENT TO NORMAL OPERATIONS

1. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.

2. Check the work area to ensure that all employees have been safely positioned or removed from the area.

3. Verify that the controls are in the "neutral" position.

4. Remove the lockout and/or tag out devices and reenergize the machine or equipment.

5. Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

6. Return or file used lockout and/or tag out devices.

EMPLOYEE TRAINING REQUIREMENTS

The employer should provide training to ensure that employees understand the purpose and function of the energy control program and that the knowledge and skills required for the safe application, the employees acquire usage and removal of the energy controls.

Each authorized employee should receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy sources, and the methods and means necessary energy isolation and control. Each affected employee should be instructed in the purpose and use of the energy control procedure.

Other employees, whose work areas may or may not be in an area where energy control procedures may be utilized, should be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machine or equipment which are locked out or tagged out.

BLOODBORNE PATHOGEN/BIOLOGICAL HAZARD SAFETY

1. Due to potential hazards associated with blood borne pathogens, bacteria, funguses, parasites and viruses that can cause infections and diseases such as hepatitis and AIDS, care shall be taken by CITY employees to eliminate contact with blood and body fluids and minimize exposure to sewage.

2. Universal precautions (treating all body fluids as potentially infectious) must be observed at all times.

3. Preventative immunizations and vaccinations shall be offered to affected employees.

4. Use of appropriate gloves and eye protection may be necessary to prevent potentially infectious materials from passing through or reaching an employee's work clothes, street clothes, undergarments, skin, eyes, mouth or other mucous membranes. A specialized mask for administering CPR shall be used.

5. Employees shall wash hands and other contaminated body areas and remove all contaminated clothing immediately after administering first aid or contact with sewage.

6. Employees shall immediately report all exposures to blood and body fluids to their supervisor so post-exposure care can be initiated.

7. Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures, or contact with blood or potentially infectious materials. Tools and materials should be decontaminated after use.

8. Infectious waste generated by rendering first aid shall be placed in closable, leak-proof containers with proper labels and must be disposed of in a proper manner.

9. Cuts and abrasions shall be promptly treated using appropriate first aid measures.

ACCIDENT/INCIDENT INVESTIGATIONS

All work-related accidents or incidents that result in or could potentially have resulted in injury or property damage must be investigated.

1. The employee will report all injuries, illnesses or incidents. Failure to do so will constitute a violation of policy and subject the involved parties to disciplinary action up to and including termination.

2. The supervisor will contact the 911 and the Service Center immediately, secure the scene and ensure injury treatment is rendered if needed. Medical treatment is necessary for severe chest pains, traumatic injuries, and loss of consciousness or severe dizziness.

3. The supervisor or members of the safety committee will conduct the investigation immediately.

4. Notify the Department leader within 24 hours and obtain the accident reporting form.

4. The final accident investigation report should be completed and submitted to the Risk Management Department within two business days of the incident.

FIRST AID EQUIPMENT

Every vehicle is equipped with first aid kits. CITY employees shall be familiar with the location, contents, and the instructions given with the first aid kit. Each employee shall learn how to use this equipment so they can render treatment when needed.

The contents of the first aid kits shall be inspected each month and expended items replaced. Personal medication shall not be kept in first aid kits.

Where the eyes or body may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided for emergency use.

TREATMENT

Each CITY division has personnel qualified to administer First Aid and CPR. If an injury requires outside medical attention, arrangements for promptly obtaining that care and treatment are normally made by the supervisor if possible. Serious injuries and illnesses will be treated at the most appropriate and accessible hospital.

WORKING ALONE

The term “Working Alone” can be defined as:

Any person working alone in any environment where there are no other workers present and who are not available to respond effectively to assist during any emergency.

Supervisors shall review each worksite under their control to identify individuals who work alone and ensure all reasonable and practical steps are taken to protect the health and safety of those workers.

The steps that follow should be adhered to by employees when working after-hours and/or weekends.

1. Employees shall notify Service Center at the beginning of a job and provide the following information:
   - Unit number
   - Method of communication (cell phone, radio, pager, etc.)
   - Location and duration of job (If there is a change in the location or duration employee shall contact Service Center. If several locations are to be made, a list should be provided to Service Center in the order the employee will make each location and contact made after all locations have been made)

2. If an employee does not contact Service Center within the expected time, Dispatch will attempt contact three (3) times within a fifteen (15) minute period

3. If the employee does not respond Service Center will contact the employee’s Supervisor to determine if emergency response is required

   <u>Options for the Supervisor</u>:

1. Report to the scene and contact Service Center within five (5) minutes or less after making location

2. Service Center may request a “welfare check” from CITY Crew Members on duty or local Law Enforcement

3. Service Center may contact 911 (If this option is used, the following information is required):
   - Exact location
   - Type of injury/illness

EMERGENCY PROCEDURES

Preplanning for a potential emergency situation at CITY is most valuable. All employees shall be aware of the medical services available and how to obtain them. This information will be covered in orientation and reviewed annually in division safety meetings. Emergency phone numbers and evacuation routes shall be posted in or near all work areas. Employees shall familiarize themselves with the emergency exits, alarm signals, and escape procedures when working inside a building or structure.

GENERAL EVACUATION

If you are asked to evacuate, hear the alarm, or are notified to do so, you should:

1. Stop all work.
2. Shut off electrical equipment and machines, if possible.
3. Walk to the designated exit, including emergency exits with crash bar assemblies. Push the bar and exit the building.
4. Exit quickly. Do not stop for personal belongings.
5. After exiting the building, move immediately to designated relocation areas and wait there for further instructions.
6. Do not re-enter the facility until you are instructed to do so.
7. Do not go to your car and leave unless instructed to do so.
10. If you are not working at your normal workstation or area, exit the building and relocate with your group at the designated location as soon as possible.

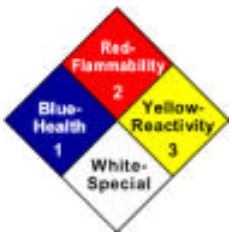
HAZARDOUS MATERIALS PROGRAM

RIGHT TO KNOW

Just as The CITY is interested in your safety from physical hazards, it is also concerned about other aspects of your health and safety. Our use of chemicals at home and at work can present health problems if recommended precautions are not followed. Most chemicals have made our lives more comfortable and productive. However, most have some other effects that could be of concern.

CITY has established a Hazardous Materials Communication Program. This program is designed to insure that while on the job you will be given training and information for the safe handling, use, storage, and disposal of any chemical you may encounter on the job. Training will include where hazardous materials exist, how to read and interpret material data safety sheets and labels and where material data safety sheets are located.

Employees using chemicals have a responsibility to keep informed and seek information from their supervisor. The goal of the program is to make each of us more aware of potential hazards.



CONFINED SPACE SAFETY

1. All potential hazards shall be evaluated prior to entry into a confined space.

2. Only CITY employees who have been properly trained on the hazards associated with confined space work shall be allowed to enter a confined space.

3. If work is to be performed in a confined space, a written permit system shall be followed. The entry supervisor shall complete the written permit prior to entry to ensure that all safety equipment is in place and acceptable entry conditions are present.

4. Before any entrance cover to a confined or enclosed space is removed, it shall be determined that there are no temperature or pressure differences, or other hazardous conditions that may cause injury to the employees removing the cover.

5. No smoking shall be permitted in a confined space or near the entrance/exit area.

6. When covers are removed from confined or enclosed spaces, the opening shall be guarded by a railing, temporary cover, or other temporary barrier.

7. Before an employee enters a confined space, the internal atmosphere shall be tested for oxygen content, flammable gases and vapors, and potential toxic air contaminants. Approved and calibrated testing equipment shall be used to measure the concentration of the various gases.

8. Before entering, if an oxygen deficiency is found, or if flammable or toxic gases or vapors are detected, the space shall be continuously tested and forced ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable or toxic gases and vapors.

11. Electric welding, gas welding, cutting, or any other hot work shall not be performed on the interior, exterior, or near the openings of any confined or enclosed space that may contain flammable or explosive gases or vapors until the space has been properly cleared. Monitoring shall be continuous during any hot work activities.

12. If a hazard-increasing work activity is to take place in a confined or enclosed space (i.e., welding, painting, working with solvents and coating), the air in the space shall be continuously tested for the presence of flammable or toxic gases and vapors or insufficient oxygen. Forced ventilation shall be used as required.

13. Before employees are allowed to enter a confined space, all electrical and mechanical energy sources that could affect the employees working in the space shall be physically rendered inoperative, locked out, and tagged. If required, the space shall be drained, vented, and cleaned.

14. A properly trained attendant shall be stationed outside the confined space. The attendant shall maintain continuous communication with the employees authorized to be in the confined space. The attendant shall be able to recognize confined-space hazards and changing conditions in the confined space that could affect employees in the space. In the event of an emergency, the attendant shall not enter the confined space but shall be able to summon emergency and rescue services.

15. All employees required to enter a confined or enclosed space shall be equipped with a body harness and lifeline monitored by a properly trained attendant. Other personal protective equipment and rescue devices may also be required depending on the situation.

16. Compressed gas cylinders, other than breathing air, shall not be taken into a confined space.

17. While work is being performed in an enclosed space, a person with CPR and basic first aid training shall be immediately available to render emergency assistance if there is reason to believe that a hazard may exist in the space or if a hazard exists because of traffic patterns in the area of the opening used for entry.

18. Necessary rescue personnel and equipment shall be available in the event of an emergency.

19. Safe access to the confined space shall be maintained at all times. If possible, all cords, hoses, leads, etc., shall be routed through an entrance other than the employee access into the confined space.

20. Employees whose job duties and responsibilities include entering confined spaces should familiarize themselves with the Confined Space Policy.

21. Training for atmospheric monitoring personnel shall include proper use of monitoring instruments, including instruction on the following:
    - proper use of the equipment;
    - calibration of equipment;
    - sampling strategies and techniques; and
    - exposure limits (PELs, TLVs, LELs, UELs, etc.).

22. Training for Attendants shall include the following:
    - procedures for summoning rescue or other emergency services; and
    - proper utilization of equipment used for communicating with entry and emergency/rescue personnel.

23. Training for Emergency Response Personnel shall include:
    - rescue plan and procedures developed for each type of confined space that is anticipated to be encountered;
    - use of emergency rescue equipment;
    - first aid and CPR techniques; and
    - work location and confined space configuration to minimize response time.

24. The Confined Space Entry Permit is the most essential tool for assuring safety during entry in confined spaces with known hazards, or with unknown or potentially hazardous atmospheres. The entry permit process guides the supervisor and workers through a systematic evaluation of the space to be entered. The permit should be used to establish appropriate conditions. Before each entry into a confined space, an entry permit will be completed. A standard entry permit shall be used for all entries and must be completed BEFORE entering any confined space.

25. A confined space that may contain a hazardous atmosphere shall be tested for residues of all identified or suspected contaminants. The evaluation testing should be conducted with specified equipment to determine that residual concentrations at the time or testing and entry are within acceptable limits. Results of testing shall be recorded by the person performing the tests on the permit. The atmosphere of the confined spaces shall be considered to be within acceptable limits when the following conditions are maintained:
    - oxygen: 19.5 percent to 23.5 percent;
    - flammability: less than 10 percent of the Lower Flammable Limit (LFL);
    - toxicity: less than recognized American Conference of Governmental Industrial Hygienists (ACGIH) exposure limits or other published exposure levels [i.e., OSHA Permissible Exposure Limits (PELs) or National Institute of Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs)].
    - Ventilation equipment is installed and operating

26. Means for safe entry and exit shall be provided for confined spaces. Each entry and exit point(s) shall be evaluated by the Utility Superintendent to determine the most effective methods and equipment that will enable employees to safely enter and exit the confined space.

27. Appropriate retrieval equipment or methods shall be used whenever a person enters a confined space.

TRENCHING AND EXCAVATION SAFETY

1. Before opening an excavation, all interferences such as trees, sidewalks, and foundations shall be removed or supported as necessary to protect employees and the public.

2. The estimated location of utility and other underground installations that may be encountered during excavation work shall be determined before opening the excavation.

3. When excavation operations approach the estimated location of underground installations, the exact location of the installation shall be determined by safe and acceptable means.

4. While the excavation is open, underground installations shall be protected, supported, or removed to safeguard employees.

5. Employees exposed to vehicular traffic shall wear “high visibility” vests or clothing.

6. A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees. Ladders must extend 3 feet above the surface and be tied off if necessary.

7. No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.

8. All mobile equipment (front-end loaders, bulldozers, and dump trucks) shall be equipped with a warning device such as a back-up alarm. When mobile equipment is operated adjacent to an excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be sloped away from the excavation.

9. In excavations deeper than four feet with the potential for a hazardous atmosphere or oxygen deficiency, air testing shall be conducted before employees can enter an excavation and as often as necessary to ensure the atmosphere remains safe. Ventilation or respiratory protection may be needed to protect employees from harmful atmospheres.

10. Daily inspections of the excavations and adjacent areas and protective systems shall be made by a competent person for evidence of situations that could result in a possible cave-in, failure of protective systems, hazardous atmospheres or other hazardous conditions. An inspection shall be conducted prior to the start of work, when there are changes in weather conditions, if the excavation has been left unattended for a period of time (such as lunch), and as needed.

11. Employees shall not work in excavations in which there is accumulated water or in an excavation in which water is accumulating unless adequate precautions have been taken to protect employees. The precautions necessary to protect employees adequately can include special support or shield systems, water removal, or the use of a body harness and lifeline.

12. Surface water shall be prevented from entering an excavation by utilizing diversion ditches, dikes, or other suitable means.

13. Excavations subject to run-off from heavy rains shall require an inspection by a competent person.

14. Excavated earth (spoil), materials, tools, and equipment shall be placed no closer than two feet from the edge of the excavation.

15. Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails shall be provided.

16. When excavations are left open, warning devices, barricades, or guardrails shall be placed to adequately protect employees and the public.

17. At the end of the workday, as much of the excavation as practical shall be closed.

18. Mechanical excavating equipment that is parked or operating on streets or highways shall be protected by proper warning devices.

19. Each employee in an excavation shall be protected from cave-ins by an adequate protective system (sloping, benching, shoring, or shielding), unless excavations are made entirely in stable rock, or are less than five feet deep and examination of the ground by a competent person provides no indication of a potential cave-in.

20. When choosing a protective system, a competent person shall take into consideration soil type, vibration sources, previously disturbed soil, layered soil, presence of water, heavy equipment work adjacent to the excavation, limited work area, and other hazard-increasing conditions.

21. Sloping, benching, shoring or shielding for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

22. A “competent person” as used in this section shall mean one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

TEXAS 811

The dig safely program stresses that safe excavation is a four step process:

1. Call before you dig. Dial 811, 24 hours a day, 7 days a week.

2. Emergency excavation may begin immediately, with reasonable care. The excavator must call when reasonably possible.

3. Respect the marks. Excavators are encouraged to outline the excavation area in white paint to aid in the location process. During the project, it is the excavator’s responsibility to make sure the marks remain visible. If the marks are obliterated, the excavator must call the DIG TESS Center for re-mark. Take photos of the locate marks prior to starting excavation.

4. DIG Safely. Once the work begins, it is up to the excavator to use safe accepted digging practices staying 18 inches on either side of utility markings. Hand digging is recommended when working within 18 inches of the mark. Regardless of how careful the preparation has been, the excavator must work in a prudent and careful manner.

WORK ZONE TRAFFIC CONTROL

Work zone safety is the adequate safeguarding or protecting of pedestrians, motorists, utility workers and equipment by the use of adequate barriers, warning signs, lights, flags, traffic cones, high level standards, barricades, rope, flaggers, etc. on approaches to work areas, excavations, open manholes, parked equipment, etc.

Work zone traffic control is accomplished by the use of informative and protective devices, keeping in mind that a safe installation requires the use of these devices in relation to the location of the workers and equipment involved. The use of these devices must be coupled with proper planning, design, installation, inspection, maintenance and the use of good common sense. It is of utmost importance that the work area be properly identified and that warning devices clearly convey the message to the traveling public well in advance of arrival at the work area.

The public must be warned in advance, then regulated and guided through or around the work area. Proper work area protection shall be planned to ensure the safety and protection of the public, the worker, and the equipment.

1. If street construction or repair work is to be done, preparations will be made to ensure vehicle and pedestrian safety before work is allowed to begin.

2. If traffic is affected by the operation, proper signs must be used in advance of the work area, and the traffic control signs in and around the affected area are to be correctly placed and maintained for the duration of the period when work is being performed and traffic obstructions exist.

3. When barricades and signs are used overnight, supervisors will examine the work area for proper placement at the end of the workday.

4. All employees working in or near the roadway will wear CITY approved reflective vests and hard hats while at the work site.

5. Lighted barricades will be used whenever possible for overnight protection.

6. Where traffic must be periodically stopped or obstructed by workers or equipment in a traveled portion of a roadway, a flagger wearing a reflective vest may be stationed. If lack of manpower exists, the roadway must be closed and the traffic detoured.

7. Flaggers will be used to slow or direct traffic where the approach to the work area does not provide adequate visibility to drivers. The use of sign paddles (Stop/Slow) is preferred and should be used if available.

8. All plates used to cover holes in the street on a temporary basis are to be spiked in place.

9. In any case where streets are significantly obstructed or closed for any period of time, the police, fire and other relevant departments will be notified of the situation and told approximately how long the closure will be in effect.

10. When pedestrian traffic is impeded, barricades, restrictive tape, rope or other restraint will be used to keep the public from the work site.

11. Holes in the sidewalk or parkway which must be left open will have perimeter protection. Protection of these areas will be in the form of physical barriers and warnings signs.

MATERIAL HANDLING AND LIFTING SAFETY

1. Before starting to lift or carry, check to ensure that the walkway is clear of all obstacles. Cautiously test the object to check its weight and center of gravity.

2. Before lifting, face the object and get as close as you can with feet slightly apart. Remember, bend at your knees not at your waist.

3. Maintain the natural curve of the back by looking forward and using abdominal muscles for support.

3. Use your legs to bring you to a standing position. Make the lift smooth and under control.

4. When carrying an object, grip it firmly and hold it as close to your body as possible.

5. Keep the load directly in the front of the body, both hips and shoulders facing forward. Do not twist your body when lifting or setting an object down.

6. If necessary, obtain assistance in lifting heavy objects by utilizing additional personnel, power equipment or other types of assisted lifting devices.

7. When two or more persons carry a heavy object that is to be lowered or dropped, there shall be a pre-arranged signal for releasing the load.

8. When two or more persons are carrying an object, each employee, if possible, should face the direction in which the object is being carried. Crouch or squat with the feet close to the object to be lifted; secure good footing; take a firm grip; bend the knees; keep the back vertical; and lift by bending at the knees and using the leg and thigh muscles. Employees shall not attempt to lift beyond their capacity. Caution shall be taken when lifting or pulling in an awkward position.

9. Material shall not be thrown from place to place or person to person.

10. A safety line or tag line should be attached to help control loads as they are lifted to elevated work areas.

FIRE EXTINGUISHER AWARENESS

1. Employees shall be familiar with both the location and the operation of all fire protection equipment in the vicinity of their work area.

2. Fire extinguishers should be “wall-mounted” in an easily accessible location not more than five feet above floor level. If an extinguisher cannot be easily seen, a sign indicating the extinguisher’s location should also be posted. Except for actual use or inspection purposes, employees shall not move or remove such equipment without proper authority.

3. Fire extinguishers shall not be blocked or hidden behind material or machines.

4. Fire extinguishers shall be visually inspected at least once a month and service inspected annually.

5. Employees should know the classes of fires and the proper extinguishing agent to be used. Employees shall be trained on the primary fire exposures in their immediate work area.

6. Class A-for fires in paper, wood, or cloth
   Class B-for flammable liquid fires
   Class C-for electrical fires
   Class D-for combustible metal fires

   A multi-purpose “ABC” fire extinguisher will extinguish most types of fires.

7. Remember how to operate most extinguishers:

   PULL - the pin.
   AIM - at the base of the fire.
   SQUEEZE - the handle.
   SWEEP - from side to side.

TOOL SAFETY

1. All tools shall be of an approved type and maintained in good condition.

2. All tools shall be examined prior to use to ensure adequate working condition.

3. Defective tools shall be tagged to prevent their use and removed from the job site.

4. Employees shall always use the proper tools for the job.

5. Employees shall be trained on the correct use, hazards and limitations of tools used in the workplace.

6. Gloves should be worn when they provide protection to the employee without increasing the chances of the employee becoming entangled at the point of operation.

7. Tools shall not be left unsecured in elevated places. Tethering is recommended in areas where tools may fall to a lower level.

8. Impact tools, such as chisels, hammers and punches that become mushroomed or cracked shall be dressed or replaced.

9. Chisels and punches, etc. shall be held with a safe holding device, such as vice grips or pliers to avoid injury to employee's hand.

10. Wrenches with sprung or damaged jaws shall not be used.

11. Wooden handles that are loose, cracked or splintered shall be replaced, not taped or lashed.

12. Power tools shall be disconnected from any power source while repairs or adjustments are being made.

13. Carrying and storing tools:

    a. Never carry sharp tools in your pockets unless the edges are protected.

    b. Do not carry tools in your hands while climbing a ladder. Hoist them with a rope or use an approved utility belt.

    c. Protect your tools from falling when working from a scaffold, ladder or other elevated work areas.

14. Do not leave tools lying around where they may cause a trip/fall hazard. Tools no longer needed for the job shall be returned to their proper location.

LADDER SAFETY

1. Wooden ladders shall not be painted so as to obscure a defect in the wood; only a clear, nonconductive finish shall be used.

2. All ladders shall be inspected regularly. Ladders with weakened, broken, or missing steps, broken side rails, or other defects shall be tagged and removed from service.

3. Ladders and scaffolds shall be sufficiently strong for their intended use.

4. Ladders shall not be placed in front of doors opening toward the ladder unless the door is open, locked, or guarded.

5. When ascending or descending ladders, employees shall have both hands free and shall face the ladder.

6. Only one employee shall work from a ladder at one time (except for hook-type ladders). If two employees are required, a second ladder shall be used.

7. Only CITY supplied ladders shall be used by employees. The minimum standard for ladders used by CITY shall be Type 1A.

8. Ladders shall not be used as scaffold platforms unless specifically designed for that purpose.

9. Boxes, chairs, etc., shall not be used as ladders.

12. Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment except in very specialized situations.

13. The use of stepladders above 20 feet is prohibited and the use of extension ladders above 24 feet is strongly discouraged.

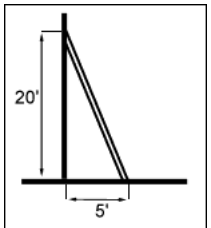


Figure 2. Use a 4:1 ratio for setting ladders

STRAIGHT & EXTENSION LADDERS

1. Portable straight ladders shall be equipped with nonskid bases or shoes.

2. Ladders should be set at a 4:1 angle.

3. Straight ladders shall not be climbed beyond the third step from the top.

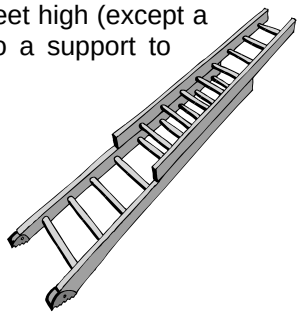
4. When working from a portable ladder, the ladder must be securely placed, held, tied, or otherwise made secure to prevent slipping or falling.

5. When dismounting from a ladder at an elevated position (such as a roof) the employee shall ensure that the ladder side rails extend at least 3 feet above the dismount position, or that grab bars are present.

6. Employees shall belt off to a ladder whenever both hands must be used for the job or a possibility of the employee falling from an elevated position exists.

7. Ladders shall not be spliced together to form a longer ladder, unless specifically designed to be used as a section ladder.

8. A ladder shall not be placed against an unsafe support.
9. When an employee is working on a straight or extension ladder more than 10 feet high (except a platform ladder), another person shall hold the ladder or it should be tied to a support to prevent it from falling.



STEP LADDERS

1. The top step shall not be used, except for platform ladders.

2. Stepladder legs shall be fully spread and the spreading bars locked in place.

3. Stepladders shall not be used as straight ladders.

4. When an employee is working on a stepladder more than 10 feet high (except a platform ladder), another person shall hold the ladder or it should be tied to a support to prevent it from falling.

MATERIAL STORAGE SAFETY

Bins and Shelves

1. Material shall be stored in such a manner that it will be safe from damage. Special care must be taken to assure that stored material poses no hazard to anyone working around it. Only lightweight material should be stored on top shelves.

2. Bins or shelves shall never be used as ladders.

3. Materials shall not be stored on the floor, in front of shelving.

Stacking Material

1. When material is stacked all possible precautions must be taken to assure that it will remain stable. The lower level must be blocked or tied to prevent slipping. The height of a stack of material should remain within reasonable limits.

2. When unloading and/or stacking poles or pipe, great care should be exercised to maintain a safe work environment. Do not stand on poles or pipe. Watch for pinch points, and stay out of the path of equipment during unloading. Avoid any contact with creosote, while unloading poles.

Flammable Material

1. Under no circumstances shall flammable materials be stored in an area where heat or potential ignition sources may affect the stability of the material.

2. All flammable materials shall be stored in a location that will not endanger life or property. Containers will be clearly and appropriately marked, in accordance with fire safety standards. In addition, storage facilities shall have a sign identifying the materials as “flammable”.

3. Storage of open containers of flammable materials is prohibited. Container covers must be promptly replaced. Smoking will not be permitted inside any warehouse facility, or outside near flammable or combustible materials in the equipment yard.

4. Flammable liquids shall be used only for their designed purposes. Gasoline shall not be used for cleaning purposes or for starting or kindling fires.

5. All solvents should be kept in approved, properly labeled containers. Gasoline and other solvents of this class shall be handled and dispensed only in Underwriters Laboratories (UL) approved, properly labeled (yellow letters) red safety cans.

6. When pouring or pumping gasoline or other flammable liquids from one container to another, metallic contact shall be maintained between the pouring and receiving containers. Transferring of flammable liquids from one container to another shall be accomplished only in properly ventilated spaces free from ignition sources.

7. Strict adherence shall be paid to “No Smoking” and “Stop your Motor” signs at fuel dispensing locations.

Housekeeping

1. Work locations including vehicles, buildings, shops, yards, offices, cabs, etc. shall be kept clean and orderly at all times.

2. Combustible materials, such as oil-soaked rags, waste and shavings shall be kept in approved metal containers with metal lids. Containers shall be emptied as soon as practical.

3. Both clean rags and used rags shall be kept in metal or metal lined bins having metal covers.

4. Permanent floors and platforms shall be kept free of dangerous projections or obstructions and shall be maintained reasonably free from oil, grease, or water. Where the type of operation produces slippery conditions, mats, grates, cleats or other methods shall be used to reduce the hazard from slipping.

5. Stairways, aisles, permanent roadways, walkways and material storage areas in yards shall be kept reasonably clear and free from obstructions, depressions and debris.

6. Materials and supplies shall be stored in an orderly manner so as to prevent their falling or spreading and to eliminate tripping and stumbling hazards.

7. Rubbish and unused clothing shall not be allowed to accumulate in lockers.

8. Paper and other combustible materials shall not be allowed to accumulate, and weeds or other range vegetation shall not be permitted to grow in or around storage areas, shops, substations, pole yards, buildings, fuel tanks or other structures.

9. Batteries shall be stored in a well-ventilated area protected from sparks or open flames.

10. All personnel will practice good housekeeping. Scrap material will be disposed of properly and the work area should be free of any loose material.

Smoking

Open flames shall not be permitted in areas where flammables or combustibles are present. Smoking will only be allowed in designated smoking areas and never in the vicinity of flammable materials. The absence of “No Smoking” signs shall not be considered authorization for smoking in hazardous locations.

SMOKING IN CITY VEHICLES IS PROHIBITED.

SHOP SAFETY

1. All rotating pulleys, gears, shafts and belts on compressors, motors, etc. shall be properly guarded. No equipment or machinery shall be operated while required guards are not in place.

2. Drain valves on air compressors should be opened frequently to prevent the accumulation of liquid.

3. Safety-relief valves will be installed on all compression tanks. These valves will be tested periodically to ensure their proper operation.

4. Never use compressed air to clean your hands or to blow dirt from clothing or your body.

5. When using compressed air for cleaning purposes, it must be kept at a level below 30 pounds per square inch (PSI).

6. If compressed gas cylinders are stored inside a building, the area will be kept dry and well ventilated. Oxygen and fuel gas cylinders must be stored separately.

7. Cylinder carts, other than those designed to hold cylinders in an upright position, are prohibited. Upright cylinder carts must be equipped with a chain, bar or some other device that will act to stabilize the cylinders. If gauges are not attached to the cylinders, valve caps must be in place.

8. Signage similar to the following must be posted in any cylinder storage areas. “DANGER - NO SMOKING, MATCHES, OR OPEN FLAMES".

9. Radial bench saws shall be equipped with a hood guard, forward travel stop and the head shall automatically return to starting position when released.

10. A face shield and safety glasses shall be worn while grinding. Any grinding equipment without proper safety features is not allowed in the work place. Abrasive wheels shall only be used on machines that have guards that cover the spindle end, nut and flange projections.

11. Grinder work rests must be designed to be adjustable to compensate for wheel wear. Work rests should be adjusted with a maximum clearance of 1/8" to help prevent work from jamming. Tongue guards must also be adjusted to within 1/8".

12. When replacing abrasive wheels, follow the manufacturer's directions for proper installation and inspection. All grinding wheels must be inspected prior to installation to insure that the RPM rating of the wheel is correct for the grinder’s RPM.

13. Identify and label all electrical control devices, such as circuit breakers, fuses, disconnects, etc.

14. All electrical outlets, including wall receptacles, extension cords, etc. must have an independent, third-wire ground system.

15. All electrical tools and equipment shall be effectively grounded unless the tool is an approved double-insulated type.

16. All electrical junction boxes shall have protective covers. All such boxes must have sufficient access space.

17. Stored materials should be stacked in such a manner as not to create a hazard. Stack containers, boxes, parts, etc. in an orderly fashion to ensure stable stacking heights.
18. Heavy bulky materials should be stored on lower shelves to minimize chances of injury due to

falling objects.

19. Elevated storage platforms over four (4) feet in height from floor level shall have standard handrails (includes a mid-rail and a top handrail) and toe boards. The handrails will be constructed of metal or wood sufficient to withstand 200 pounds of top rail pressure.

20. Proper signage, such as "NO SMOKING" signs, will be installed in all areas where flammable or easily combustible materials are stored.

21. Hooks used on hoisting equipment shall be equipped with a safety latch to help prevent dropping of any lifted load.

22. The hoisting capacity of any hoisting equipment shall be printed clearly on the frame in lettering that is large enough to be read from ground level. All cranes shall be inspected on at least a monthly basis to assure their proper operation and condition.

23. All shops shall have at least two accessible exits for emergency evacuations.

24. Any doors not designated as exits, but may be mistaken for exits should be clearly marked "NOT AN EXIT".

25. All exits shall be identified by a clearly visible, illuminated, "EXIT" sign.

26. Only approved containers are to be used for the storage of flammable and combustible materials. Approved containers can be identified by the presence of a label from a certifying organization such as Underwriters Laboratories.

27. Safety cans shall be painted red and clearly marked to identify the contents. Only approved pumps or self-closing faucets are to be used for dispensing flammable or combustible liquids.

28. No guard shall be removed from any machine or piece of equipment except to perform required maintenance. Guards removed to perform maintenance operations shall be replaced immediately after the completion of the work.

YARD STORAGE SAFETY

1. All vehicles shall have the emergency brake set when parked on a slope or down grade. Consideration should also be given to the use of chocks in these situations.

2. All vehicles and equipment shall be parked in a position that does not require backing whenever possible. When backing a truck or machinery in the yard, use a spotter to assist you into position.

3. Proper personal protective equipment should be evaluated before performing any work in the yard. It is not possible to identify all personal protective equipment that may be required due to the various types of assignments in that area.

4. Miscellaneous tools, equipment and material should be stored on pallets instead of being placed on the ground when able. Pallets should be stacked in a way that ensures their stability. Stability may be influenced by many items such as the stability of the ground, the height of the stacked material, the configuration of the stacking, etc.

5. Always roll pipe or pole's from the ends or from behind to avoid placing your body in the pipe or pole's path.

6. All pipe racks will be fitted with pipe stops to prevent pipe roll-off. Stripping should also be used at the ends of the pipe to act as spacers.

7. All aboveground fuel storage tanks should be protected on all four sides with heavy-duty guard posts and crash rails. Emergency cut-off switches shall also be installed near the pumping equipment and a fire extinguisher should be readily accessible.

8. A diking system capable of holding the volume of the above ground storage tank should be constructed to help control potential spills.

COMPRESSED GAS CYLINDER SAFETY

1. Never attempt to lift compressed gas cylinders with an electromagnet. Where cylinders must be handled by a crane or derrick, as on work sites, the cylinders shall be lifted in a cradle or suitable platform, not by the valve protector cap. Do not lift with slings or chokers. Extreme care must be exercised to prevent dropping or bumping of the cylinders.

2. Cylinders, whether full or empty, shall be stored in a rack, chained or otherwise secured to prevent them from falling.

3. Do not use cylinders as rollers, supports or for any other use other than its designed purpose.

4. Cylinders shall have their contents properly identified. Empty cylinders shall be plainly marked “EMPTY” or “MT”, and the valves shall be closed.

5. Oxygen cylinders in storage shall not be stored near flammable or highly combustible materials, such as oil, grease, fuel, and other fuel gas cylinders, etc. In addition, no cylinders shall be stored in areas where there is an exposure to direct sunlight.

6. Welding or cutting of any pipeline, tank, empty container or piece of equipment shall not be performed until it is assured that the object is free from flammable materials or an explosive mixture of gases. Before welding or cutting begins, the hazardous materials shall be removed or it shall be vented to the atmosphere to prevent a possible explosion from the expansion of trapped gases.

7. Cylinders shall not be placed where they might become part of an electric current or within five feet of an electrical outlet. Cylinders shall not be allowed to come in contact with energized conductors, ground wires from electrical equipment or welding machines.

8. Valves of compressed gas cylinders shall be opened slowly and with the proper wrench.

9. Before the regulator is removed from a cylinder, the valve shall be closed and all pressure released from the regulator. Use regulators and pressure gauges only with gases for which they are designed and intended. Do not attempt to repair or alter cylinders, valves or attachments. Any changes in the cylinders shall only be performed by the supplier or manufacturer.

10. Leaking cylinders shall not be used. Such cylinders shall be taken away from sources of ignition and the supervisor notified. Leaking compressed gas cylinders shall be taken out of service immediately and handled as follows:

    a. Close the valves and take the cylinder outdoors well away from any source of ignition.
    b. Properly tag or mark the cylinder.
    c. If the leak occurs at a fuse plug or other safety device, take the cylinder outdoors well away from any potential ignition source and open the cylinder valve slightly to allow the contents to escape slowly. Tag the cylinder to warn others. (The environmental and health effects of the contents must be evaluated prior to allowing the cylinder to bleed-down.)
    d. Post warnings against approaching with lit cigarettes or other potential ignition sources.
    e. Promptly notify the supplier and follow their instructions for handling/returning the cylinder.

11. Do not remove or change the marks and/or numbers stamped on compressed gas cylinders. In addition, any labels shall be left in place for identification purposes.

12. Cylinders that are heavy or difficult to carry by hand may be rolled on their bottom edge, but they

should never be dragged.

13. Do not tamper with safety devices in valves or on cylinders.

14. Consult the supplier of the gas or the appropriate Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets (MSDS) when there are doubts concerning the proper handling of a compressed gas cylinder or its contents.

15. When cylinders are transported:
    a. Load to allow as little movement as possible.
    b. Secure them to prevent violent contact or falling.
    c. Remove regulators and put valve protection caps in place.

CHLORINE SAFETY

The following provides general information on Chlorine Safety and is provided for information only. Proper training and certifications are required when working with chlorine cylinders.

Chlorine is used in water and wastewater facilities. It is hazardous; may cause irritation of the throat, nose and eyes and in large concentrations, it can cause dizziness, uncontrollable coughing, vomiting, unconsciousness and even death. It is important for the personnel to be aware of these dangers and the proper use of emergency equipment and handling of chlorine containers.

Chlorine handling requires proper planning and use of proper procedures in changing cylinders and containers and operating the equipment. The following list provides preventive actions which will help minimize the effects of an emergency.

1. **Only** trained workers should be allowed to handle chlorine.

2. Avoid dropping or bumping containers.

3. Store and chain 150 lb. Cylinders in an upright position.

4. Do not remove protective valve caps while in storage or standby.

5. Chlorine valves should be opened slowly and carefully using a wrench of proper size and length.

6. Chlorine valves need only to be turned one full turn counter clockwise to permit maximum discharge from the cylinder. Chlorine valves can normally be opened by striking the end of the wrench with the heel of the hand. If a valve doesn't open in this manner, return the container to the supplier for replacement.

7. Disconnect the chlorine container when empty and test the new container for leaks after connections with a strong solution of aqueous ammonia (white fumes of ammonium chloride are emitted if a leak is present).

8. Self-contained breathing apparatus should be worn by personnel (at least two individuals present) when entering chlorine room where a leak is suspected.

9. New lead washer should be installed with each new chlorine cylinder.

10. Emergency drills using self-contained breathing apparatus and chlorine repair kits shall be conducted twice a year.

WELDING AND CUTTING SAFETY

1. Welding and cutting shall only be performed by experienced and properly trained personnel.

2. The work area shall be inspected for potential fire hazards before any cutting or welding is performed.

3. When welding or cutting in elevated positions, precautions shall be taken to prevent sparks and hot metal from falling onto people or material below.

4. Suitable fire extinguishing equipment shall be immediately available at all locations where welding and cutting equipment is used.

5. Proper strikers shall be used in lighting torches. Matches and cigarette lighters shall not be used.

6. A fire watch shall be maintained whenever welding or cutting is performed in locations where combustible materials present a potential fire hazard. A fire check should be made of the entire area after completion of welding or cutting activities.

7. Machinery, tanks, equipment, shafts or pipes that could contain explosive or flammable materials shall be thoroughly cleared and decontaminated prior to the application of heat.

8. In dusty or gaseous spaces where there is a possibility of an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated.

9. Adequate ventilation or approved respiratory equipment shall be used while welding in confined spaces or while cutting, brazing or welding zinc, brass, bronze, stainless steel, galvanized or lead coated materials.

10. Welders shall wear clothing made of fire resistant fabrics, gloves, appropriate footwear, sleeves and a buttoned collar. All protective clothes and equipment should be worn in a manner that provides the most efficient protection from slag or other hot material.

11. When using an arc welder, use No. 10 or No. 12 shade lenses. When using acetylene torches for welding or cutting, use No. 5 or No. 6 shade lenses.

12. Regular shaded safety glasses do not provide adequate protection for welding or cutting operations.

13. Proper eye protection in the form of safety glasses and a face shield should be worn during any portable grinding activities. Safety glasses should also be worn during any slag chipping activities.

GAS WELDING

1. Suitable eye protection, protective gloves and clothing shall be worn during welding or cutting operations or while cleaning scale from welds. Helpers or attendants shall wear proper eye protection. Other employees shall not observe welding operations unless they use approved eye protection.

2. Matches shall not be used to light a torch. A torch shall not be lit on hot work.

3. When gas-welding equipment is not in use, the cylinder valves shall be closed and the pressure in the hose released.

4. Gas hoses shall not be positioned so they create tripping/slipping hazards.

5. Always inspect oxygen or fuel gas hoses for leaks, burn spots, worn places, or other defects before pressurizing.

ELECTRIC WELDING

1. No electric welding machine, either AC or DC shall be operated until the frame or case of the machine is electrically grounded for protection from potential shock hazards.

2. All ground and electrode lead cables will be inspected before use for bad or damaged connectors. Only connectors designed for joining or connecting will be used for that purpose.

3. Welders shall wear an approved welding helmet, proper protective gloves and fire-resistant clothing during welding activities. Proper eye protection in the form of safety glasses and/or a face shield should be worn by the welder and any helpers in the area when chipping slag, grinding, etc. Other employees shall not observe electric welding operations unless they use approved eye protection.

4. Welders shall wear proper eye protection to guard against flying particles when the helmet is raised.

5. Welding screens shall be used whenever practical to help control potential ultraviolet light exposures to other personnel in the area.

6. Welding machines will be placed at least 4 feet apart.

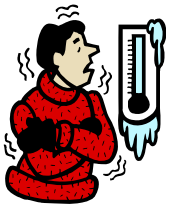
7. Firefighting equipment should be placed in the immediate area and a fire watch used as necessary to control any fire potential.

COLD AND HEAT RELATED ILLNESSES AWARENESS

Cold Related Illnesses

Hypothermia is when the body's temperature drops below normal causing uncontrollable shivering, weakness, drowsiness, disorientation, unconsciousness, and even death. Persons working outdoors during the winter months should follow the guidelines listed below:

1. Dress in layers.
2. Keep dry.
3. Work with co-workers when possible.



Heat Related Illnesses

Heat stroke, heat exhaustion, heat cramps and heat rash are health related problems associated with working in hot environments. Heat related illnesses could be caused by prolonged exposure to hot temperatures, limited fluid intake, or failure of temperature regulation mechanisms in the brain.

The most serious health disorder associated with working in a hot environment is heat stroke. Symptoms of heat stroke include hot dry skin, no sweating, high body temperature, rapid heartbeat, mental confusion or a loss of consciousness. While medical help is being called, the victim should be moved to a cool area and his/her clothing soaked with cool water. Vigorous fanning of the body will increase cooling. Death can occur if prompt first aid and medical help is not given.

Heat exhaustion occurs as a result of excess fluid loss and failure to replace the minerals and fluid lost during sweating. Signs of heat exhaustion include extreme weakness or fatigue, giddiness, nausea or headaches. The skin is clammy and moist and the body temperature is relatively normal. The best treatment for heat exhaustion involves resting in a cool place and drinking plenty of fluids.

Heat cramps are painful muscle spasms, which are caused by excessive fluid and salt loss. Such cramps can be treated by consuming fluid replacement beverages.

Heat rash is likely to occur in hot and humid environments where sweat cannot be easily evaporated from the skin surface. It can be prevented by resting in a cool place and allowing the skin to dry.

By following a few basic precautions, health problems associated with working in hot environments can be prevented:

1. Those unaccustomed to working in the heat should be given time to adjust to work in a hot environment.

2. Wear light, loose fitting clothing and protect yourself by wearing a hat. Sunscreen should also be used when prolonged exposures to sunlight may be possible.

3. Drink plenty of fluids to help prevent dehydration. Eight to ten (8-10) ounces of fluid are recommended every ten to fifteen (10-15) minutes when working in extremely hot or humid conditions. Beverages containing caffeine should be avoided.

4. Alternate work and rest periods. Heavy work should be scheduled for the cooler parts of the day if possible.

5. Employees will be educated on the symptoms, treatments and preventive measures for heat related problems.

PESTICIDE/HERBICIDE SAFETY

1. When applicable, all employees who apply pesticides or herbicides shall be licensed.

2. Before using any pesticide or herbicide, employees shall read the label carefully and follow the directions and precautions.

3. Pesticides shall be stored in a properly labeled, tightly sealed container and under lock and key at all times. The building, room, or structure shall be clearly marked with pesticide warnings.

4. Before handling any pesticide/herbicide, the user should review the material safety data sheet and label to identify any personal protective equipment that will be needed to prevent a possible exposure.

5. Mix the pesticides/herbicides in a well-ventilated, well-lit area. Mix only at recommended rates and apply only at specified dosages.

6. Check application equipment for leaking hoses or connections, plugged or worn nozzles, and examine the filter to ascertain that it is free of debris.

7. Employees shall avoid contact with skin or inhalation of mists or spray.

8. Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets (MSDS) shall be maintained and kept near material and storage locations.

9. Spray equipment shall be cleansed daily when using oil-based solutions.

10. Pesticides/herbicides shall not be stored or disposed of where they could contaminate people, property or waterways.

11. Empty containers shall be disposed of in a safe manner.

12. Pesticides/herbicides should only be applied under favorable time and weather conditions.

13. Do not eat, drink or use tobacco products while handling pesticides/herbicides.

CHAIN SAW SAFETY

1. Employees operating powered trimming equipment shall, as a minimum, wear safety glasses and/or face shields and hearing protection. Other personal protective equipment such as chaps, gloves, fall protection, etc. should also be evaluated to gauge its need.

2. When starting a chain saw, it shall be placed on or against a solid support.

3. The operator shall grip the chain saw with both hands during the entire cutting operation.

4. The saw bumper shall be against the tree or limb before starting a cut.

5. Chain saw operators shall regularly clear the immediate area around their work to make certain that brush/limbs will not interfere with the chain saw or operator.

6. Chain saws shall not be modified in such a way to allow locking of controls in the “on” position.

7. The chain saw engine or motor shall be stopped when:

   a. Working on any part of the chain or cutting bar.
   b. Being moved from one location to another.
   c. The unit is unattended.

8. Gasoline driven chain saw engines shall be stopped when being refueled. If gasoline is spilled on the chain saw during refueling, it shall be wiped off before the engine is started.

9. A gasoline driven chain saw shall not be used above shoulder level.
   Employees shall not approach the chain saw operator within the reach of the saw blade while it is in operation.

10. Ropes, pulleys, etc. should be used as necessary to lower larger limbs that may endanger persons and property if allowed to “free-fall”.

11. The proper use of fall protection and/or ladders should be reviewed with all employees prior to working from a position other than ground level.

FORKLIFT SAFETY

1. Forklifts shall only be operated by authorized persons who have been properly trained in their use. This training should be documented and consistently used with all authorized operators and trainees.

2. The operator is responsible for inspecting the equipment before it is used. The brakes and controls shall also be tested by the operator prior to use. (Needed repairs shall be reported immediately and taken out of service.)

3. Equipment shall be operated at a safe speed for existing conditions. Go slowly around corners. Avoid holes, loose material etc.

4. Hard hat, safety glasses and seat belt shall be worn when operating a forklift with rollover protection.

5. Clearances shall be checked in all directions, particularly overhead clearances.

6. Forklifts shall not be fueled while the engine is running.

7. Forks shall be placed under the load as far as possible. Loads should not be raised or lowered while traveling. Loaded or empty, forks should be carried as low as possible, but high enough to clear uneven surfaces. (Usually about 6-12 inches on level surfaces.)

8. Operators shall always face the direction of travel and also keep their arms and legs inside operator's compartment.

9. Load limits as specified by the manufacturer shall not be exceeded.

10. Do not travel with the load raised as this causes the center of gravity to rise, which may affect the tipping potential.

11. Only the operator shall be allowed on the equipment during operation, unless a seat is provided for another occupant.

12. A secured platform specifically designed for that purpose must be used when lifting personnel.

13. Unattended forklifts (operator 25 feet away or forklift not in his view) shall have the load fully lowered, controls neutralized, power shut off and brakes set.

Equipment with internal combustion engines shall not be operated in enclosed areas for long periods of time so as not to exceed the allowable levels of carbon monoxide.

BACKHOE/LOADER SAFETY

1. Operators shall be adequately trained and qualified to operate the equipment. The operators shall become thoroughly familiar with the equipment before using it and they must understand the contents of the operator's manual.

2. The operator is responsible for inspecting the equipment before it is used. The brakes and controls shall also be tested by the operator prior to use. (Needed repairs shall be reported immediately and removed from service.) Observe proper maintenance and repair of all pivot pins, hydraulic cylinders, hoses, snap rings and main attachment bolts daily.

3. Hardhat, safety glasses and seat belt shall be worn on all equipment with rollover protection.

4. Operators should maintain “three points of contact” with the equipment when entering or exiting. This will allow the operator to regain their balance if a slip occurs.

5. Back-up alarms are a useful warning device and should be used when possible, especially on larger vehicles and equipment that may severely restrict your view to the rear of the vehicle. If an alarm is not present, the operator should honk his horn to warn others of the moving vehicle. Back-up alarms should be operable at all times.

6. Only the operator shall be allowed on the equipment during operation, unless a seat is provided for another occupant.

7. Employees shall never be allowed to ride in the bucket or use the bucket for an elevated platform.

8. Walk around the equipment to observe for children and others before starting up. If available, a spotter shall be used when backing the equipment.

9. Keep bystanders in the clear while operating the equipment. No one is allowed in a ditch while a backhoe is excavating.

10. Locate underground utility lines and overhead power lines before starting to dig. (Always contact utility companies to physically locate any underground lines.) Extreme caution shall be used when operating a backhoe within 10 feet of an overhead electrical line. Operators shall use every precaution available, including hand digging, to avoid damaging underground utilities.

11. Never attempt to lift loads in excess of the equipment’s capacity.

12. Never allow anyone to get under the equipment or reach through the lift arms while the bucket is raised.

13. Relieve the pressure in any hydraulic lines before disconnecting them to make repairs. Any hydraulic implements that are not relieved shall be physically blocked to protect against mashing injuries during maintenance or repair activities. Physical blocks may include safety stands, timbers, cinder blocks, etc. that can withstand the force.

14. Use care at all times to maintain proper stability. Drive at safe speeds over rough ground, on slopes, when crossing ditches and when turning corners.

15. To prevent upsets when operating on a slope avoid using the full reach and swinging a loaded bucket to the downhill side.

16. Always center and raise the boom before moving to a new location.
17. Do not attempt to exit the equipment while it is still in motion. Apply the parking brake and shut

down the engine before leaving equipment.

18. Lubrication activities or mechanical adjustments shall not be attempted while the equipment is running if there is a possibility of contacting a pulley, belt, shaft, etc. that is in motion.

19. Park the equipment on level ground when possible. As a minimum, the bucket should be lowered, the brakes set, the transmission engaged and engine killed when parking.

20. Use care in attaching towing lines to the equipment. Pulling from the tractor rear axle or any point above the axle may cause an accident.

21. Slow moving placards and other warning devices should be used to help other motorists in spotting the slow-moving vehicle from a safe distance.

DUMP TRUCK SAFETY

1. Employees or other individuals shall not be carried in the bed for transportation purposes.

2. Employees shall not remain in the cab when the bed is being loaded unless the cab is protected against impact.

3. Check overhead clearances before raising the bed. Be aware of overhead electrical lines.

4. Be sure hoist is not engaged before moving the truck.

5. Loose material shall be covered to prevent blowing debris and spillage.

6. Close windows during loading/unloading to control dust accumulation inside the cab.

7. Operators of dump trucks must possess a valid Commercial Drivers License.

8. Operators are responsible for cleaning debris, mud, rocks, etc. from the bed, fenders and other body parts that may become dislodged during travel.

9. Back-up alarms are a useful warning device and should be used when possible, especially on larger vehicles and equipment that may severely restrict your view to the rear of the vehicle. If an alarm is not present, the operator should honk his horn to warn others of the moving vehicle. Back-up alarms should be operable at all times.

10. All mirrors should be maintained in clean, good working condition and adjusted to assist the operator in viewing obstructions or other vehicles.

11. Operators should maintain “three points of contact” with the equipment when entering or exiting the cab. This will allow the operator to regain their balance if a slip occurs.

TRACTOR/SHREDDER SAFETY

1. The operator shall wear a securely fastened seat belt if the tractor/shredder is equipped with rollover protection.

2. Guards around chains, shafts, pulleys, gears, etc. shall always remain in place while the equipment is in operation.

3. Use caution when operating near slopes, cuts, depressions, drop-offs, soft shoulders, ditches, etc. Operators shall constantly watch for hidden objects and uneven ground. Hazardous areas shall be pre-cleaned and special hazards removed prior to mowing.

4. Use care when entering traffic areas, crossing railroad tracks, etc.

5. Operators should maintain “three points of contact” with the equipment when entering or exiting. This will allow the operator to regain their balance if a slip occurs.

6. Back-up alarms are a useful warning device and should be used when possible, especially on larger vehicles and equipment that may severely restrict your view to the rear of the vehicle. If an alarm is not present, the operator should honk his horn to warn others of the moving vehicle. Back-up alarms should be operable at all times.

7. Only the operator shall be allowed on the equipment during operation, unless a seat is provided for another occupant.

8. Lubrication activities or mechanical adjustments shall not be attempted while the equipment is running if there is a possibility of contacting a pulley, belt, shaft, etc. that is in motion.

9. Take sharp turns at low speed.

10. Proper personal protective equipment shall be worn at all times. On a tractor with an uncovered cab, the operator should as a minimum wear safety glasses and hearing protection. Other personal protective equipment such as gloves, face shields, hard hats, sleeves, boots, etc. should be evaluated for individual jobs. Sunscreen should also be used in areas where the operator may be exposed to sunlight for long periods of time.

11. Slow-moving placards and other warning devices should be used to help other motorists in spotting the slow-moving vehicle from a safe distance.

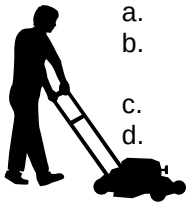
GROUNDS MAINTENANCE SAFETY

Power Lawn Mowers and Edger

1. All power lawn mowers shall be equipped with adequate guards, which shall remain in place while the mower is in use.

2. Prior to making adjustments, inspections, or repairs, the employees shall permit the mower to come to a complete stop. A spark plug wire shall be removed if necessary for energy control.

3. When operating a mower or edger, the employee shall:



   a. Remove any rocks, pieces of wire or other foreign objects from the area.
   b. Avoid directing the discharge opening toward themselves or other individuals in the vicinity.
   c. When mowing on a slope or incline, mow across the face of the slope.
   d. Wear proper personal protective equipment for the task being performed. Necessary personal protective equipment may include safety glasses, goggles, face shields, hearing protection and work boots.

Chippers

1. Chippers shall never be parked directly under the tree being trimmed.

2. If the chipper is parked on or near the roadway, advance warning signs, flaggers, cones, etc. shall be used to identify and protect the work area.

3. Spectators shall never be allowed to stand near the machine while feeding brush into the chipper.

4. Employees shall never place hands or other parts of the body into the brush chipper while the chipper is in operation.

5. The battery cables shall be disconnected prior to performing any task that may potentially put you in contact with the cutting blades.

6. Tools or other metallic objects shall not be used to push brush into the chipper.

7. The ignition key shall be removed when the chipper is left unattended.

8. Hard hat, safety glasses and hearing protection will be worn by all employees near the chipper and other personal protective equipment may be necessary depending on the activity. In addition, workers must be aware of entanglement hazards involving loose fitting clothes, gloves, etc.

9. Employees shall be familiar with emergency “shut off” procedures and ensure that the emergency shut-off is operational prior to use.

POISON IVY, OAK OR SUMAC AWARENESS

1. Sensitivity to these plants can vary and some people who do not appear sensitive may develop sensitivity on later exposures.

2. Exposures to poison ivy, poison oak or sumac are greatest in the spring and summer months when the oil (urushiol) is most abundant.

3. Onset of the rash is from a few hours to several days after exposure. The skin becomes red; blisters appear, usually accompanied by itching. As symptoms progress, swelling and fever may develop.

4. Common poison ivy can be recognized by its three green, glossy leaflets that turn yellow in the fall.

5. Western poison oak can be recognized by its vine form and three leaflets that are green or brown in color with yellow veins and brownish/yellow stems. In addition, the leaves are covered with hair on the underside and there are groups of hairy, yellowish berries.

6. Poison sumac is recognizable as a woody shrub or small tree, five to twenty five feet tall and containing seven to thirteen leaflets per stem. The leaves turn red in the fall. Poison sumac has cream-colored berries that hang in loose groups from the branches.

7. If you are going to be in areas where you know poison oak or ivy is likely to grow, wear long pants and long sleeves, and if practical, gloves and boots. Your best protection is to identify the plant and avoid contact. For highly sensitive persons, a barrier cream can provide even greater protection.

8. Be aware that the plant's oily resin sticks to almost all surfaces and can even be carried in the wind (on particles of dust) when there is a fire burning.

If you think you have contacted poison ivy, follow these simple procedures:

1. Wash all exposed areas with cold running water as soon as you can. If this is done within five minutes, the water should neutralize or deactivate the urushiol in the plant's oil before it can bond with your skin and create a rash. Soap is not necessary and may even spread the oil.

2. If possible, change clothes. Wash all clothing outside with a water hose before taking it into the work area or home to prevent the oil from being transferred to furniture or rugs. Resinous oils can last on tools and clothing for months unless properly cleaned or laundered.

3. Mild rashes can be treated with lotions and by soaking in an oatmeal bath or covering the rash with wet compresses. Contact a physician for treatment of severe cases or if the irritation is not cleared up in three or four days.

PAINTING SAFETY RULES

1. Read and follow the manufacturer's directions carefully when applying any finishing materials, such as lacquer, enamel, paint, etc. If questions arise as to the hazards of the substance, refer to the applicable Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets (MSDS).

2. Personal protective equipment, as recommended by the manufacturer, shall be used when applying the products.

3. Any spray painting must be done with an adequate amount of clearance from any potential sources of ignition. When possible, painting should be performed in isolated areas where ignition sources do not exist or are very minimal.

4. Proper ventilation and/or adequate respiratory protection must be addressed before any application begins.

5. Any flammable substances, such as paints, thinners, etc., must be stored in proper storage areas or in a UL listed metal storage cabinet.

6. Any flammable substances removed from their original containers shall be stored in UL listed storage containers, if the original container will not meet the requirements.

7. Bond metal containers when transferring flammable liquids, especially those that are known Class I flammable liquids. Refer to Material Safety Data Sheets for flammability information.

8. Use the proper type of respirator at all times when applying toxic paints. If questions arise as to the toxicity of the paint, refer to the applicable Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets (MSDS). Do not use toxic paints or any paint products that require the use of a respirator.

9. Never have more than one day's supply of flammable substances outside of an approved storage area.

10. Clean up all spills promptly and in accordance with the requirements on the Safety Data Sheets (SDS).

11. Dispose of oily, paint or solvent-soaked rags in metal containers with tight fitting lids to prevent possible chemical reactions that may result in “spontaneous combustion”.

12. Use properly designed and erected ladders, scaffolds, elevated mobile work platforms, etc., when painting above ground level. Do not work or place elevated equipment within 10 feet of power lines.

13. When using spray guns and compressed air:

    a. Follow all rules concerning the safe handling of combustible and flammable materials.
    b. Exercise caution in the handling of compressed air equipment.
    c. Adjust and regulate the air pressure on the spray gun before starting work.
    d. Clean the spray gun and other equipment thoroughly after each use.

14. Read and follow the manufacturer's directions carefully when applying any finishing materials, such as lacquer, enamel, paint, etc. If questions arise as to the hazards of the substance, refer to the applicable Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets (MSDS).

15. PPE, as recommended by the manufacturer, shall be worn when applying the products.

OFFICE SAFETY

1. Employees shall walk cautiously up and down stairs and use handrails whenever possible. Avoid using both hands to carry objects up and down the stairs.

2. Caution shall be exercised when walking around blind corners, walk to the right side of hallways and corridors when turning corners. Open doors cautiously to prevent hitting someone who may be on the other side.

3. Desk drawers and file cabinets shall be kept closed when not in use.

4. Only one drawer of a file cabinet shall be pulled out at a time.

5. Boxes, chairs, buckets, etc. shall not be used in place of ladders.

6. The floor shall be kept clear of tripping hazards such as telephone cords, electrical extension cords, paper cartons, etc.

7. Employees mopping or waxing floors shall place warning signs to alert co-workers of the potential for slippery floors. In addition, all liquid spills shall be cleaned up immediately and signs put in place until the hazard is alleviated.

8. Material shall be stored on shelves in a manner to prevent falling; heavy objects shall be placed on lower shelves.

9. Hallways and aisles shall be kept clear of obstructions.

10. All emergency exits, electrical panels, fire extinguishers, and emergency equipment shall be kept clear of all obstructions.

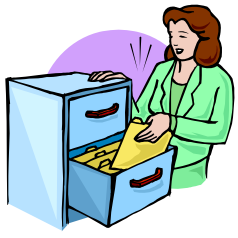
11. Solvents or other toxic substances shall be used only with adequate personal protection or in well-ventilated areas. Safety Data Sheets (SDS) should be accessible to all employees who are using these substances.

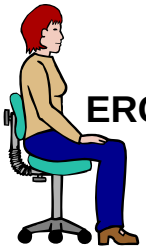
12. Employees shall not attempt to clean, oil or adjust any machine that is running. If the machine is not equipped with a starting switch that can be locked in the “off” position, it shall be disconnected from the power source.

13. Unsafe electrical cords, faulty equipment, or any other hazardous condition shall be reported and taken out of service until the repairs are completed.

14. Broken glass and other sharp objects shall not be placed in wastepaper containers.

15. Do not attempt to move heavy desks or equipment alone. Sufficient help should be available whenever desks or furniture needs to be relocated.





ERGONOMICS AWARENESS

Work Stations

Chairs should be easily adjustable and provide good lumbar support. If feet cannot rest firmly on the ground, a footrest may be provided. Chairs with a five-point base are recommended due to the stability that is provided.

Sufficient legroom must be allowed for seated operators.

Position the monitor directly in front of the operator. The operator's eyes should be level with the top of the screen. Viewing distance between the user's eyes and the screen should be approximately 16 to 22 inches.

The equipment or sources of light should be positioned so that glare or bright reflections on the display screen are minimized.

Adjust the height of the chair and/or keyboard so that the shoulder-elbow-arm angle is approximately 70-90 degrees.

Keyboard heights and placement should be adjustable. Use a cushioned palm rest if needed to keep user's hands and fingers in the same plane as the forearm and avoid resting wrists and forearms on sharp table edges.

Work surface heights should range from 23 to 28 inches for seated workstations. In addition, your work area should be well organized with routine operations within easy reach and easily accessible.

Document holders should be placed adjacent to and at the same height as the display screen.

Operators should adjust positions frequently and get up and move around to help avoid fatigue.

Lighting, Noise and Heat

Adequate but not excessive heat should be provided.

Windows should be equipped with adjustable blinds.

Use task lighting where extra illumination is required.

Noise above 85 to 90 decibels (dB) may be harmful to workers. When exposed to high noise levels, employees shall utilize hearing protection equipment to ensure proper working conditions.

Whenever possible, isolate noisy machines and equipment in a remote location.

Tailor work practices to prevent heat/cold-related disorders. Employees exposed to hot environments must know the appropriate medical steps to counteract potentially life threatening situations such as hypothermia, heat stroke, heat exhaustion, and heat cramps.

Materials Movement

Appropriate equipment should be readily available and used to eliminate or minimize the physical demands of the process on the people involved. Whenever possible, people should be engineered out of the flow of materials.
Where mechanical means cannot be used, seek assistance from another person in lifting heavy or

unwieldy objects.

Repetitive lifting tasks should be eliminated or minimized if possible. Tasks should be designed so that twisting while lifting or carrying is not required.

The area in which material movement tasks are performed should be designed for optimal materials handling. Footing should be comfortable and stable and should not be slippery or sticky. Space should be provided to insure adequate room to work. The work area should have adequate lighting and provide workers with clear sight lines.

Employees shall be taught the correct ways to lift, push or pull objects and to modify workloads to make moving objects safer.

Hand Work and Use of Tools

Activities should be performed keeping the elbows at right angles to the body and avoid bent wrists when using the arms to apply force. Also extreme inward or outward rotation of the arms and wrists should be avoided.

Minimize repetitive motion and the amount of force needed to perform work.

Analyze each job to ensure the correct tool is being used. Good tool design promotes efficiency and reduces cumulative trauma disorders.

Hand tool handles should be insulated against electricity, heat, and cold.

All surfaces with which arms, elbows, and other body parts are in contact should be rounded or padded to avoid mechanical contact stresses on the nerves.

Where workers use hand tools that vibrate, hazards may be reduced by decreasing exposure time or isolating equipment vibration.

TIPS FOR PREVENTING WORKPLACE VIOLENCE

1. Recognize signs that may precede violence in your co-workers or customers and report them to your supervisor. Be cautious when you deal with a person who:

   a. Makes verbal threats on the job about getting "even" with co-workers or with your employer for disciplinary action or dismissal
   b. Regularly threatens or intimidates others
   c. Claims people are out to get him or her
   d. Talks a lot about weapons-and may own them
   e. Holds grudges
   f. Blames others for problems or setbacks
   g. Gets angry very easily and often
   h. Is defensive when criticized

2. Report the following behavior to you supervisor:

   a. A customer that becomes unusually angry with you because of perceived slow service, perceived poor product quality or lack of information
   b. A customer who talks abusively when making a telephone complaint
   c. A customer who threatens you or co-workers

3. Respond effectively to a threatening or violent situation:

   a. Take all threats seriously.
   b. Stay calm and be polite. Look the person in the eye and do not argue or threaten.
   c. Address each customer with a friendly greeting when you are on the phone or meeting the customer in person.
   d. Be courteous at all times.
   e. Notify the police if you are frightened or use a warning signal to alert co-workers.
   f. Ask your employer for training to help you deal with the public

4. Protect yourself and co-workers on the job:

   a. Keep security and police department numbers near your phone.
   b. Know how to use an alarm or alert staff to possible danger.
   c. Develop a "danger signal" you can use to alert others to possible danger.
   d. Meet visitors in the lobby and escort them to your work area.
   e. Report any unusual packages to appropriate personnel, do not open them.
   f. Lock purses and personal belongings in a desk or locker.
   g. Report signs of a break-in and missing items immediately.

5. Follow security policies and procedures:

   a. Keep locked doors locked, do not prop them open.
   b. Wear nametags or badges when required.
   c. Do not share access cards or entry codes.
   d. Do not allow non-employees (including ex-employees) to avoid sign-in and other visitor entry procedures
   e. Do not engage in fistfights or other aggressive behavior at work.
   f. Do not bring a weapon to work or leave one in your car.
   g. Do not drink or use drugs at work, or work under the influence.
   h. Report all threats and security violations.

6. Take special precautions when working late or alone:

a. Inform someone that you are working late.
b. Lock the door to your work area if you are alone.
c. Work near a phone.
d. Work with lights on.
e. Avoid using dark stairways or halls.
f. If working with others, try to leave and walk to transportation together.
g. Have your car keys ready as you leave the building.
h. Check under and inside your car before unlocking it.
i. Lock your car as soon as you are seated in it.
j. Walk confidently and quickly to show that you know where you are going and what you are doing.
k. Try to run away from an attacker if possible.
l. Yell if you are being attacked to alert others.
m. Give an attacker money or jewelry on demand.

AGGRESSIVE ANIMAL AWARENESS

1. Any employees who may encounter an aggressive animal during the performance of their normal duties should exercise reasonable care to avoid contact, and follow the procedure below where practical.

2. Call Dispatch immediately if you contact an aggressive animal and request Dispatch contact animal control.

3. Clear the area of other people while waiting for animal control. Crowds may scare the animal and cause it to attack.

4. Call for the animal's owner or handler.

5. Do not run away unless you are certain of quickly reaching a place of safety.

6. Back away slowly while continuing to speak in a firm, calm voice.

7. Back against any available object to prevent an attack from the rear if more than one animal is present.

8. Do not back an animal into a corner, as this may cause it to attack.

9. Under no circumstances may animals be kept as pets on CITY property.

10. Care should be taken not to use excessive force in defending yourself against an aggressive animal.

City of Tyler
Fats, Oil and Grease (FOG) Program Manual and Policies

This document is intended to be reviewed with the CMOM Plan. Performance indicators will be compiled and FOG Program modifications may be implemented to optimize program results. Changes to the FOG Program Manual should be documented by revision number and date.

Rev. 1 September 19, 2017

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Section 1 Introduction

Tyler Water Utilities is responsible for maintaining 655 miles of publicly owned sanitary sewer pipelines and 24 lift stations. Approximately 350 food service establishments (FSE) are monitored by NetHealth. To keep its sewer system functioning properly the City has implemented a Fats, Oils, and Grease (FOG) Control Program to minimize blockages in the sewer lines that may cause sanitary sewer overflows (SSOs) that could affect public health or cause contamination of receiving streams. The FOG program will be managed by the Tyler Water Utilities Industrial Pretreatment, but will coordinate efforts with NetHealth, as required, to address FOG within the collection system. Figure 1 presents the Organization Chart showing the coordination between Tyler Water Utilities and NetHealth.

The FOG educational and outreach program consists of providing promotional and educational materials for the public and FSE. TWU coordinates with NetHealth to expand the FOG program in the area of grease interceptor inspection.

City ordinances impose various requirements for sewer system users including the installation and maintenance of grease interceptors, sand traps, and related Grease Reducing Device (GRD) within the sewer system. Grease traps generally refer to small under the counter devices. A grease interceptor is generally a large outside, normally underground, multi-compartment tank that reduces the amount of FOG in wastewater before discharge into the wastewater collection system. Regular City inspections minimize the discharge of FOG and educate facilities regarding program requirements. Those facility managers/owners found to be non-compliant will be re-educated on the requirements. In some cases, enforcement actions may be initiated, which may result in suspension or termination of service, facility closure, injunctive relief, civil penalties or criminal prosecution in accordance with approved City ordinances (See Section 2).

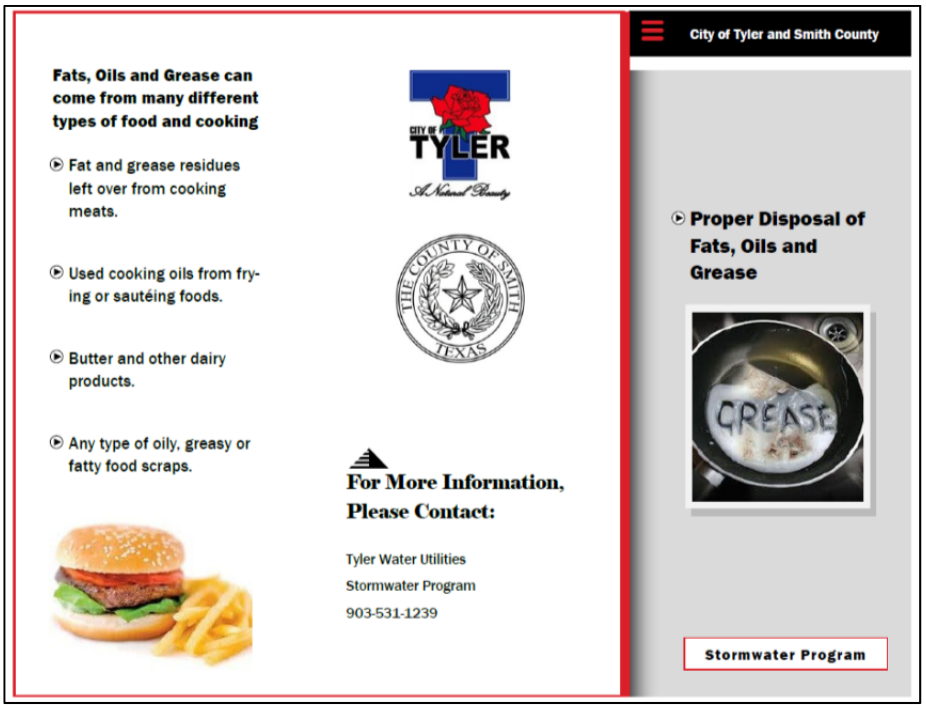
By working together with users of the City's sewer system to reduce the amount of FOG that enters the sewer system, the City can minimize blockages, cleaning costs, odors and the potential for SSOs.

The purpose of this document, City of Tyler FOG Program Manual and Policies, is to provide a written summary of the City's FOG Control Program. The various components of the FOG Control Program include:

- Public and Commercial education and outreach
- Provisions for proper FOG disposal
- Legal Authority to prohibit discharges
- Requirements to install and maintain GRDs
- Development and implementation of source control measures
- Coordination with Operations Manager on FOG related problems

Key program elements are:

1. Permits and Ordinances
2. Inspections
3. FOG Best Management Practices
4. FOG Haulers
5. Education and Outreach
6. Enforcement
7. FOG Program Performance Indicators

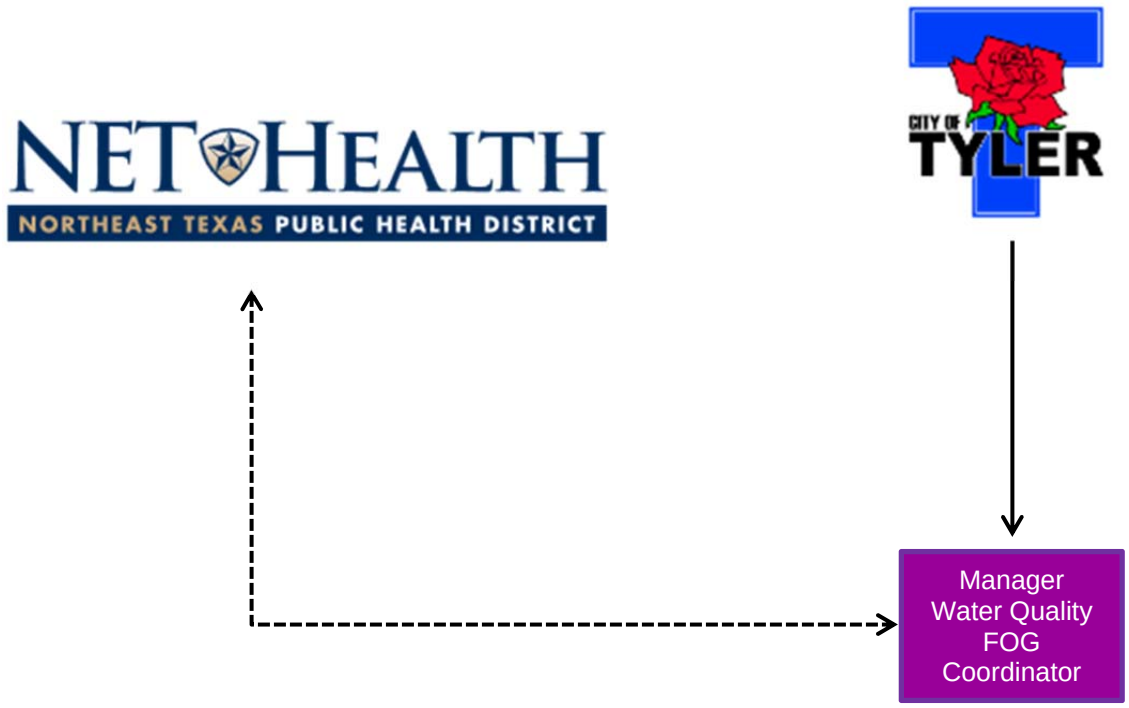


Example public outreach brochure for proper FOG disposal.

Implementation Schedule

While the great majority of this FOG manual has been implemented, there are components that are in the initial stages of implementation. These include the "tiered" inspection approach and additional compliance inspection techniques such as the 25% rule, as well as revisions to existing ordinances.

Figure 1
FOG Program Coordination



Section 2 FOG Policy Statement

I. POLICY

It is the policy of the City of Tyler to implement and enforce the FOG discharge requirements contained in the City of Tyler's adopted ordinances.

The intent of this policy is to ensure compliance with the City's ordinances and provide specific standards for oil and grease interceptors' location, type and size, installation, construction, and maintenance.

It is the role of the City of Tyler to limit the excessive introduction of FOG into the sewer system which may have the potential to create hazardous conditions in the collection system, treatment plant inhibitions, increased treatment cost, regulatory fines and other costs for the City.

Food service establishments (FSEs) and other facilities that have GRDs shall provide a means of preventing FOG discharges to the City's sewer system. Where a GRD currently exists or is required by the City, it shall be maintained for continuous, satisfactory and effective operation by the manager/owner at his expense. GRDs shall be of a type and capacity approved by the City and shall be located as to be accessible for cleaning and inspection.

II. ORDINANCES

City Council adopted the 2006 International Plumbing Code (IPC) with revisions. The following provisions of the City of Tyler Code of Ordinances provide the legal authority for the enforcement of the City's FOG Control Program (See Appendix 2 for detailed excerpts):

Key City of Tyler Code of Ordinances Summary

- Chapter 6 Building and Structures; Sec. 6-72.
- Chapter 10 Tyler Unified Development Code; Sec. 10-76. Mobile Food Units and Food Truck Parks
- Chapter 19 Utilities; Sec. 19-73. General sewer use requirements
- Chapter 19 Utilities; Sec. 19-315. Discharge Prohibitions

All terms used in this Manual are as defined in the City's ordinances. In the case of conflict between this Manual and the City's ordinances, the City's ordinances shall prevail.

III. GENERAL REQUIREMENTS

A. FSEs shall have, if required, GRDs approved by the City.

B. All FSEs' grease-handling facilities shall be subject to review, evaluation, and inspection by City representatives during normal working hours. Results of inspections will be made available to the facility manager/owner. City representatives may lend assistance by providing educational materials and minimal compliance actions.

C. FSEs receiving unsatisfactory evaluations or inspections may be subject to penalties or other corrective actions as provided for in the City's ordinances.

D. FSEs who continue to violate the requirements of the City's FOG Control Program may be subject to termination of water and sewer service.

E. FSEs whose operations cause or allow excessive grease to discharge or accumulate in the City sewer system or overflow into the storm sewer system may be liable to the City for costs related to City service calls for line blockages, line cleanings, line and pump repairs, etc. including all labor, materials, and equipment. Failure to pay all service-related charges may also be grounds for termination of water and sewer service.

F. Regularly scheduled maintenance of GRDs and equipment is required to ensure adequate operation. As a component of proper maintenance of GRDs, the FOG generator (represented by the manager/owner) shall be responsible for the approved removal and disposal of grease in accordance with City ordinances and this Manual, and shall maintain on-site records of dates, and means of disposal. The need for cleaning is a function of the load of FOG plus the capacity of the GRD. The load of FOG varies, depending on the type of facility, the FOG management practices utilized by the facility, and the ability of waste hauler to accept and dispose of the waste product. The following summarizes the required cleaning of GRDs:

1) GRDs shall be cleaned (consisting of skimming the surface, pumping the solids and pumping the greasy water) and pumped dry a minimum of once every 90 days unless a variation from this policy is authorized. In addition, grease traps and grease interceptors shall be cleaned as often as necessary to ensure that sediment and floating materials do not accumulate to impair the efficiency of the grease trap/interceptor; to ensure the discharge is in compliance with local discharge limits.

2) Grease traps and grease interceptors shall be completely cleaned a minimum of every ninety (90) days, or more frequently when:

    a. Twenty-five (25) percent or more of the wetted height of the grease trap or grease interceptor, as measured from the bottom of the device to the invert of the outlet pipe, contains floating

materials, sediment, oils or greases.

b. The discharge exceeds other pollutant levels established by the City; or
c. The downstream wastewater pipes show evidence of grease deposits; or
d. There is a history of non-compliance.

G. No waste or wastewater pumped from the GRD is to be reintroduced back into the interceptor or sewer system. This is a violation of the City's ordinances and can result in enforcement action.

H. Any FSE whose effluent discharge to the sewer system is determined by the City to cause interference in the conveyance or operation of the sewer system may be required to sample its GRD discharge and have it analyzed for oil and grease at the expense of the manager/owner of the FSE. Results of such analyses shall be reported to the City.

I. NetHealth is responsible for permitting new and remodeled food establishments, and Building Services is responsible for approving design and construction of GRDs. Inquiries regarding sizing and design criteria should be directed to Building Services. Restaurants or food related projects require NetHealth approval prior to the Building Services Department approving and releasing permits for construction.

J. FSEs should adopt procedures for handling sources of floatable FOG originating within their facility. A notice should be posted at a prominent place in the facility-advising employees of the procedures to be followed. If FOG handling information is not visible, address this concern.

K. The City may render advice or make suggestions regarding the minimization of waste.

IV. CONSTRUCTION STANDARDS

A. New Facilities

1. All new FSEs shall be required to install a GRD as required by City ordinances. GRD shall be in-ground, multi-chamber style and be located outside and approved by NetHealth and Building Services. Grease interceptors and sampling ports shall be adequately sized. The current sizing and requirements are presented in the 2006 International Plumbing Code adopted by the City. Information on sizing of GRD's can be found in Appendix 1.
2. No new FSEs will be allowed to initiate operations until GRDs are installed and approved by the City.
3. Building Services is responsible for ensuring that GRDs are designed for direct accessibility from the surface for servicing, inspection, maintenance and that the GRD basket, screen or other intercepting device is properly sized and is removable for cleaning.
4. The GRD should be located 25 feet or closer to the kitchen to prevent

settling or suspension of FOG.

5. Verify the GRD has not been installed backwards, check for proper connections, verify inlet and outlet port is installed, two manholes for proper inspection, etc.

B. Existing Facilities

1. In the event an existing FSE's GRDs discharge grease due to being either under-designed or substandard in accordance with this Policy and/or Ordinance, the owner(s) will be notified in writing of the deficiencies and required improvements, and given a compliance deadline to achieve compliance.
2. Sizing of "under-the-counter" grease trap units will be in accordance with recommended ratings for commercial grease traps.
3. City approval of grease trap design must be obtained prior to installation.
4. The location of "under-the-counter" units must be as near the source of the wastewater as physically possible.
5. In maintaining grease traps/interceptors, the owner(s) shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain dates and means of disposal, which are subject to review by City representatives.
6. The use of enzymes, grease solvents, emulsifiers, etc. is prohibited.

C. New FSE in Existing Buildings

1. New FSEs located in existing buildings will be required to comply with the Construction Standards applicable to new FSEs.
2. Where physically impossible to install "outdoor" units, "under-the-counter" units may be allowed upon prior approval by Building Services of unit type, size, location, etc. so long as consistent with the manufacturer's instructions.

V. EXCEPTIONS

Under certain circumstances, the interceptor size and location may need special exceptions to this Policy. If an exception to this Policy is requested, the facility must demonstrate and certify by a licensed Texas Professional Engineer that the size and location will not cause the facility any problems in meeting the City's discharge requirements.

The intent of this Policy is to ensure compliance with the City's ordinances establishing its FOG Control Program. This Policy is in no way intended to discourage development, but rather to protect the facilities and the City's infrastructure as it relates to the City's sanitary and storm water sewer systems. All variances must be approved in writing, and it is the responsibility of the

manager/owner to maintain a copy of the variance.

VI. ENFORCEMENT AND PENALTIES

Enforcement of this Policy shall be in accordance with the provisions of applicable City ordinances. Failure to comply with this Policy may be grounds for civil penalties and /or discontinuance of service. Additionally, failure to comply may lead to revocation of the FSE's food service permit. Penalties for violations are detailed in the municipal code.

This Policy may be modified or changed by the City at any time in accordance to the requirements of the applicable municipal, state and federal law upon City Council approval of ordinance amendments.

Any questions concerning this Policy should be directed to:

Mike Norris
Manager Water Quality
903-939-8278
mnorris@tylertexas.com

VII. PROGRAM MONITORING AND PERFORMANCE INDICATORS

Performance indicators have been established and will be monitored for the City's FOG Control Program on a regular basis. These key performance indicators will be used for monitoring the effectiveness of various CMOM components. For a listing of all key performance indicators refer to CMOM Program Appendix G. Key FOG program performance indicators include:

1. Number of Inspections (FSE) per year
2. Number of Re-inspections per year
3. Number of Violations per year

Other data collected on the causes of SSOs, such as grease, will be monitored and evaluated during CMOM Program reviews.

Section 3 Fats, Oils and Grease

FOG is discharged from the sinks and drains of generating facilities, such as FSEs, as well as residences. These discharges can accumulate in sewer lines and cause blockages in the private service lateral, or the City-owned mainline sewers and lift stations. FOG blockages can cause backup of sewage into homes or businesses and may even result in SSOs.

Implementation of the City's FOG Control Program as documented in this manual will ensure proper handling and disposal of FOG by grease generating facilities and monitor compliance with regulations that have been adopted. Many factors contribute to FOG accumulation including facility operational procedures and equipment. A major potential source for FOG is food preparation facilities such as restaurants, cafeterias, meat markets, etc. Wastewater with high concentrations of FOG tend to congeal and harden in sanitary sewers and thereby restrict pipeline flow capacity over time. City ordinances regulate these facilities and limit the FOG they may discharge to the sewer system. There are approximately 350 FSE's located within the City of Tyler (see Listing in Appendix 8).

Facilities that utilize rotisseries, fryers and kettles will generally produce larger quantities of FOG and if not properly captured and disposed off-site will significantly contribute to FOG accumulation in the collection system.

Reference information on best management practices (BMP) for kitchen management are presented in Appendix 3. The City's outreach program includes various materials and publications to assist facility owners in training employees in proper FOG management and are presented in Appendix 4.

Those facilities with a large number of sinks and drains in the food preparation and clean-up areas will have a higher potential to introduce FOG into the sewer system. All sinks and drains should be connected to a properly sized grease trap. Employees should be trained to use the proper sink and drain when handling waste grease.

Disposal of residual food scraps should be by scraping them into the garbage. Allowing food scraps to be washed down drains will increase the likelihood of FOG accumulations in the sanitary sewer with an increased possibility of sewer blockage. Scraping utensils should be provided by facilities to encourage employees to scrape food scraps into the garbage for disposal. The FSE is responsible for training and providing policy to employees.

Customer seating available at a monitored facility is an indicator of potential FOG discharge. Facilities with high occupancy will tend to serve more meals resulting in higher FOG production. Such facilities are likely to create high accumulation in downstream sewer lines if proper grease trap maintenance is not performed.

Section 4 Education and Outreach

The City of Tyler has prepared various FOG related educational and outreach materials for distribution to FSEs, residents, and other groups such as trade organizations, schools, etc. (refer to Appendix 4). NetHealth develops various outreach materials and programs in support of the food service health inspections. These materials are available to the FSE inspectors for distribution and education of facility employees and management. Outreach and education on flushable wipes and towels has been added to the program.

The City may target residential and/or commercial areas of the City where grease related blockages are being observed on a higher frequency. Targeted FSEs in the area may be scheduled for inspection and/or residential areas (including multi-family housing) may be blanketed with literature and outreach materials.

A key element of the City's FOG Control Program is centered around an ongoing public outreach to residents and facility owners and employees on the importance of FOG control. Educational materials such as informational fact sheets, residential grease containers, news articles, City Website, Texas State Department of Health on-line training materials and DVD training materials are used to educate the public and facility owners/employees. TWU staff performs inspections and work with facility managers to ensure compliance and that Best Management Practices ("BMP's") are being implemented. Appendix 3 presents a resource of educational materials distributed by various municipalities for education and outreach.

The use of kitchen BMPs is of great importance in reducing FOG and the practices are relatively easy to implement at minimal costs. Facility manager/owner should train employees on proper methods of grease disposal. The training of FSE employees should include a review of BMPs. To assist the facility in training employees, the various materials describing best management practices is distributed at no cost to the facility. Best management practices that each facility is expected to implement include:

1. Scrape grease and food waste from plates and pots into the solid waste trash before washing
2. Install drain screens on all sinks and floor drains to collect solids for disposal in the trash
3. Monitor grease abatement devices (grease interceptors, etc.) and clean regularly
4. Limit garbage disposal usage to non-greasy food materials
5. Use absorbent materials to prevent grease spills from entering drains
6. Use educational materials for training of all new employees
7. Post educational materials at key locations to minimize FOG discharges

Grease interceptors are devices that are designed to separate FOG from the wastewater. Figures 2 and 3 present typical grease trap and interceptor construction. Both outdoor in-

ground grease interceptors and indoor type grease interceptors are utilized within the City of Tyler. New construction requires, unless given an exemption, outside grease traps. The determination as to whether a grease interceptor is required is regulated by the City's ordinances and plumbing code (See Appendix 2 and Section 2). The ordinance states:

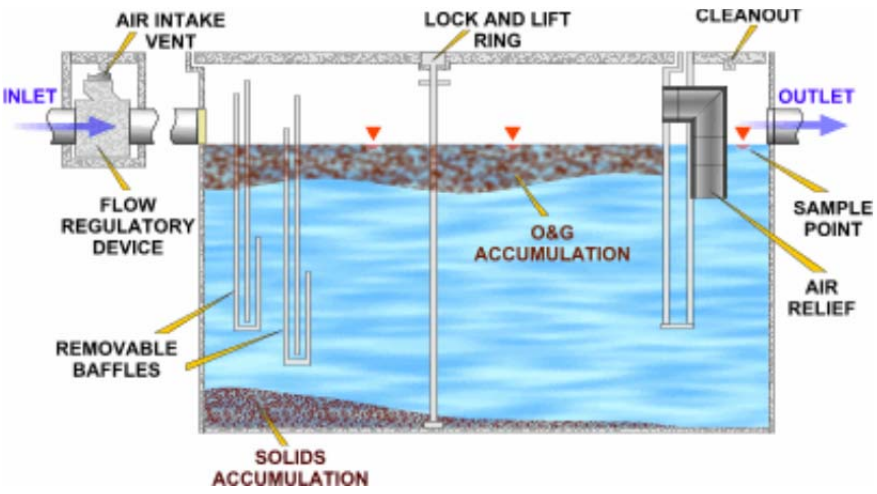
Sec. 19-74. –Pretreatment of wastewater.

2. *Grease, oil, and sand interceptors shall be provided as required by the City Plumbing Code or as determined by the Manager. All interception units shall be of type and capacity specified by the plumbing code and shall be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired regularly by the owner, at his expense in accordance with the requirements of the City's Grease Trap Ordinance.*

Note that the City of Tyler incorporates in its ordinance, by reference, the International Plumbing Code, 2006 edition. Chapter 10, Section 1003 of the IPC code (Traps, Interceptors and Separators) address grease interceptor sizing requirements. Administrative authority to enforce the 2006 IPC is included in the ordinance:

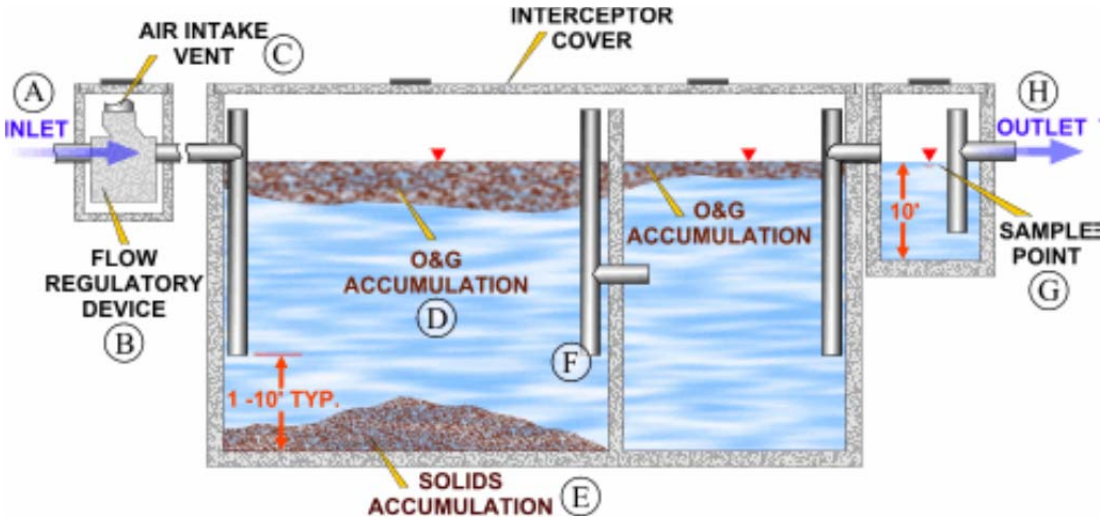
Sec. 19-81. Administrative enforcement remedies.
Sec. 19-82. Judicial enforcement remedies.
Sec. 19-83. Termination of sewer service.
Sec. 19-84. Supplemental enforcement action.

Figure 2
Example Grease Trap Construction



Size: Approximately 2 feet

Figure 3
Example Grease Interceptor Construction



Size: Approximately 8 feet

Factors that may be considered when evaluating the need for a grease interceptor include:

- Anticipated daily water use
- Location of dishwasher
- Location of water softener system
- Type of food preparation equipment (kettles, fryers, grills, woks, etc.)
- Hours of operation
- Number of seats
- Dishwasher size and use
- Installation of grease limiting devices by the FSE

In general, new facilities to be constructed under a building permit will be required to properly size and install in-ground or under sink grease interceptors depending on projected waste volumes. Facilities that undergo modifications or significant change in operations will be reevaluated and may be required to increase the grease interceptor size or modify maintenance operations to address increased FOG loadings.

Any in-ground grease interceptor that separates FOG, solids and water will require appropriate City approval of the design and cleaning schedule. Proper sizing will ensure sufficient retention times to allow particles to rise or settle before passing out the effluent and into the collecting sewer line. Once the grease interceptor contains over 25% grease or solids, it fails to provide separation and subsequently solids and grease are discharged into the sewer system in violation of City ordinance. Grease interceptors must be regularly cleaned prior to them filling to capacity. Cleaning is generally needed at a minimum every 90 days. The cleaning frequency may require shortening if the City determines from inspection (25% rule) or sampling that the current maintenance cleaning schedule is inadequate. The use of chemical additives to disperse FOG is not allowed.

Facilities may have approved GRDs that are located within the facility. Such devices are generally limited to small FOG generators or where in-ground structures are not feasible or where anticipated flows are low. Regardless, such facilities must be properly designed for the anticipated use and approved by the City.

The City will review and approve the sizing and installation of all GRDs. The type and installation must conform to City ordinances, including the plumbing code. Scheduled maintenance of all GRDs is required. Maintenance of the GRD must be conducted in accordance with the manufacturer's guidelines, this Policy, and at a frequency that prevents FOG and solids from entering the downstream sewers. Where applicable, wiper blades and internal components should be inspected and changed when worn and solids collection baskets should be emptied on a daily basis. Larger facilities should monitor the grease interceptor and have scheduled service to remove FOG and solids. Facilities may minimize the cost of FOG disposal by implementing applicable BMPs.

Even with proper operation and maintenance of GRDs, it may be necessary to periodically clean the service line lateral pipe(s). Over time, FOG that is not collected will deposit in the lateral. Depending on the volume of FOG and lateral pipe size, cleaning of the service

line may be required to provide reliable service. If the facility experiences slow sewage flow or blockages, and the GRD is functioning properly, then periodic cleaning of the service line may be required to ensure reliable service. TWU staff may assist the facility in determining if periodic service lateral cleaning is necessary to provide reliable service.

It is the FOG generator who is responsible for implementing appropriate BMP's, employee training and properly operating and maintaining its GRD. The City will perform periodic inspections and re-inspections as necessary to ensure compliance with City ordinances. The goal of the FOG Control Program is to minimize sewer system blockages and potential SSOs/Spills associated with FOG discharges into the sewer system. If a facility is found to be deficient in the FOG Control Program requirements, then the City will work with that facility to correct deficiencies. The City will encourage facilities and residents to limit discharges of FOG and will work with them to address City concerns. However, if a facility or resident continues to discharge FOG, the City has the right to enforce additional FOG abatement measures, including fines for ordinance violations.

Section 5 Inspection, Sampling and Waste Hauling Protocols

I. BACKGROUND AND PURPOSE

The City of Tyler FOG inspection frequencies are determined by a performance based system. Figure 4 presents the inspection process. Performance is determined during FSE inspections and is related to compliance with the FOG ordinance. If an FSE is out of compliance, a higher frequency of inspections will occur until the FSE becomes compliant. As the FSE maintains its compliance, the frequency of inspections will be reduced. For those FSEs who maintain their compliance, a minimal inspection frequency will be assigned. For those FSEs in compliance, the inspection frequency goal is once every 12 months. For FSEs that are found to be out of compliance during their inspection, they will be placed on a more frequent inspection depending on the nature of the compliance issue. For out of compliance FSEs, if during the next inspection, the FSE has come into compliance, the inspection frequency may be reduced. And if during the next inspection, the FSE is still in compliance, it will be returned to the 12 month frequency.

No FSE shall discharge or cause to be discharged into the sewer system FOG that exceeds a concentration level adopted by the City or that may accumulate and/or cause or contribute to blockages in the sewer system or at the sewer system lateral which connects the FSE to the sewer system.

GRD operation and maintenance is critical to effectiveness and performance. Each FSE is required to maintain the GRD in satisfactory operating condition. To ensure the GRD is working as it was designed, the following practices are used for FOG inspection and control:

A. Content Removal

Normal maintenance must include the complete removal of the contents of the GRD including floating material, wastewater (grey water), settled solids and grease accumulation on the sides of the GRD at a maximum interval of 90 days unless a variance has been given. A more frequent removal may be required based on observation and 25% rule. Decanting or discharging of removed waste or wastewater back into the GRD from which the waste or wastewater was removed or any other GRD or portion of the collection system for the purpose of reducing the volume to be disposed, is strictly prohibited. No FOG that has accumulated in a GRD is allowed to pass into any sewer lateral, sewer system, storm drain or public right of way during maintenance activities.

B. Prohibition of Additives

The introduction of additives such as bacteria, enzymes, emulsifiers, or similar agents designed for the purpose of emulsifying or controlling FOG discharge into

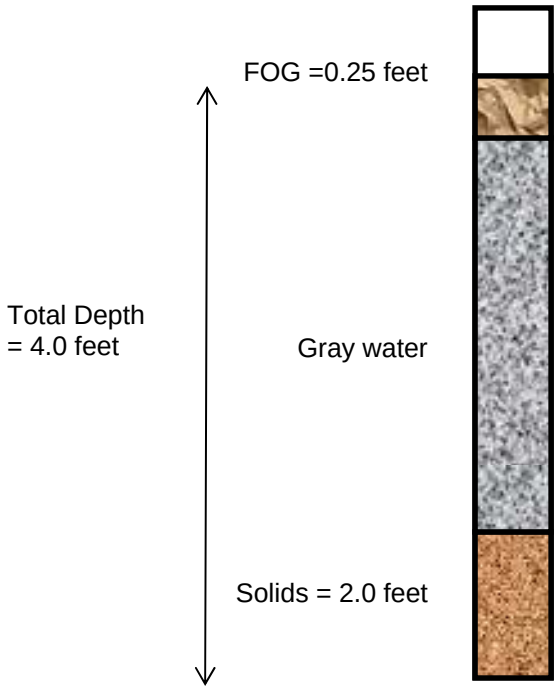
GRDs or associated plumbing is strictly prohibited.

C. Waste Hauler

All FSEs are responsible for ensuring that all recovered contents of the GRD are removed by a City of Tyler permitted and TCEQ licensed liquid waste hauler and disposed of at an approved facility.

D. 25% Rule Maintenance Frequency

Unless otherwise authorized by the TWU Manager Water Quality or designee, all GRDs must be pumped out completely by a TCEQ licensed waste hauler, permitted by the City of Tyler, whenever the accumulation of grease and solids is 25% of the GRD overall liquid depth or at least every 90 days whichever is more frequent. Exception to this minimum frequency of pumping may be made with special written approval from the TWU Manager Water Quality or designee for generators of small quantities of grease waste. The 25% rule is a requirement for GRDs to be maintained such that the combined FOG and solids accumulation does not exceed 25% of the design hydraulic depth of the GRD. This is to ensure that the maximum hydraulic retention time and required available hydraulic volume is maintained to effectively intercept and prevent FOG discharged to the sewer system. Following is an example calculation for determining compliance with the 25% rule:



Total FOG on top of interceptor =0.25 feet
Total solids at bottom of interceptor = 2.0 feet
Total depth of interceptor contents = 4.0 feet
Percentage of FOG + solids:

$$\frac{\text{(FOG) + (solids)}}{\text{Depth of Interceptor}} = \frac{(0.25' + 2.0')}{4.0'} = \frac{2.25'}{4.0'} = \mathbf{56\%}$$

The 25% rule has been exceeded and the FSE needs to increase pump out frequency.

E. Grease Deposits in Mainline Sewer

Mainline sewers with elevated grease deposits may be identified by TWU crews. Such areas of the city may undergo stepped-up inspections of FSEs to identify the source(s) of elevated grease that were observed in the mainline sewers.

II. INSPECTION PROCESS

The following provides a general description of the inspection process. Appendix 5 contains the Standard Operating Procedure and Grease Trap Inspection Report Form.

A. Pre-inspection preparation. The goal is to inspect each FSE on a 12 month basis. The inspector will need to obtain the prior inspection results and note previous violations and compliance issues.
B. Go to restaurant during probable hours of operation. No appointment or notice is required prior to your visit. Confirm that the actual address and FSE name matches the address from the scheduled inspection.
C. Special note: If restaurant is part of a strip mall, see section below.
D. Prepare an Inspection Sheet (Appendix 5). Log the restaurant name, address and location ID. Note the days and hours of operation.
E. Enter the restaurant and identify yourself as a TWU inspector for the City of Tyler. Ask for a manager. If no manager is on site, ask for the person currently in charge. Be prepared to provide your City identification if asked.
F. Identify yourself to the manager and ask to see the GRD records. It is helpful to have an example grease hauling manifest available to show the manager. Tell the manager that you will need to see the last twelve months of records.
G. Check the records. Make sure the manifest form is utilized. On the inspection form, log the dates pumped for the last 12 months (from each record), company name, and GRD size.
H. Restaurant documentation: Summarize type of drainage system, oil/grease recycling bin, permit issuance and expiration date, permit history, permit limits (FOG, pH, temperature, detention time)
I. GRD data: Type/size, number of GRDs, onsite location (inside and outside), new installations, structural repairs
J. Inspect immediately downstream manhole to determine the grease accumulations, debris and if low flow
K. Make sure the hauler is TCEQ licensed to haul and dispose of grease and is on the City of Tyler approved hauler list and is properly permitted. If not, verify that hauler has not recently been licensed or permitted. If not permitted, then notify the manager that the hauler is not permitted to haul in Tyler.
L. Inspect the inlet and outlet chambers and GRD structural condition

M. Note the restaurant manager's name, get a signature and date, get a phone number, and whether or not food is fried on site. Fill out the form as completely as possible and return the restaurant hauling records to the manager.
N. Confirm GRD is in compliance with the 25% rule.
O. Plan a sampling event if noncompliance is observed or probable. Based on the information, tell the manager approximately when you will be sampling the facility. (For a 90 day GRD maintenance schedule, sampling should be no shorter than 60 days after last pumping.)

III. STRIP MALLS

Strip malls may require special handling since piping and occupancy changes can make inspection difficult. Shared grease interceptors are also possible.

A. Strip malls are variable as to what is required, sometimes each store has a water meter and pays its own water and wastewater bill.
B. If a strip mall has only one master GRD then the strip mall will require testing as one unit representing all connected FSEs. Check prior inspection notes in the files to identify special requirements.

IV. SAMPLING PROTOCOL (As needed)

Periodically the need for sampling (Oil and Grease, pH, etc.) may arise to ensure compliance. Note that FOG clings to sample equipment, therefore, FOG analytical results may not be representative of the actual waste stream. When sampling is necessary the following general guidelines should be followed where possible along with 40CFR136 sampling guidelines:

A. Grab sample is the only method recognized for compliance monitoring.
B. Collection is with a wide mouth glass or stainless steel vessel that is dipped to take a sample.
C. Sampling ports need to be large enough for the vessels used. The use of teflon tubing to obtain samples is allowed.
D. Sanitary tee sample collection is the least preferred method if a sample vault cannot be installed or if it is not large enough to accommodate the 1L sample jars.
E. Utilize the proper Chain of Custody form (Appendix 5) for samples. Note that the laboratory performing the analysis can normally provide chain of custody forms.
F. Collect samples and refrigerate.

G. Take the samples and Chain of Custody to the laboratory for analysis. Keep the copy and staple it to the inspection form.

V. SAMPLING DIFFICULTIES

Each sample location will be slightly different and the inspector should attempt to determine the best location to obtain a representative sample for analysis. Sampling problems that may occur are summarized below:

A. If a cleanout is blocked with grease report the problem to the restaurant for them to have the grease removed.
B. GRD overflows. Report any overflow, regardless of size, to Public Services for immediate evaluation of cause and responsibility. Provide as much detail as possible.
C. No GRD installed. Create an NOV for the restaurant. Deliver the NOV along with appropriate BMP outreach material. Notify restaurant that they need to hire a licensed plumber to size an interceptor and then submit plans to NetHealth and the City for approval and permit issuance and then have interceptor installed.
D. Cannot get sample with auto-sampler at any time. After many and varied attempts, write “No Sample” on the form. Make plans to go back and find out why no sample can be taken.
E. If auto-sampler loses suction, check the probe for blockage. If not blocked, change tubing. Make sure the battery is fully charged.

VI. MANIFEST BOOKS

A hauler must be licensed with the TCEQ, permitted by the City of Tyler and utilize a written manifest book in compliance with TCEQ.

VII. OTHER INSEPCTIONS

Other inspections may take the form of Closed Circuit Television Inspection (CCTV) performed by City crews or by contractors hired to perform such inspections. The responsibility of maintaining the public owned sewer system belongs to the City of Tyler. TWU performs mainline cleaning when blockages occur but private lateral blockages are the responsibility of the property owner. Some blockages may be the result of FOG accumulation. Where recurring grease blockages are noted, TWU may initiate public outreach for residents and apartments upstream of the blockage and/or call for inspection of facilities tributary to the chronic blockage. TWU may also generate a work order to perform CCTV inspection to determine if secondary causes for the blockage are present. Root intrusion, dropped pipe joint, protruding service line, line sag, etc. may actually be the primary cause for the blockage and appropriate repair action taken. CCTV inspection may identify a facility service lateral as the source of the excessive FOG and thereby create stepped up inspections and/or enforcement action.

Section 6 FOG Enforcement Procedures

The following protocol will be used by TWU staff as reference material and guidelines during inspections and follow-up enforcement actions (Figure 4 presents a flow chart showing the inspection process).

The need for GRD cleaning is a function of the load of FOG plus the capacity of the grease trap/interceptor. The load of FOG varies, depending on the type of facility, the FOG management practices utilized by the facility, and the ability of waste hauler to accept and dispose of the waste product. The following summarizes the required cleaning of grease interceptors:

- Grease traps and grease interceptors shall be cleaned as often as necessary to ensure that sediment and floating materials do not accumulate to impair the efficiency of the grease trap/interceptor and to ensure the discharge is in compliance with local discharge limits.
- Grease traps and grease interceptors subject to these standards shall be completely evacuated a minimum of every ninety (90) days (unless a written variance has been obtained), or more frequently when:
  - ✓ Twenty-five (25) percent or more of the wetted height of the grease trap or grease interceptor, as measured from the bottom of the device to the invert of the outlet pipe, contains floating materials, sediment, oils or greases; or
  - ✓ The discharge exceeds any pollutant levels established by the City; or
  - ✓ The downstream wastewater pipes show evidence of grease deposits.
  - ✓ There is a history of non-compliance.

A. Permitted Grease Haulers - Grease haulers are required to be permitted under City ordinance.

B. Required Manifest - Restaurants are required to complete and maintain a disposal manifest (also known as a trip ticket) for the disposal of their wastes. Manifest requirements:

(1) Persons who collect and transport, or transport and dispose liquid waste shall maintain a record of each individual collection, transportation, and disposal transaction.
(2) The records of each transaction shall be maintained in the form of a manifest.
(3) The manifest forms used must provide sufficient information to monitor the pickup and disposal of the liquid waste.
(4) A manifest must be used for the disposal of grit trap wastes, grease trap waste, and septage.
(5) The City may approve the further use of the manifest for other authorized waste transport and disposal.
(6) The City may make administrative modifications of the manifest form used in individual cases.

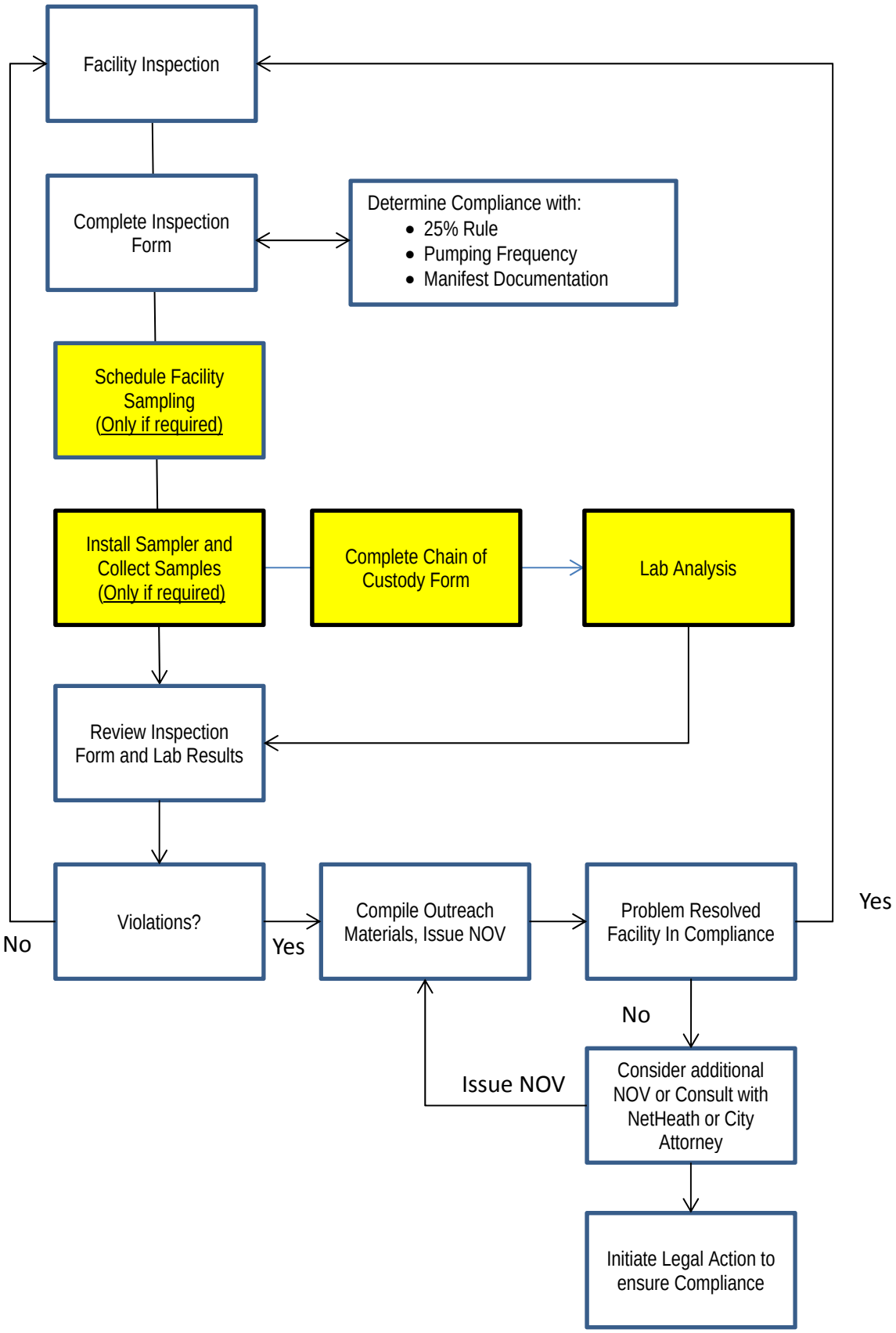
Manifest contain the following information:

(1) Liquid waste generator information.
   a. Name of generator.
   b. Generator's address and telephone number.
   c. Tank or trap capacity.
   d. Date and time of generator's transfer of liquid waste to transporter.
   e. Signature

(2) Transporter information.
   a. Name of transporter
   b. Transporter's address and telephone number.
   c. TCEQ registration number.
   d. Type and source of liquid waste removed.
   e. Number of gallons removed from tank or trap.
   f. Date and time of receipt of liquid waste from generator.
   g. Vehicle driver's name and signature.

(3) Disposal facility information.
   a. Name of disposal facility.
   b. Name of disposal facility's owner.
   c. Location of the disposal facility.
   d. Mailing address of the disposal facility, if different than the location.
   e. Disposal facility's TCEQ permit number.
   f. Number of gallons received.
   g. Date and time of delivery.
   h. Disposal facility representative's name and signature.

Figure 4
Inspection Flow Chart



C. Manifest distribution.

Manifests shall be maintained as labeled on the individual copies in each manifest book, but shall be generally as follows:

Generator - One (1) copy of the manifest shall have the generator and transporter information completed and shall be given to the generator at the time of liquid waste pickup.

Disposal facility - The copy of the manifest shall be given to the facility receiving the liquid waste.

Transporter - The transporter will retain the copy of the manifest

Local authority - A copy of the completed manifest shall be available for TWU.

D. Responsibilities of FOG generators:

General responsibilities:

(1) With respect to those liquid wastes for which a generator is responsible, the generator of liquid waste shall:

a. Know or ascertain the contents, characteristics, and classifications of liquid wastes generated
b. Have liquid waste removed from the premises by a transporter holding the proper state, federal and local permits or registrations required for the collection and transportation the liquid wastes.
c. Make a determination that the liquid waste to be hauled under this article is not a hazardous waste.
d. Verify from the completed manifest or by other means that the liquid wastes have been disposed of properly

(2) A generator of grease trap waste or grit trap waste shall have traps serviced as frequently as required by the city's plumbing code, in order to prevent bypass or overflow, and to insure proper operation of the trap.

(3) A generator of grit trap waste, grease trap waste, septage, or any other liquid waste shall sign the manifest presented by the transporter and shall keep a copy on site for a period of five (5) years.

(4) TWU personnel may periodically inspect the generator's copy during normal business hours to ensure compliance.

E. FOG Test Limits and Prohibited Discharges

When a FOG test result exceeds the 25% Rule (see item 7 below), a written Notice of Violation (NOV) is issued and delivered to the establishment. (See Appendix 5).

F. Notice of Violation (NOV)

Whenever TWU finds that any user has violated or is violating the ordinance, a wastewater discharge permit or directive issued hereunder, or any other pretreatment requirement, the Manager Water Quality or his designee may serve a written notice of violation and direction for remedial action. Within thirty (30) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the user to TWU. TWU may prescribe in the notice of violation and direction for remedial action plan, the minimal compliance actions and responses required of the violator. Submission of this plan in no way relieves the user of liability for any violations occurring before or after receipt of the notice of violation and directive for remedial action plan. Nothing in this section shall limit the authority of TWU to take any action including emergency actions or any other enforcement action, without first issuing a notice of violation and directive for remedial action plan. The following describes the order of severity in issuing NOV and enforcement activities:

1. Issue first NOV to be accompanied by outreach materials
2. Issue second NOV
3. Initiate enforcement action (probable cause affidavit; warrant; water shut off)

Section 7 Data Management, Letters, Surcharge and NOV Notification

I. BACKGROUND AND PURPOSE

The FSE data may be maintained either electronically or in physical files. Letters and reports are generated which contain the FSEs tested in a given period, along with location ID, and the laboratory results for the BOD and TSS concentrations. Surcharges to FSEs are based on the TSS and BOD concentrations. Notice of Violation (NOV) letters are generated based on GRD cleaning frequency violations, subject enforcement protocol to have manifest receipts on site, exceeding the 25% rule. Appendix 7 presents example letters and correspondence. See Appendix 8 for list of monitored establishments.

II. NOTICE OF VIOLATION (NOV)

TWU's goal is to work with facilities to correct deficiencies without implementing fines or initiating other enforcement actions. However, if the event or major violation has not been corrected by previous NOV, TWU may initiate enhanced enforcement actions including public health violations or prohibited discharge violations. These penalties can be assessed through an administrative process with opportunity for appeal. The City has several enforcement options including:

- The City may impose civil penalties as specified by ordinance for each food service violation
- The City may impose civil penalties for each day of continuance of violation in violation of the prohibited discharges to the public sewer system
- The City may seek injunctive relief in the form of closing a facility to prohibit the discharge of FOG; and
- The City may seek equitable relief to recover the costs of investigation, corrective services or other expenses incurred by the City.

Appendix 1

Grease Interceptor Sizing

Appendix 1 contains information on sizing of grease interceptors and is for information only. Specific sizing will be site specific. Staff may prepare future guidance documents based on experience.

CHAPTER 10

TRAPS, INTERCEPTORS AND SEPARATORS

SECTION 1001
GENERAL

1001.1 Scope. This chapter shall govern the material and installation of traps, interceptors and separators.

SECTION 1002
TRAP REQUIREMENTS

1002.1 Fixture traps. Each plumbing fixture shall be separately trapped by a water-seal trap, except as otherwise permitted by this code. The vertical distance from the fixture outlet to the trap weir shall not exceed 24 inches (610 mm) and the horizontal distance shall not exceed 30 inches (610 mm) measured from the centerline of the fixture outlet to the centerline of the inlet of the trap. The height of a clothes washer standpipe above a trap shall conform to Section 802.4. A fixture shall not be double trapped.

Exceptions:

1. This section shall not apply to fixtures with integral traps.
2. A combination plumbing fixture is permitted to be installed on one trap, provided that one compartment is not more than 6 inches (152 mm) deeper than the other compartment and the waste outlets are not more than 30 inches (762 mm) apart.
3. A grease trap intended to serve as a fixture trap in accordance with the manufacturer's installation instructions shall be permitted to serve as the trap for a single fixture or a combination sink of not more than three compartments where the vertical distance from the fixture outlet to the inlet of the interceptor does not exceed 30 inches (762 mm) and the developed length of the waste pipe from the most upstream fixture outlet to the inlet of the interceptor does not exceed 60 inches (1524 mm).

1002.2 Design of traps. Fixture traps shall be self-scouring. Fixture traps shall not have interior partitions, except where such traps are integral with the fixture or where such traps are constructed of an approved material that is resistant to corrosion and degradation. Slip joints shall be made with an approved elastomeric gasket and shall be installed only on the trap inlet, trap outlet and within the trap seal.

1002.3 Prohibited traps. The following types of traps are prohibited:

1. Traps that depend on moving parts to maintain the seal.
2. Bell traps.
3. Crown-vented traps.
4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an approved material that is resistant to corrosion and degradation.
5. "S" traps.
6. Drum traps.

   Exception: Drum traps used as solids interceptors and drum traps serving chemical waste systems shall not be prohibited.

1002.4 Trap seals. Each fixture trap shall have a liquid seal of not less than 2 inches (51 mm) and not more than 4 inches (102 mm), or deeper for special designs relating to accessible fixtures. Where a trap seal is subject to loss by evaporation, a trap seal primer valve shall be installed. A trap seal primer valve shall conform to ASSE 1018 or ASSE 1044.

1002.5 Size of fixture traps. Fixture trap size shall be sufficient to drain the fixture rapidly and not less than the size indicated in Table 709.1. A trap shall not be larger than the drainage pipe into which the trap discharges.

1002.6 Building traps. Building (house) traps shall be prohibited, except where local conditions necessitate such traps. Building traps shall be provided with a cleanout and a relief vent or fresh air intake on the inlet side of the trap. The size of the relief vent or fresh air intake shall not be less than one-half the diameter of the drain to which the relief vent or air intake connects. Such relief vent or fresh air intake shall be carried above grade and shall be terminated in a screened outlet located outside the building.

1002.7 Trap setting and protection. Traps shall be set level with respect to the trap seal and, where necessary, shall be protected from freezing.

1002.8 Recess for trap connection. A recess provided for connection of the underground trap, such as one serving a bathtub in slab-type construction, shall have sides and a bottom of corrosion-resistant, insect- and verminproof construction.

1002.9 Acid-resisting traps. Where a vitrified clay or other brittleware, acid-resisting trap is installed underground, such trap shall be embedded in concrete extending 6 inches (152 mm) beyond the bottom and sides of the trap.

1002.10 Plumbing in mental health centers. In mental health centers, pipes and traps shall not be exposed.

SECTION 1003
INTERCEPTORS AND SEPARATORS

1003.1 Where required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer, the private sewage disposal system or the sewage treatment plant or processes.

1003.2 Approval. The size, type and location of each interceptor and of each separator shall be designed and installed in accordance with the manufacturer's instructions and the

requirements of this section based on the anticipated conditions of use. Wastes that do not require treatment or separation shall not be discharged into any interceptor or separator.

1003.3 Grease interceptors. Grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.5.

1003.3.1 Grease interceptors and automatic grease removal devices required. A grease interceptor or automatic grease removal device shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias and clubs. Fixtures and equipment shall include pot sinks, prerinse sinks; soup kettles or similar devices; wok stations; floor drains or sinks into which kettles are drained; automatic hood wash units and dishwashers without prerinse sinks. Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged.

1003.3.2 Food waste grinders. Where food waste grinders connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste grinder. Emulsifiers, chemicals, enzymes and bacteria shall not discharge into the food waste grinder.

1003.3.3 Grease interceptors and automatic grease removal devices not required. A grease interceptor or an automatic grease removal device shall not be required for individual dwelling units or any private living quarters.

1003.3.4 Grease interceptors and automatic grease removal devices. Grease interceptors or automatic grease removal devices shall conform to PDI G101, ASME A112.14.3 or ASME A112.14.4 and shall be installed in accordance with the manufacturer's instructions.

1003.3.4.1 Grease interceptor capacity. Grease interceptors shall have the grease retention capacity indicated in Table 1003.3.4.1 for the flow-through rates indicated.

1003.3.4.2 Rate of flow controls. Grease interceptors shall be equipped with devices to control the rate of water flow so that the water flow does not exceed the rated flow. The flow-control device shall be vented and terminate not less than 6 inches (152 mm) above the flood rim level or be installed in accordance with the manufacturer's instructions.

1003.3.5 Automatic grease removal devices. Where automatic grease removal devices are installed, such devices shall be located downstream of each fixture or multiple fixtures in accordance with the manufacturer's instructions. The automatic grease removal device shall be sized to pretreat the measured or calculated flows for all connected fixtures or equipment. Ready access shall be provided for inspection and maintenance.

1003.4 Oil separators required. At repair garages, car-washing facilities, at factories where oily and flammable liquid wastes are produced and in hydraulic elevator pits, separators shall be installed into which all oil-bearing, grease-bearing or flammable wastes shall be discharged before emptying into the building drainage system or other point of disposal.

Exception: An oil separator is not required in hydraulic elevator pits where an approved alarm system is installed.

TABLE 1003.3.4.1
CAPACITY OF GREASE INTERCEPTORS [a]

TOTAL FLOW-THROUGH RATING (gpm)	GREASE RETENTION CAPACITY (pounds)
4	8
6	12
7	14
9	18
10	20
12	24
14	28
15	30
18	36
20	40
25	50
35	70
50	100
75	150
100	200

For SI: 1 gallon per minute = 3.785 L/m, 1 pound = 0.454 kg.

a. For total flow-through ratings greater than 100 (gpm), double the flow-through rating to determine the grease retention capacity (pounds).

1003.4.1 Separation of liquids. A mixture of treated or untreated light and heavy liquids with various specific gravities shall be separated in an approved receptacle.

1003.4.2 Oil separator design. Oil separators shall be designed in accordance with Sections 1003.4.2.1 and 1003.4.2.2.

1003.4.2.1 General design requirements. Oil separators shall have a depth of not less than 2 feet (610 mm) below the invert of the discharge drain. The outlet opening of the separator shall have not less than an 18-inch (457 mm) water seal.

1003.4.2.2 Garages and service stations. Where automobiles are serviced, greased, repaired or washed or where gasoline is dispensed, oil separators shall have a minimum capacity of 6 cubic feet (0.168 m^3) for the first 100 square feet (9.3 m^2) of area to be drained, plus 1 cubic foot (0.28 m^3) for each additional 100 square feet (9.3 m^2) of area to be drained into the separator. Parking garages in which servicing, repairing or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator.

1003.5 Sand interceptors in commercial establishments. Sand and similar interceptors for heavy solids shall be designed

and located so as to be provided with ready access for cleaning, and shall have a water seal of not less than 6 inches (152 mm).

1003.6 Laundries. Laundry facilities not installed within an individual dwelling unit or intended for individual family use shall be equipped with an interceptor with a wire basket or similar device, removable for cleaning, that prevents passage into the drainage system of solids 0.5 inch (12.7 mm) or larger in size, string, rags, buttons or other materials detrimental to the public sewage system.

1003.7 Bottling establishments. Bottling plants shall discharge process wastes into an interceptor that will provide for the separation of broken glass or other solids before discharging waste into the drainage system.

1003.8 Slaughterhouses. Slaughtering room and dressing room drains shall be equipped with approved separators. The separator shall prevent the discharge into the drainage system of feathers, entrails and other materials that cause clogging.

1003.9 Venting of interceptors and separators. Interceptors and separators shall be designed so as not to become air bound where tight covers are utilized. Each interceptor or separator shall be vented where subject to a loss of trap seal.

1003.10 Access and maintenance of interceptors and separators. Access shall be provided to each interceptor and separator for service and maintenance. Interceptors and separators shall be maintained by periodic removal of accumulated grease, scum, oil, or other floating substances and solids deposited in the interceptor or separator.

SECTION 1004
MATERIALS, JOINTS AND CONNECTIONS

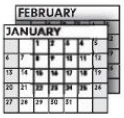
1004.1 General. The materials and methods utilized for the construction and installation of traps, interceptors and separators shall comply with this chapter and the applicable provisions of Chapters 4 and 7. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow of the piping.

Grease Production Sizing

Although sizing grease interceptors, whether gravity or hydromechanical, has always been based solely on flow rate, this strategy falls short in that it does not consider how much grease a specific food service facility could produce.

There are many times when volume or flow rate sizing would lead to the same size interceptor for a subway sandwich shop as for a Mexican grill, however it is well understood by inspectors that these two types of restaurants produce significantly different amounts of fats, oils and grease (FOG).

Schier recommends using a grease production calculation to determine how much grease a particular restaurant is likely to produce in order to ensure that the specified grease interceptor has sufficient grease storage capacity to allow for a realistic and affordable pump out frequency.

Meals or Customers Per Day	✖	Grease Production (lbs.) Per Meal (see A B C D E F below)	✖	Days Per Pump-Out Cycle	=	**Grease Capacity Needed**
						

Restaurant Type		**Grease Production Values**
Low Grease Production	Sandwich Shop, Convenience Store, Fresh, Bar, Sushi Bar, Delicatessen, Snack Bar, Frozen Yogurt, Hotel Breakfast Bar; Residential	A 0.005 lbs./meal (no flatware)
		B 0.0065 lbs./meal (with flatware)
Medium Grease Production	Coffee House, Pizza, Grocery Store (no fryer), Ice Cream Parlor, Fast Food, Greek, Indian, Low Grease Output FSE (w/fryer)	C 0.025 lbs./meal (no flatware)
		D 0.0325 lbs./meal (with flatware)
High Grease Production	Cafeteria, Family Restaurant, Italian, Steak House, Bakery, Chinese, Buffet, Mexican, Seafood, Fried Chicken, Grocery Store (w/fryer)	E 0.035 lbs./meal (no flatware)
		F 0.0455 lbs./meal (with flatware)

We developed the above categories for restaurants based on feedback from jurisdictions and pumper contractors around the country, combined with reports such as the Brown Grease Study (Kennedy Jenks 2011) which gives detailed information about restaurant types and menu's as well as grease and solids production data.

The formula for calculating grease production requires three bits of information:
1. Grease production per meal - you simply have to decide by menu type which category (low, medium or high) that the restaurant falls under and then whether the restaurant uses flatware or disposable (plastic or paper) forks, knives, spoons, plates, cups, etc.

2. Meals or customers per day - if this is a franchise they typically have this information available. Independent start-ups may not know this information up front, in which case you may have to make an educated guess or phone a friend or consult a medium. Most of the time you can get close enough that the calculation makes sense. Just remember that its better to err on the high side.

3. Days per pump-out cycle - this is simply the maintenance cycle you plan to use for pumping out the interceptor. Most people will not maintain an interceptor that is sized to be cleaned out more often than once per month and most jurisdictions won't let an interceptor be maintained less often than once every 90 days. Somewhere in between is the sweet spot for your project.

The formula for calculating grease production is very straight forward. You simply take the amount of grease expected per meal (a,b,c,d,e, or f), times the number of meals expected per day, times the number of days between pump outs to arrive at the grease capacity required for the interceptor.

Lets take a couple of real-world examples:

Example 1
McDonalds (medium grease producer, no flatware - category "c")
400 meals per day X 0.025 lbs per meal = 10 lbs FOG per day, or 300 lbs every 30 days, or 600 lbs every 60 days, or 900 lbs every 90 days.

You can also take a grease interceptors' certified capacity and divide it by the amount of grease production per day, to determine the pump out frequency as follows:

10 lbs per day would require:

Schier GB-75, 75 gpm, 616 lbs = 61 days between pump-outs
Schier GB-250, 100 gpm, 1076 lbs = 108 days between pump-outs
Trapzilla TZ-400, 75 gpm, 400 lbs = 40 days between pump-outs
Trapzilla TZ-600, 75 gpm, 600 lbs = 60 days between pump-outs
Mifab BigMax 750, 75 gpm, 150 lbs* = 15 days between pump-outs
Mifab BigMax 1150, 100 gpm, 200 lbs* = 20 days between pump-outs

*based on grease interceptors' actual third party certification (not based on the manufacturer's claims of performance, which cannot be proven).

Example 2
Buffalo Wild Wings (high grease producer with flatware, category "f")
642 meals per day X 0.455 lbs per meal = 29.2 lbs per day, or 876 lbs every 30 days, or 1,752 lbs every 60 days, or 2,628 lbs every 90 days.

29.2 lbs per day would require:

Schier GB-75, 75 gpm, 616 lbs = 21 days between pump-outs
Schier GB-250, 100 gpm, 1076 lbs = 36 days between pump-outs

Trapzilla TZ-400, 75 gpm, 400 lbs = 14 days between pump-outs
Trapzilla TZ-600, 75 gpm, 600 lbs = 20 days between pump-outs
Mifab BigMax 750, 75 gpm, 150 lbs* = 5 days between pump-outs
Mifab BigMax 1150, 100 gpm, 200 lbs* = 7 days between pump-outs

Of course you can increase capacity by increasing the number of interceptors in order to lengthen the pump-out cycle, i.e:

Schier GB-250 (2), 100 gpm, 2152 lbs = 74 days between pump-outs

Using the grease production sizing method is not limited to any specific manufacturer, you can use it for any interceptor.

The only thing to watch out for is the funny-business some manufacturers' play in making unsubstantiated claims of capacity that they want to be used in determining a pump-out frequency.

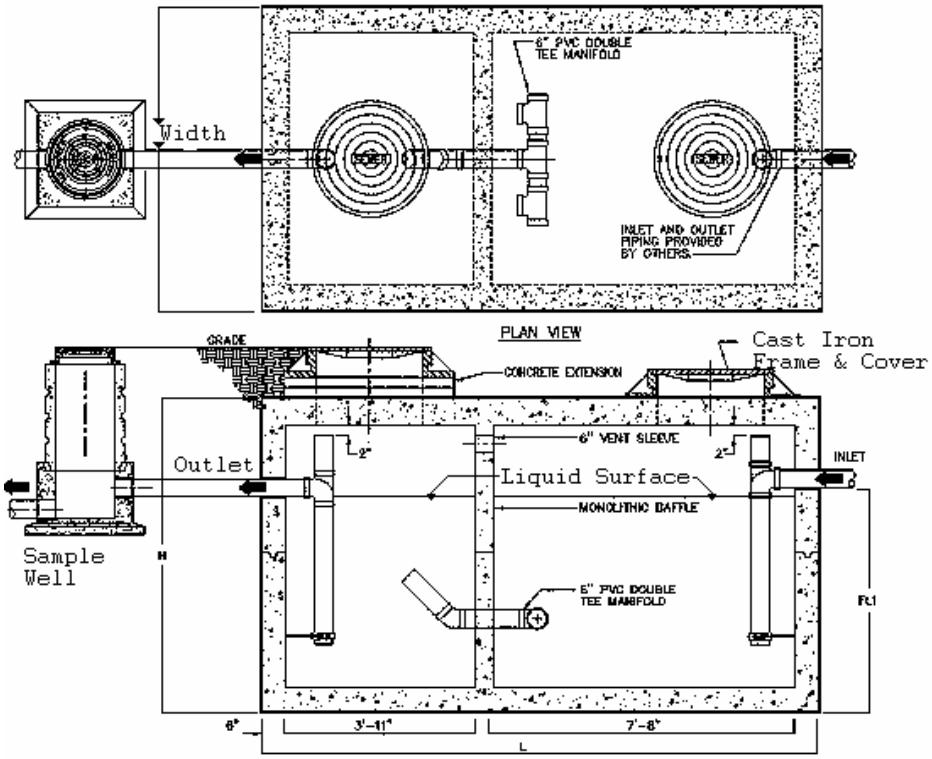
Sorry Charlie, that's just not going to work.

When in doubt ask them for their certified test reports to see what their actual/real/genuine/true/factual capacity is, then base the pump-out cycle on that.

Posted by Ken Loucks at 6:31 PM
Labels: FOG loading, GI sizing, Grease Interceptor, grease trap, grease trap maintenance, HGI, hydromechanical, interceptor maintenance requirement, multiple grease interceptors

FORT WORTH
WATER

GUIDANCE DOCUMENT
FOR SIZING AND INSTALLATION
OF GREASE TRAPS AND INTERCEPTORS



Part I: Guidance for Grease Trap Sizing and Design Criteria

A. Introduction:

Information contained within this document is based on standard industry practices and guidance found in both the 1997 International Plumbing Code (IPC) Commentary and the Uniform Plumbing Code (UPC), Appendix H. Size, type, and location of grease traps shall be in accordance with the manufacturers instructions, the requirements of City of Fort Worth Environmental Ordinance #12274 and Plumbing Ordinance #13521.

B. Applicability:

These requirements are applicable to all commercial food service establishments, including those that are undergoing:

1. New construction
2. Interior remodeling to accommodate expansion or operational modifications
3. Changes of ownership/occupancy
4. Facilities which may be experiencing difficulty in achieving compliance with maintenance and/or wastewater discharge limitations

C. Sizing Requirements:

Sizing methods described herein are intended as guidance in determining grease trap/interceptor sizes that will afford the City's sanitary sewer system a minimum degree of protection against grease and other obstructing materials. Sizing determinations are based on operational data provided by business owners or their contractors. In approving a customer's plumbing or grease interceptor design, the City does not accept liability for the failure of a system to adequately treat wastewater to achieve effluent quality requirements specified under Ordinance 12274. It is the responsibility of the generator and/or contractors to insure the appropriate level of treatment necessary for compliance with environmental and wastewater regulations.

Minimum acceptable grease trap/interceptor sizing shall be accomplished as follows:

a. Sizing according to formulas found in Section D below.

b. Where sizing formulas result in determination of a grease trap less than 750 gallons in capacity, this minimum size is recommended for all restaurant applications. However, under no circumstances should exterior grease traps less than 500 gallons be utilized.

D. Grease Trap Sizing Formulas:

It is the responsibility of the generator and his/her contractors to ensure that the wastewater discharged from their facility is in compliance with the City's discharge limitations. For the purpose of plans review, a general assessment of grease trap/interceptor design and size will be performed using the following formulas. (These formulas have been demonstrated as industry standards capable of achieving the City's discharge criteria when systems are maintained in proper condition.)

Method 1: Uniform Plumbing Code, Appendix H

Number of meals Per peak hour (1)	x	waste flow rate (2)	x	retention time (3)	x	storage factor (4)	=	Size Requirement (liquid capacity)

Factors:

1) Number of meals served at peak operating hour (Seating Capacity) x Peak Factor
    a. Where Peak Factor for Fast Food Restaurant is……...1.33
    b. And, Peak Factor for all other food service types is….1.00

2) Waste Flow Rate:
    a. With Dishwasher……6 gallon flow
    b. Without Dishwasher……...5 gallon flow
    c. Single Service kitchen……..……. 2 gallon flow
    d. Food waste disposer…….. 1 gallon flow
3) Retention Times
    a. Commercial kitchen waste/dishwasher……2.5 hours
    b. Single service kitchen/single serving……1.5 hours
4) Storage Factors
    a. Fully equipped commercial kitchen …..8 hr operation…1
    b. ……..16 hr operation…2
    c. ……..24 hr operation…3
    d. Single Service Kitchen…….……1.5

The Uniform Plumbing code includes a built-in safety factor that can yield very large grease trap size specifications. At this time, the City is not requiring traps larger than 4,000 gallons. However, the decision to use a trap smaller than that specified by the formula and calculations above is to be addressed in the plan submission.

Method 2: Five (5) Hour Detention/Peak Flow

A. Gallons of water used per hour of operation
B. A x 0.75 = average "gray water" flow per hour
C. B x 1.9 peak flow factor
D. C x 5 hours detention = volume of trap

Required volume of trap = A x B x C x D

E. Alternate Sizing Formulas / Proposals

Food service establishments that propose the use of alternate sizing techniques and/or procedures that result in specifications that differ from calculated requirements (or are less than the MIMIMUM 750 gallon recommendation), must submit formulas and other bases to support proposed grease trap size/ installation. Submission should also provide documentation of ability to meet effluent quality requirements. This proposal must be signed by a licensed plumbing contractor or professional engineer. Under no circumstances will a grease trap smaller than 500 gallon be accepted.

Alternate procedures for grease removal (i.e. API Industries ECHO2, Big Dipper, etc.) must be approved on an individual basis.

F. Construction/Installation:

All permitting, construction, and inspection activities must be completed in accordance with the Fort Worth Plumbing Code #13521. Additionally, the following specifications must be incorporated into grease trap design.

a. The grease interceptor shall be constructed with a minimum of two baffles.

b. Grease traps are to be installed at a minimum distance of 10 ft. from sinks and dishwashers to allow for adequate cooling of the wastewater. Water temperatures must be less than 120 degrees prior to entering grease trap.

c. All grease bearing waste streams should be routed through an appropriate grease trap/interceptor, including: three-compartment sinks, pot/pan sinks, soup kettles, hand-washing sinks, dishwashers, mop sinks and floor drains. *Notable Exceptions:* Drains that receive "clear waste" only, such as from ice machines, condensate from coils and drink stations, may be plumbed to the sanitary system without passing through the grease interceptor with the condition that the receiving drain is a "hub" type that is a minimum of two inches above the finished floor.

d. Kitchens that utilize Garbage Disposals shall be required to use an interceptor twice the size calculated in Part I, Section D, above.

e. All exterior or recessed Grease Traps and Interceptors are to be installed with an Effluent Sampling Well, equivalent to: a. Parks Equipment Services *Sample Well SWB-9*; b. American Industrial Pre-Cast Products *Test Well;* or c. PW Eagle (formerly Uponor) *Sample Well*. Sample wells will have a minimum 12" diameter access cover and a minimum 4" drop from inlet to outlet piping through the sampling well. Mechanical Traps and Interceptors that are installed above ground must be equipped with an influent flow regulator and an effluent valve assembly that allows for sample collection.

G. Customer (Generator) Responsibilities:

It is the responsibility of the customer (waste generator) to insure compliance with the City of Fort Worth's discharge limitations specified in Environmental Ordinance #12274.

G. Customer (Generator) Responsibilities: (continued)

Hazardous wastes, such as acids, strong cleaners, pesticides, herbicides, paint, solvents, or gasoline should not be disposed of where they would go through grease or grit traps. If commercial dishwashers are discharged through a grease interceptor, care must be taken in system design. Dishwashers use detergents and elevated water temperatures that will melt grease. If the interceptor is either too small or too close to the commercial dishwasher, grease may pass through the interceptor and into the collection system.

Generators are responsible for maintaining grease traps in continuous proper working condition. Further, generators are responsible for inspecting, repairing, replacing, or installing apparatus and equipment as necessary to ensure proper operation and function of grease traps and compliance with discharge limitations at all times.

The generator must have grease traps serviced (pumped, cleaned, and inspected) by a City of Fort Worth permitted waste hauler, at a minimum frequency of every 90 days **or more often as necessary**, to ensure proper function. Records of maintenance are required to be maintained on site for five (5) years. (90 day maintenance frequency assumes proper sizing and installation consistent with this guidance).

Enzymes, solvents, and emulsifiers are not permitted as they will only change the form of grease, allowing it to be carried out of the trap with the wastewater and deposited in the collection system. Biological treatment systems must be pre-approved by the Pretreatment Services Division. These systems <u>will not</u> alleviate the necessity for inspection and proper maintenance.

Part II: Other types of Interceptors and sizing requirements

Interceptors are required for oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer or sewage treatment plant. Design, size, and location of pretreatment devices must be submitted by a licensed plumbing contractor or professional engineer for review and approval.

A. Laundries

Commercial Laundries, Laundromats, and dry-cleaners shall be equipped with an interceptor in order to reduce the quantity of lint and silt that enter the collection system. The system must be of adequate size and design to allow for cool-down of wastewater so that separation can be more readily achieved. The interceptor must be installed with a wire basket or similar device, removable for cleaning, that prevents passage into the drainage system of solids ½ inch (12.7 mm) or larger in size, string, rags, buttons or other materials detrimental to the public sewerage system.

Sizing must be in accordance with guidance found in the Uniform Plumbing Code (UPC), Appendix H which uses the following formula:

(TGC) x (CPH) x (RT) x (ST) = Size of Lint Interceptor (gallons)

A. Laundries (continued)

Where:
TGC = Total Gallons per Cycle
CPH = Cycles per hour
RT = Retention time
2.5 for Institutional Laundry
2.0 for Standard Commercial Laundry
1.5 Light Commercial Laundry
ST = Storage Factor, based on hours of operation;
1.0 for 8 hours of operation
1.5 for 12 or more hours

Currently, no effluent sample well is required for small commercial laundries. However, large and/or industrial laundries may be subject to Federal Pretreatment regulations. For more information please contact the Fort Worth Water Department, Pretreatment Services Division, at (817)871-8305.

B. Car Washes

Where automobiles are washed (including detail shops utilizing hand-wash practices), separators shall have a minimum capacity of 1000 gallons for the first bay, with an additional 500 gallons of capacity for every other bay.

Additionally, wash racks must be constructed to eliminate or minimize the impact of run-off from rain/storm events. Minimum requirements are roofed structures with at least two walls and appropriate grading to prevent stormwater infiltration into the sanitary sewer.

An effluent sampling well is required, per specifications listed in Part 1, Section F, Subsection d.

C. Automotive Repair Facilities (Garages and Service Stations)

Where automobiles are serviced, greased, or repaired or where gasoline is dispensed, oil/water separators shall have a minimum capacity of 500 gallons for the first 1000 square feet of area to be drained, plus 250 gallons for each additional 1000 square feet of area to be drained into the separator.

An effluent sampling well is required, per specifications listed in Part 1, Section F, Subsection d.

Note: Parking garages in which servicing, repairing, or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator.

Figure 1, Typical plumbing layout

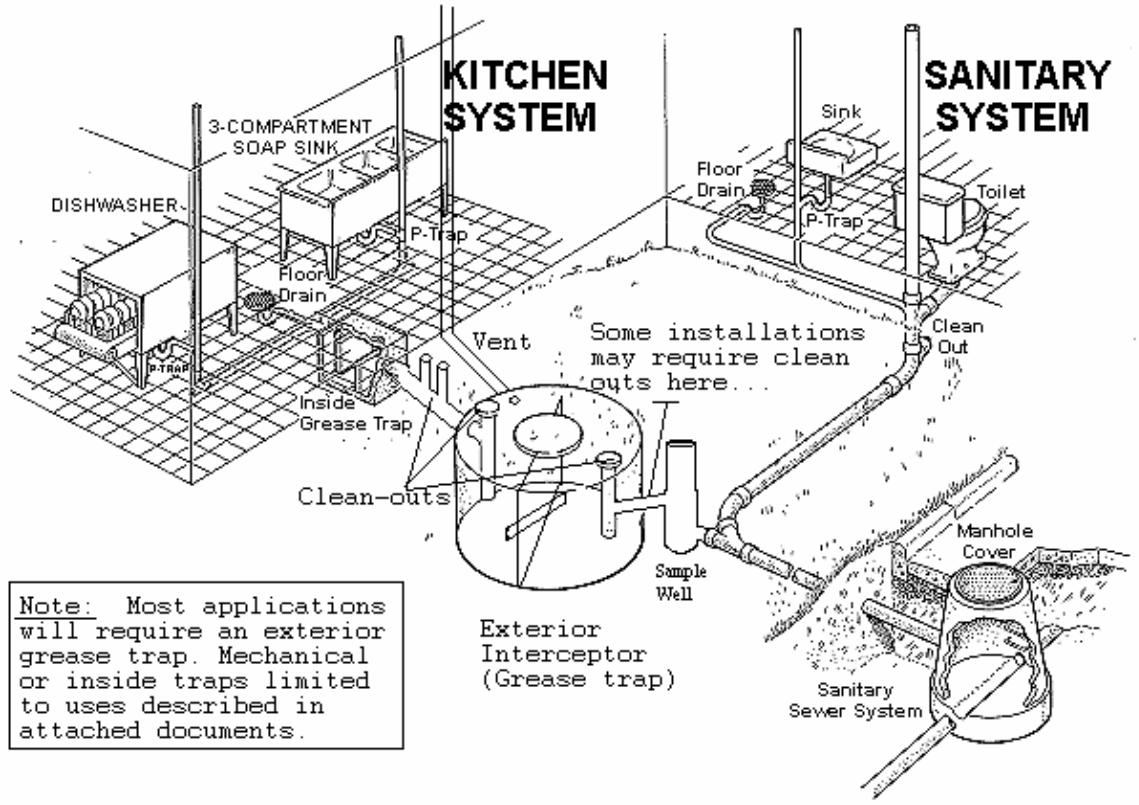


Figure 2, Typical Grease Interceptor Schematic

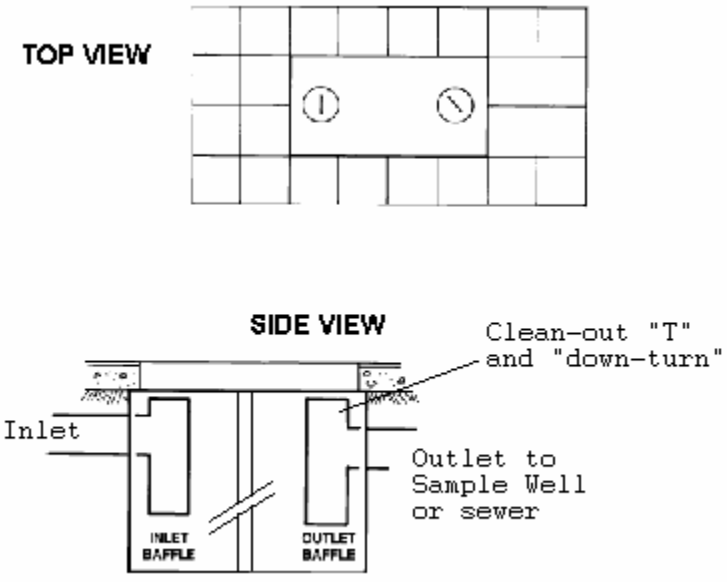


Figure 3, Typical Sampling Well, *Courtesy Park Env. Equipment Co.*

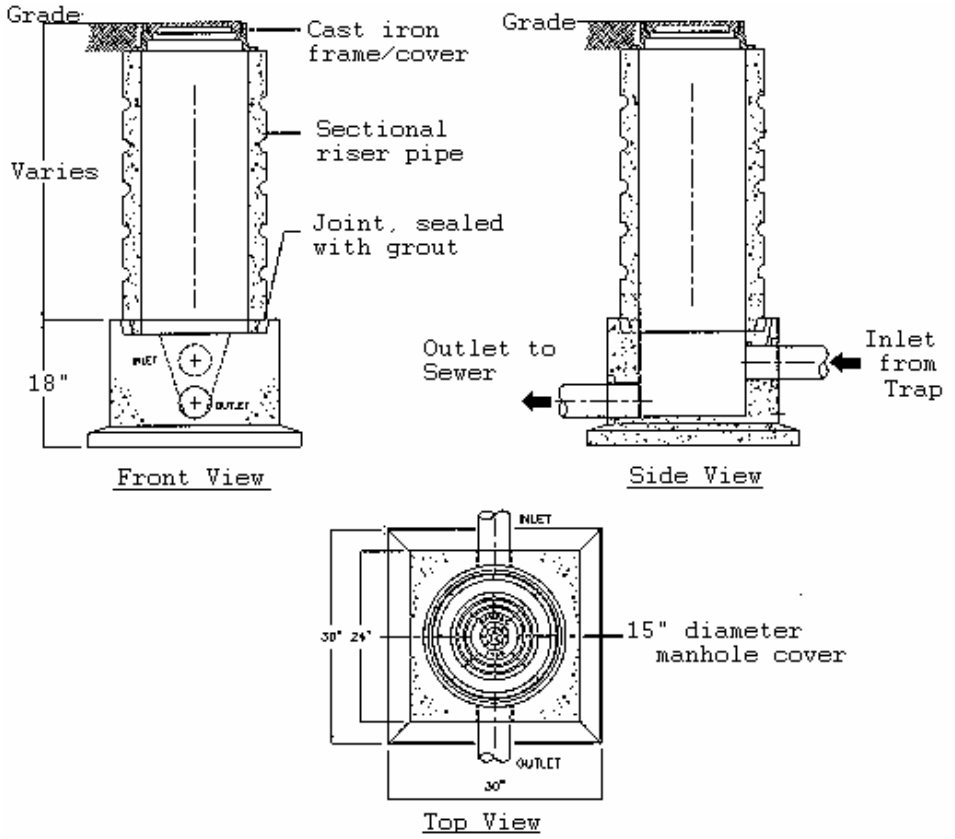
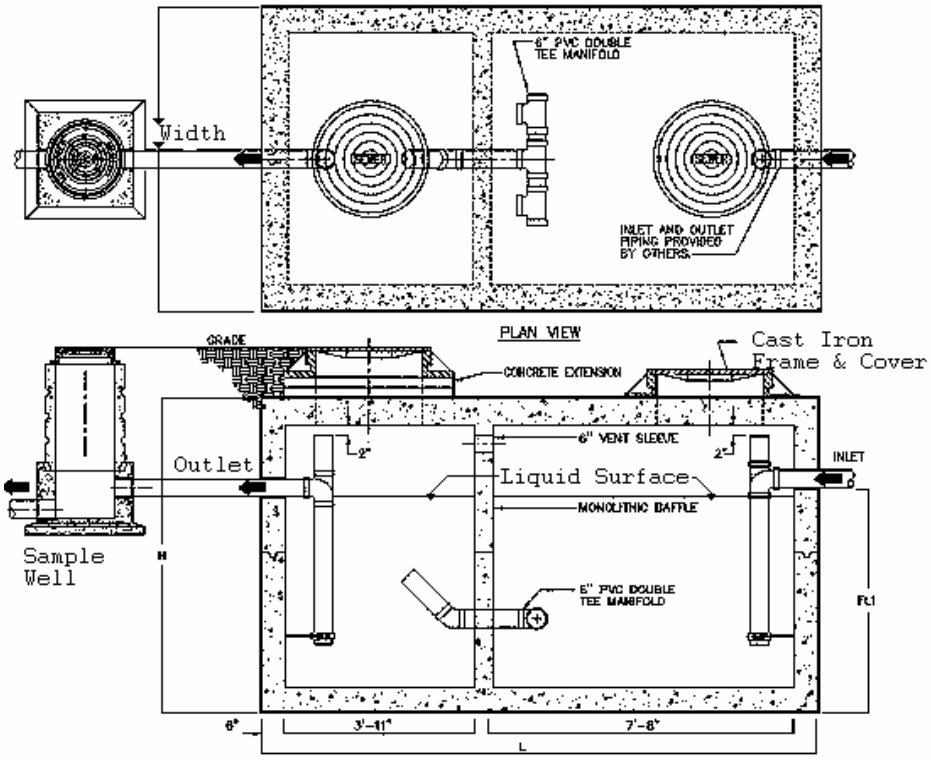


Figure 4: Typical Grease Trap / Sample Well Installation, *Courtesy Park Env. Equipment Co.*



Known Vendors:

Company	Phone	Products
American Industrial Precast (Hughes Supply) Alvarado, Texas	(817)477-5286	Grease Traps, Interceptors, Sample Test Wells
API Industries Tulsa, OK	(918)664-4010 www.apiindustriesinc.org	Alternative Grease Removal Systems
CPI Hewitt, Texas	(800)613-8274	Grease Traps, Interceptors, Sample Test Wells
Josam	(800)-3656726 www.josam.com	Alternative Grease Removal Systems, Mechanical Traps
Old Castle Precast	(817)477-2915	Grease Traps, Interceptors, Sample Test Wells
Park Env. Equipment Co. Houston, Texas	(800)256-8041 www.park-usa.com	Grease Traps, Interceptors, Sample Test Wells Lint Traps, Oil/Water Sep.
PW Eagle (via Montgomery Sales) Formerly Uponor, ETI Plano, Texas	(972)712-6418 cell (972)467-9084 cell (214)668-6685	Molded Wastewater Access Chamber and Clean-out Sampling Chamber
Thermaco (Big Dipper)	(800)633-4204 www.big-dipper.com	Alternative Grease Removal Systems

Gravity Grease Interceptor Sizing Calculation Sheet

Name of Project: _____ Date: _____

Project Address: _____ Contact Number: _____

Contact Name: _____ Contact E-mail: _____

Step 1: Determine the total number of Drainage Fixture Units (DFUs) for the Food Service Facility. If the fixture is known, use "Fixture" column to determine DFU value. If the fixture is not known or listed, use the "Other Contributors" column to determine DFU value based on trap size or flow, as applicable. Total all DFUs to determine the "Total Drainage Fixture Unit Value" for the facility.

Drainage Fixture Unit Values (DFU)							
Qty	**Fixture**	**DFU**	**Total**	**Qty**	**Other Contributors**	**DFU**	**Total**
	Commercial Sink with Food Waste	3			1¼ inch trap & trap arm	1	
	Kitchen Sink	2			1½ inch trap & trap arm	3	
	Bar Sink	2			2 inch trap & trap arm	4	
	Wash Sink	2			3 inch trap & trap arm	6	
	Service or Mop Sink	3			4 inch trap & trap arm	8	
	Food Waste Grinder	3			Flow of 1.0 to 7.5 gpm	1	
	Dishwasher (domestic)	2			Flow of 7.6 to 15 gpm	2	
	Floor Drain	2			Flow of 15.1 to 30 gpm	4	
	Drinking Fountain or Water Cooler	0.5			Flow of 30.1 to 50 gpm	6	

Total Drainage Fixture Unit Value: _____

Drainage Fixture Unit Values (DFUs) are derived from the 2012 Uniform Plumbing Code, Tables 702.1, 702.2(a), and 702.2(b).

Step 2: Select the appropriately sized gravity grease interceptor based on the Total Drainage Fixture Unit Value determined in Step 1. Round up to next size available grease interceptor size (e.g. 45 DFUs would require a 1,250 gallon interceptor).

Gravity Grease Interceptor Sizing	
DFUs	**Interceptor Sizing (gallons)**
8	500
21	750
35	1,000
90	1,250
172	1,500
216	2,000
307	2,500
342	3,000
428	4,000
576	5,000
720	7,500
2112	10,000
2640	15,000

Minimum Required Gravity Grease Interceptor Size: *1,000* *gallons*

Proposed Gravity Grease Interceptor Size: _____ ***gallons***

Gravity Grease Interceptor Sizing derived from the 2012 Uniform Plumbing Code, Table 1014.3.6 and is based on a 30-minute retention time.

Appendix 2
Relative FOG Ordinances
Excerpts

Note: All current City Ordinances can be found at:

http://library.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:tyler_tx

Sec. 19-73. General sewer use requirements

a. Prohibited discharge standards. No industrial user shall introduce or cause to be introduced into the POTW any pollutant or wastewater which causes pass through or interference. These general prohibitions apply to all industrial users of the POTW whether or not they are subject to categorical pretreatment standards or any other federal, state, or local pretreatment standards or requirements. Wastes prohibited by this section shall not be processed or stored in such a manner that they could be discharged to the POTW, except that any floor drains connected to the POTW located in a process or material storage area may be allowed by the Manager provided proper controls are in place. No industrial user may contribute the following substances to the POTW:

7. Any discharge of fats, oils, or greases of animal or vegetable origin in a concentration greater than one hundred (100) mg/l.

Sec. 10-76. Mobile Food Units and Food Truck Parks

c. Operational Requirements

12. Any unauthorized connection to the water system and/or unauthorized dumping of grease into the sanitary sewer system in conjunction with the operation of a mobile food unit in any way is strictly prohibited and is unlawful.

d. Food Truck Parks

3. Violations, Suspension/Revocation, and Enforcement. Any permit issued by the City will become void should the holder's Northeast Texas Public Health District permit be suspended or revoked. The on-site manager for a Food Truck Park or property allowing a transient Mobile Food Unit is required to ensure that no more than the maximum number of Mobile Food Units is located on the site at any given time. Failure to comply with this numerical limitation authorizes the Building Official or designee to suspend and/or revoke the Certificate of Occupancy. The Planning Director is authorized to revoke and withhold Transient Vendor Permits for vendors and/or locations at their discretion if there are documented repeated violations of this section. The Director of Utilities in accordance with Tyler City Code Chapter 19 is authorized to discontinue water service to any property in violation of unauthorized connection to the sewer system and/or unauthorized dumping of grease into the sanitary sewer system. City Code

Enforcement Department personnel, Planning Department personnel, Building Inspections personnel, and Police Department personnel have full and complete authority to enforce all provisions of this section and have authority to issue citations for violations thereof. (Ord. No. 0-2014-113; 12/10/14)

Sec. 17-90. Mobile Food Unit Street Vending Pilot Program

g. Any unauthorized connection to the water system and/or unauthorized dumping of grease into the sanitary sewer system in conjunction with the operation of a mobile food unit in any way is strictly prohibited and is unlawful.

2006 International Plumbing Code Excerpts

SECTION 302
EXCLUSION OF MATERIALS DETRIMENTAL TO THE SEWER SYSTEM

302.1 Detrimental or dangerous materials. Ashes, cinders or rags; flammable, poisonous or explosive liquids or gases; oil, grease or any other insoluble material capable of obstructing, damaging or overloading the building drainage or sewer system, or capable of interfering with the normal operation of the sewage treatment processes, shall not be deposited, by any means, into such systems.

CHAPTER 10

TRAPS, INTERCEPTORS AND SEPARATORS

SECTION 1001
GENERAL

1001.1 Scope. This chapter shall govern the material and installation of traps, interceptors and separators.

SECTION 1002
TRAP REQUIREMENTS

1002.1 Fixture traps. Each plumbing fixture shall be separately trapped by a water-seal trap, except as otherwise permitted by this code. The vertical distance from the fixture outlet to the trap weir shall not exceed 24 inches (610 mm) and the horizontal distance shall not exceed 30 inches (610 mm) measured from the centerline of the fixture outlet to the centerline of the inlet of the trap. The height of a clothes washer standpipe above a trap shall conform to Section 802.4. A fixture shall not be double trapped.

Exceptions:

1. This section shall not apply to fixtures with integral traps.
2. A combination plumbing fixture is permitted to be installed on one trap, provided that one compartment is not more than 6 inches (152 mm) deeper than the other compartment and the waste outlets are not more than 30 inches (762 mm) apart.
3. A grease trap intended to serve as a fixture trap in accordance with the manufacturer's installation instructions shall be permitted to serve as the trap for a single fixture or a combination sink of not more than three compartments where the vertical distance from the fixture outlet to the inlet of the interceptor does not exceed 30 inches (762 mm) and the developed length of the waste pipe from the most upstream fixture outlet to the inlet of the interceptor does not exceed 60 inches (1524 mm).

1002.2 Design of traps. Fixture traps shall be self-scouring. Fixture traps shall not have interior partitions, except where such traps are integral with the fixture or where such traps are constructed of an approved material that is resistant to corrosion and degradation. Slip joints shall be made with an approved elastomeric gasket and shall be installed only on the trap inlet, trap outlet and within the trap seal.

1002.3 Prohibited traps. The following types of traps are prohibited:

1. Traps that depend on moving parts to maintain the seal.
2. Bell traps.
3. Crown-vented traps.
4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an approved material that is resistant to corrosion and degradation.
5. "S" traps.
6. Drum traps.

   Exception: Drum traps used as solids interceptors and drum traps serving chemical waste systems shall not be prohibited.

1002.4 Trap seals. Each fixture trap shall have a liquid seal of not less than 2 inches (51 mm) and not more than 4 inches (102 mm), or deeper for special designs relating to accessible fixtures. Where a trap seal is subject to loss by evaporation, a trap seal primer valve shall be installed. A trap seal primer valve shall conform to ASSE 1018 or ASSE 1044.

1002.5 Size of fixture traps. Fixture trap size shall be sufficient to drain the fixture rapidly and not less than the size indicated in Table 709.1. A trap shall not be larger than the drainage pipe into which the trap discharges.

1002.6 Building traps. Building (house) traps shall be prohibited, except where local conditions necessitate such traps. Building traps shall be provided with a cleanout and a relief vent or fresh air intake on the inlet side of the trap. The size of the relief vent or fresh air intake shall not be less than one-half the diameter of the drain to which the relief vent or air intake connects. Such relief vent or fresh air intake shall be carried above grade and shall be terminated in a screened outlet located outside the building.

1002.7 Trap setting and protection. Traps shall be set level with respect to the trap seal and, where necessary, shall be protected from freezing.

1002.8 Recess for trap connection. A recess provided for connection of the underground trap, such as one serving a bathtub in slab-type construction, shall have sides and a bottom of corrosion-resistant, insect- and verminproof construction.

1002.9 Acid-resisting traps. Where a vitrified clay or other brittleware, acid-resisting trap is installed underground, such trap shall be embedded in concrete extending 6 inches (152 mm) beyond the bottom and sides of the trap.

1002.10 Plumbing in mental health centers. In mental health centers, pipes and traps shall not be exposed.

SECTION 1003
INTERCEPTORS AND SEPARATORS

1003.1 Where required. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer, the private sewage disposal system or the sewage treatment plant or processes.

1003.2 Approval. The size, type and location of each interceptor and of each separator shall be designed and installed in accordance with the manufacturer's instructions and the

requirements of this section based on the anticipated conditions of use. Wastes that do not require treatment or separation shall not be discharged into any interceptor or separator.

1003.3 Grease interceptors. Grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.5.

1003.3.1 Grease interceptors and automatic grease removal devices required. A grease interceptor or automatic grease removal device shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias and clubs. Fixtures and equipment shall include pot sinks, prerinse sinks; soup kettles or similar devices; wok stations; floor drains or sinks into which kettles are drained; automatic hood wash units and dishwashers without prerinse sinks. Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged.

1003.3.2 Food waste grinders. Where food waste grinders connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste grinder. Emulsifiers, chemicals, enzymes and bacteria shall not discharge into the food waste grinder.

1003.3.3 Grease interceptors and automatic grease removal devices not required. A grease interceptor or an automatic grease removal device shall not be required for individual dwelling units or any private living quarters.

1003.3.4 Grease interceptors and automatic grease removal devices. Grease interceptors or automatic grease removal devices shall conform to PDI G101, ASME A112.14.3 or ASME A112.14.4 and shall be installed in accordance with the manufacturer's instructions.

1003.3.4.1 Grease interceptor capacity. Grease interceptors shall have the grease retention capacity indicated in Table 1003.3.4.1 for the flow-through rates indicated.

1003.3.4.2 Rate of flow controls. Grease interceptors shall be equipped with devices to control the rate of water flow so that the water flow does not exceed the rated flow. The flow-control device shall be vented and terminate not less than 6 inches (152 mm) above the flood rim level or be installed in accordance with the manufacturer's instructions.

1003.3.5 Automatic grease removal devices. Where automatic grease removal devices are installed, such devices shall be located downstream of each fixture or multiple fixtures in accordance with the manufacturer's instructions. The automatic grease removal device shall be sized to pretreat the measured or calculated flows for all connected fixtures or equipment. Ready access shall be provided for inspection and maintenance.

1003.4 Oil separators required. At repair garages, car-washing facilities, at factories where oily and flammable liquid wastes are produced and in hydraulic elevator pits, separators shall be installed into which all oil-bearing, grease-bearing or flammable wastes shall be discharged before emptying into the building drainage system or other point of disposal.

Exception: An oil separator is not required in hydraulic elevator pits where an approved alarm system is installed.

TABLE 1003.3.4.1
CAPACITY OF GREASE INTERCEPTORS *

TOTAL FLOW-THROUGH RATING (gpm)	GREASE RETENTION CAPACITY (pounds)
4	8
6	12
7	14
9	18
10	20
12	24
14	28
15	30
18	36
20	40
25	50
35	70
50	100
75	150
100	200

For SI: 1 gallon per minute = 3.785 L/m, 1 pound = 0.454 kg.

a. For total flow-through ratings greater than 100 (gpm), double the flow-through rating to determine the grease retention capacity (pounds).

1003.4.1 Separation of liquids. A mixture of treated or untreated light and heavy liquids with various specific gravities shall be separated in an approved receptacle.

1003.4.2 Oil separator design. Oil separators shall be designed in accordance with Sections 1003.4.2.1 and 1003.4.2.2.

1003.4.2.1 General design requirements. Oil separators shall have a depth of not less than 2 feet (610 mm) below the invert of the discharge drain. The outlet opening of the separator shall have not less than an 18-inch (457 mm) water seal.

1003.4.2.2 Garages and service stations. Where automobiles are serviced, greased, repaired or washed or where gasoline is dispensed, oil separators shall have a minimum capacity of 6 cubic feet (0.168 m^3) for the first 100 square feet (9.3 m^2) of area to be drained, plus 1 cubic foot (0.28 m^3) for each additional 100 square feet (9.3 m^2) of area to be drained into the separator. Parking garages in which servicing, repairing or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator.

1003.5 Sand interceptors in commercial establishments. Sand and similar interceptors for heavy solids shall be designed

and located so as to be provided with ready access for cleaning, and shall have a water seal of not less than 6 inches (152 mm).

1003.6 Laundries. Laundry facilities not installed within an individual dwelling unit or intended for individual family use shall be equipped with an interceptor with a wire basket or similar device, removable for cleaning, that prevents passage into the drainage system of solids 0.5 inch (12.7 mm) or larger in size, string, rags, buttons or other materials detrimental to the public sewage system.

1003.7 Bottling establishments. Bottling plants shall discharge process wastes into an interceptor that will provide for the separation of broken glass or other solids before discharging waste into the drainage system.

1003.8 Slaughterhouses. Slaughtering room and dressing room drains shall be equipped with approved separators. The separator shall prevent the discharge into the drainage system of feathers, entrails and other materials that cause clogging.

1003.9 Venting of interceptors and separators. Interceptors and separators shall be designed so as not to become air bound where tight covers are utilized. Each interceptor or separator shall be vented where subject to a loss of trap seal.

1003.10 Access and maintenance of interceptors and separators. Access shall be provided to each interceptor and separator for service and maintenance. Interceptors and separators shall be maintained by periodic removal of accumulated grease, scum, oil, or other floating substances and solids deposited in the interceptor or separator.

SECTION 1004
MATERIALS, JOINTS AND CONNECTIONS

1004.1 General. The materials and methods utilized for the construction and installation of traps, interceptors and separators shall comply with this chapter and the applicable provisions of Chapters 4 and 7. The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow of the piping.

Appendix 3

Example Best Management Practices

Appendix 3 contains various reference materials that demonstrate public outreach and best management practices implemented by various communities across the country.

Fats, Oil, and Grease (FOG)
Best Management Practices (BMP)
For Food Service Facilities
Information, Pollution Prevention, and Compliance Information (2/07/06)

Fats, oil and grease (FOG) can have negative impacts on wastewater collection and treatment systems. Most wastewater collection system blockages can be traced to FOG. Blockages in the wastewater collection system are serious, causing sewage spills, manhole overflows, or sewage backups in homes and businesses. This manual is written to provide restaurant and fast food business managers and owners with information about FOG pollution prevention techniques focused on their businesses, effective in both reducing maintenance costs for business owners, and preventing oil and grease discharges to the sewer system. The discharge of FOG to the sewer system is illegal. Ensuring that grease trap and grease interceptors are properly installed and most importantly, properly maintained, is the key to avoiding enforcement action against your business. This manual focuses on proper maintenance of grease traps and interceptors, and includes inspection checklists for the business owner/manager as a guide to how and what Sewer District pretreatment inspectors will be checking during an on site inspection.

Manual contents includes:

- **Frequently Asked Questions (FAQs)**
- **Best Management Practices (BMPs)**
- **Prohibitions**
- **How It Works**
- **Maintenance**
- **Compliance Inspection and Installation Checklists**

Knowledgeable business managers can effectively prevent oil and grease buildup and associated problems for both the sewerage agency and the restaurant owner.

Frequently Asked Questions About FOG:

Why is grease a problem?
Do I need a grease interceptor or trap?
Who determines if I need a grease trap or interceptor?
Do I have a grease interceptor or trap?
What is a grease trap and how does it work?
What is a grease interceptor?
How do I clean my grease trap or interceptor?
Can you recommend a grease interceptor maintenance schedule?
What if I don't take care of my grease trap or interceptor?
What are the criteria for inspecting grease traps?

Why is grease a problem?

Large amounts of oil and grease in the wastewater cause trouble in the collection system pipes. It decreases pipe capacity and, therefore, requires that piping systems be cleaned more often raising costs for all ratepayers. Oil and grease also hamper effective treatment at the wastewater treatment plant. Grease may not appear harmful but it congeals and causes nauseous mats on the surface of settling tanks, digesters, and the interior of pipes and other surfaces which may cause a shutdown of wastewater treatment units. Problems caused by wastes from restaurants and other grease-producing establishments are the reason the Sewer District requires the installation of pretreatment equipment, commonly known as grease traps or interceptors.

Do I need a grease interceptor or trap?

Any establishment that introduces wastewater containing grease or oil into the sewage system is required to install an interceptor or in limited cases, an interior grease trap (point source). Interceptors are usually required for high volume fast food or full menu establishments and large commercial establishments such as hotels, hospitals, factories, or school kitchens. In some instances, interior grease traps may be allowed for small volume fast food or take-out restaurants with limited menus, paper plate service, minimum dishwashing, and/or minimal seating capacity. Electro-mechanical, self cleaning type grease traps are the accepted standard. These are generally referred to as Automatic Grease Interceptors (AGI). All specified devices must meet local plumbing code regulations.

Who determines if I need a grease trap or interceptor?

When waste pretreatment is required by the sewer district authority, an approved grease trap or interceptor shall be installed according to the Uniform Plumbing Code. Sewer District Pretreatment staff will assist the establishment in determining if a grease trap or interceptor is required and the appropriate sizing. Sewer District Pretreatment Inspectors make routine periodic inspections to verify that mandatory maintenance BMP's are being implemented. These BMP's are fully enforceable under Sewer District Regulations.

Do I have a grease interceptor or trap?

If you are uncertain whether your establishment has a grease interceptor or trap, you should contact the local Sewer District Pretreatment Office for assistance. You may request a "voluntary compliance" visit by a Sewer District Pretreatment Inspector without risk of an enforcement action. You will be required to comply with any requests for cleaning or other maintenance.

What is a grease trap and how does it work?

A grease trap is typically located under the sink or other kitchen fixture to which it is connected. Baffles in the trap interior slow the wastewater down long enough for the grease to separate and rise to the surface. The grease can then be removed and disposed properly. Passive traps must be cleaned manually, a dirty and smelly job! Electro-mechanical devices require less manual maintenance and are more efficient because accumulated FOG is automatically removed daily.

What is a grease interceptor?

An interceptor is a buried vault with a minimum capacity of between 1000 and 1500 gallons located on the exterior of the building. The vault includes a minimum of two compartments, and flow between each compartment is through a configuration of pipe fittings designed to allow for solids settling and grease retention. The capacity of the interceptor provides adequate detention time so that the wastewater has time to cool, allowing grease to separate and rise to the surface where it accumulates until the interceptor is cleaned. See *How it Works* section in this document for a description of how the various components of a grease interceptor function.

How do I clean my grease trap or interceptor?

Refer to *Grease Trap and Interceptor Maintenance* section in this document

Can you recommend a grease interceptor maintenance schedule?

Based on historical inspection observations and established best management practices, most grease interceptors need to be cleaned every 60 to 90 days. Some establishments will find it necessary to clean their traps *more often.* In some instances, light menu, low volume facilities may be able to clean less frequently. *Only rarely does a facility have to pump less frequently than every six months.* Demonstrating

thru accurate recordkeeping that a less frequent cleaning schedule is fully adequate is the responsibility of you the business owner/manager. It is **not** the Sewer District's responsibility. Securing a service contract with a qualified pumping contractor for routine inspection and cleaning as needed is the best way to avoid enforcement action by the Sewer District. **Waiting until a Sewer District inspector arrives on site and requires you to clean your interceptor is not an acceptable best management practice and will result in an enforcement action.**

What if I don't take care of my grease trap or interceptor?

Failure to implement the required FOG BMP's is a violation of Sewer District Regulations. Additionally, if the establishment fails to adequately maintain its trap or interceptor, it will eventually encounter a maintenance problem with a plugged building sewer line. The blockage can create a sewer backup situation and ultimately a potential health problem in the establishment. If the problem is in the building sewer line, then the establishment has direct responsibility for paying for the maintenance. If the blockage or restriction occurs in the Sewer District sewer main then the establishment will have to pay for the Sewer District's line cleaning maintenance costs. The discharge of grease to a sanitary sewer line in amounts "*which will or may cause obstruction"* is a violation of Sewer District Regulations and will result in enforcement action including cost recovery, fines and/or penalties.

What are the criteria for inspecting grease traps/interceptors ?

All food service establishments are inspected for compliance with BMP's. The following general criteria are used by Pretreatment inspectors during trap or interceptor evaluation and are offered here for information purposes only. <u>The judgment of the on site inspector is final.</u>

Percent of hydraulic capacity	**Condition**	**Inspector Action**
25%	Good	Check records for last date cleaned. Maintain normal schedule.
25 – 50%	Fair to Poor	Check next scheduled date for cleaning. Advise facility to schedule soon. Order revision of cleaning schedule as necessary.
>50%	Non-Compliance	Order immediate cleaning. Order prescribed cleaning schedule. Facility to call for re-inspection.

If the trap is in FAIR to POOR condition, the facility should be advised to schedule a cleaning event in the near future. The cleaning frequency schedule may need to be increased.
If the trap is in Non-Compliance, the facility is issued a compliance order to have it <u>cleaned immediately</u>. The facility is required to call for re-inspection within 7 days to verify that the trap or grease interceptor has been properly cleaned. An enforcement action including fines and/or penalties will be taken against facilities found in Non-Compliance a second time.

Best Management Practices (BMPs)

Required FOG BMPs - Maintain Grease Traps and Interceptors
Recommended FOG BMPs for your Kitchen Operations
Prevent FOG from Entering the Storm Drain System

Required FOG BMPs - Maintain Grease Traps and Interceptors

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Checks
Clean grease interceptors routinely. 60 to 90 cleaning schedules standard unless facility can demonstrate a less frequent schedule is adequate. Securing a service contract with a qualified pumping contractor for routine inspection and cleaning as needed is strongly advised.	Grease interceptors must be cleaned routinely to ensure that grease accumulation does not limit retention time and separation efficiency resulting in pass through of grease to the sewer. **Waiting until a Sewer District inspector arrives on site and requires you to clean your interceptor is not an acceptable BMP and may result in an enforcement action.**	The cleaning frequency is a function of the type of establishment, the size of the interceptor, and the volume of flow discharged by the establishment. Routine cleaning is a required BMP. Avoid Sewer District enforcement action.	50% of the interceptor capacity as a combination of grease (top) and sediment (bottom) requires immediate cleaning.
Clean undersink passive type grease traps weekly unless facility can demonstrate a less frequent schedule is adequate. Accurate cleaning records or log are required to be kept on site.	If passive grease traps are more than 50% full when cleaned weekly, the cleaning frequency needs to be increased.	Weekly cleaning of undersink grease traps serves to limit risk of enforcement action by the Sewer District. If the grease trap is not providing adequate protection, the Sewer District will require installation of additional grease abatement equipment.	Visually inspect the undersink grease trap for flow restrictor. Inspect cleaning records.
Electro-mechanical automatic traps – empty oil buckets daily. Clean solids strainer daily. Never remove flow restrictor. Clean wiper blades weekly.	Solids take up capacitytrict and can cause odors. (see: electro-mechanical trap maintenance section further down in this document).	Adequate maintenance ensures maximum efficiency.	Check that electro-mechanical trap is plugged in and timer is set. Visually inspect the device for flow restrictor. Check solids basket. Inspect cleaning and maintenance records.
Keep a *maintenance log*. A sample copy is available for reprint at the end of this document.	The maintenance log serves as a record of the frequency and volume of cleaning the interceptor. It is required by the pretreatment program to ensure that grease trap/interceptor maintenance is performed on a regular basis.	The maintenance log serves as a record of cleaning frequency and can help the establishment manager optimize cleaning frequency to reduce cost.	Inspect maintenance log. Provide the establishment with a sample maintenance log if it does not have one. Confirm the maintenance log with the grease hauler identified.

Recommended FOG BMPs for your Kitchen Operations

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspector Checks
Witness all grease trap or interceptor cleaning and maintenance activities to ensure the device is properly operating.	The facility manager inspects the cleaning operation and ensures it is consistent with the procedures in the section on *GreaseTrap and Interceptor Maintenance*.	The establishment will ensure it is getting value for the cost of cleaning the grease trap or interceptor. Otherwise the establishment may be paying for cleaning more often than necessary.	Check condition of grease interceptor. Check for submerged inlet and outlet. Check for evidence of grease in outlet pipe. Check for evidence of overflow or blockage.
Train kitchen staff and other employees about how they can help ensure BMPs are implemented.	People are more willing to support an effort if they understand the basis for it.	All of the subsequent benefits of BMPs will have a better chance of being implemented and you can avoid enforcement actions.	Talk to the establishment manager about the training program that he/she has implemented.
Post "No Grease" signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	These reminders will help minimize grease discharge to the traps and interceptors and reduce the cost of cleaning and disposal.	Check appropriate locations of "No Grease" signs.
Use a low temp chemical sanitization type dishwasher. Follow Central Dist. Health regulations for sanitizing.	Temperatures can be set at 120° F or less depending on type of chemical sanitizer used. The Uniform Plumbing Code (UPC) prohibits discharging any type dishwasher to grease traps.	The food service establishment will reduce its costs for the energy – gas or electric – for heating the water.	Check boiler or hot water heater discharge temperature. Measure the temperature of the hot water being discharged from the closest sink.
Use a three-sink dishwashing system, which includes sinks for washing, rinsing, and chemical sanitizing. Follow Central Dist. Health regulations for sanitizing.	In Idaho hot water sanitization type dishwasher requires a minimum temperature of 165° F for stationary rack, single temperature machines. 180°F for all other type systems.	The food service establishment will reduce its costs for the energy - gas or electric - for heating the water for the mechanical dishwasher and for operating the dishwasher.	Measure temperature of the hot water at the three-sink system. Note: The Uniform Plumbing Code (UPC) prohibits the discharge of dishwasher water to grease traps.
Recycle waste cooking oil.	This is a good recycling opportunity. There are several waste oil recyclers serving the Boise area.	Liquid wastes cannot go into dumpsters. Low cost for proper handling of the waste material.	Obtain name of recycler used. Review recycling records. Confirm records with recycler.
"Dry wipe" pots, pans, and dishware prior to dishwashing.	By "dry wiping" and disposing in garbage receptacles, the material will not be sent to the grease traps and interceptors.	This helps keep grease from going to grease traps and interceptors, which will require less frequent cleaning, reducing maintenance costs.	Observe dishwashing practices.
Scrape plates to dry trash. Use screens in your sinks to catch food waste. Dispose of food waste by recycling and/or to dumpster as solid waste.	Some recyclers will take food waste for animal feed. The food waste can be disposed to the dumpster.	Recycling of food wastes will reduce the cost of solid waste disposal. Solid waste disposal of food waste will reduce the frequency and cost of grease trap and interceptor cleaning.	Inspect dumpster corral for cleanliness. Check bottom of grease interceptor for solids accumulation.

Prevent FOG from Entering the Storm Drain System

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Cover outdoor grease and oil storage containers. Secure barrels to an outside wall or post to prevent tipping spills.	Uncovered grease and oil storage containers can collect rainwater. Since grease and oil float, the rainwater can cause an overflow onto the ground. Such an overflow will eventually reach the stormwater system and nearby streams.	The discharge of grease and oil to the storm drain system can impact the Boise River. Discharge of grease and oil to the storm drain will result in a clean up order at your expense and possible legal penalties or fines.	Observe storage area for signs of oil and grease. Inspect containers for covers. Remove covers to ensure containers have not overflowed and do not have excess water.
Locate grease dumpsters and storage containers away from storm drain catch basins. Be aware of oil and grease dripped on the ground while carrying waste to the dumpster, as well as oil and grease that may "ooze" from the dumpster.	The farther away from the catch basin, the more time someone has to clean up spills or drainage prior to entering the storm drain system.	The discharge of grease and oil to the storm drain system can impact the Boise River. Discharge of grease and oil to the storm drain will result in a clean up order at your expense and possible legal penalties or fines.	Observe storage area for signs of oil and grease. Inspect the closest catch basin for signs of accumulated grease and oil.
Use absorbent pads or other material in the storm drain catch basins if grease dumpsters and containers must be located nearby. Use absorbent materials such as "kitty litter" and sweep up for disposal to dumpster.	Absorbent pads and other materials can serve as an effective barrier to grease and oil entering the storm drain system.	The discharge of grease and oil to the storm drain system can impact the Boise River. Discharge of grease and oil to the storm drain will result in a clean up order at your expense and possible legal penalties or fines.	Check the nearest catch basin and drainage paths for signs of grease and oil. Require absorbent pads if the basin is within 20 feet of grease dumpsters or containers, or if there are signs of grease in the catch basin at any distance.
Routinely clean kitchen exhaust system filters inside at sinks connected to grease a trap or outside interceptor.	If grease and oil escape through the kitchen exhaust system, it can accumulate on the roof of the establishment and eventually enter the storm drain system when it rains. The discharge of grease and oil to the storm drain system can impact the Boise River.	Discharge of grease and oil to the storm drain will result in a clean up order at your expense and possible legal penalties or fines. Ensure your hood cleaning contractor properly handles the wastewater – you're responsible!	Inspect roof downspouts for signs of oil and grease. Require a maintenance schedule and records for cleaning exhaust filters.

Prohibitions Relating to Discharge of Fats, Oil, and Grease

Prohibitions	Basis
Discharge fats, oil, and grease in amounts that "can or may" cause an obstruction to the flow in a sewer is prohibited.	Grease can solidify and trap other solid particles to completely plug the wastewater collection system.
Commercial garbage disposers and grinders are prohibited.	These materials in combination or alone can cause blockages and other operations and maintenance problems in the wastewater collection and treatment system.
Do not discharge wastewater with temperatures in excess of 140° F to any grease traps. Add cold water to manual washing triple sink sanitizing water before discharge through a grease trap. Mechanical dishwasher is required to be plumbed to outside grease interceptor. It cannot be plumbed to grease traps.	Temperatures in excess of 140° F will dissolve and flush grease out of the trap. Grease can re-congeal and cause blockages further downstream in the sanitary sewer collection system as the water cools
Direct introduction of enzymes, bio-additives, emulsifying agents or similar chemicals is prohibited.	These agents can cause interference and pass through resulting in grease being discharged to the sewer system.
Do not clean kitchen equipment outdoors.	Grease and dirt will be washed off the equipment and enter the storm drain system.

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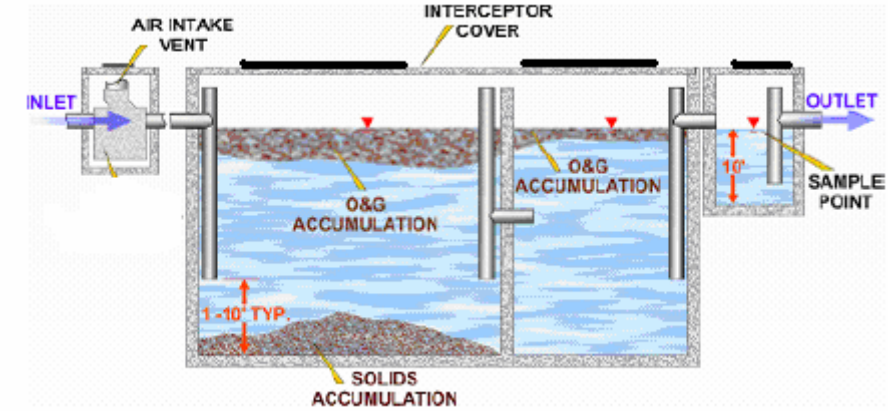
How it Works - Grease Interceptor



A Flow from undersink grease traps or directly from plumbing fixtures enters the grease interceptor. The UPC requires that all flow entering the interceptor must enter through the inlet pipe
B An air intake valve allows air into the open space of the grease interceptor to prevent siphonage and backpressure.
C Oil and grease floats on the water surface and accumulates behind the grease retaining fittings and the wall separating the compartments. The oil and grease will be removed during routine grease interceptor cleaning.
D Solids in the wastewater that do not float will be deposited on the bottom of the grease interceptor and will need to be removed during routine grease interceptor cleaning.
E Grease retaining fittings extend down into the water to within 12 inches of the bottom of the interceptor.
Because grease floats, it generally does not enter the fitting and is not carried into the next compartment. The fittings also extend above the water surface to provide air relief.
F Some interceptors have a sample box so that inspectors or employees of the establishment can periodically take effluent samples. Having a sample box is recommended but not required by the Sewer District.
G Flow exits the interceptor through the outlet pipe and continues on to the sanitary sewer system.

Grease Trap and Interceptor Maintenance

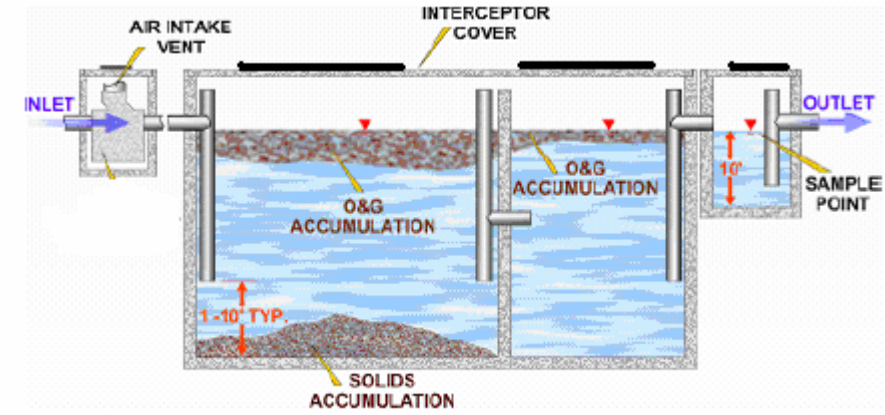
Grease Interceptor Maintenance
Electro-mechanical Trap Maintenance
Passive Trap Maintenance

Grease trap maintenance is usually performed by maintenance staff, or other employees of the establishment. Grease interceptor (GI) maintenance, which is usually performed by permitted haulers, consists of removing the entire volume (liquids and solids) from the GI and properly disposing of the material in accordance with all Federal, State, and/or local laws. When performed properly and at the appropriate frequency, grease interceptor and trap maintenance can greatly reduce the discharge of FOG) into the wastewater collection system. The required maintenance frequency for grease interceptors and traps depends greatly on the amount of FOG a facility generates as well as any best management practices (BMPs) that the establishment implements to reduce the FOG discharged into its sanitary sewer system. In many cases, an establishment that implements BMPs will realize financial benefit through a reduction in their required grease interceptor and trap maintenance frequency. Refer to the *Best Management Practices* tables in this document for examples of BMPs that FOG generating establishments should implement.

WARNING! Do not use hot water, enzymes, bio-additives, emulsifying agents or similar chemical agents in lieu of physical cleaning of grease traps and interceptors.

Grease Interceptor Maintenance

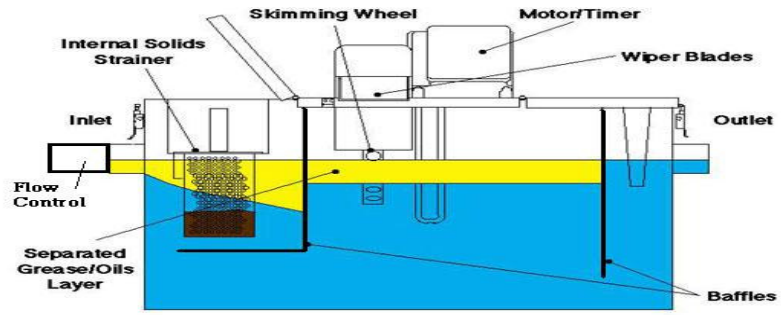
Grease interceptors, due to their size, will usually be cleaned by grease haulers or recyclers. Licensed septic haulers can also pump out grease interceptors and haul the waste to the regulated landfill facility. Septic haulers are required to be permitted by Central District Health. A proper maintenance procedure for a grease interceptor is outlined below:



Step	Action
1.	**Review records of last cleaning. Most units require cleaning every 60 to 90 days.**
2.	**Contact a grease hauler for cleaning. See: *Grease Interceptor Cleaning Contractors*.**
3.	**Record the volume of grease removed on the *maintenance log* or retain contractor receipt.**

Electro-Mechanical Trap Maintenance

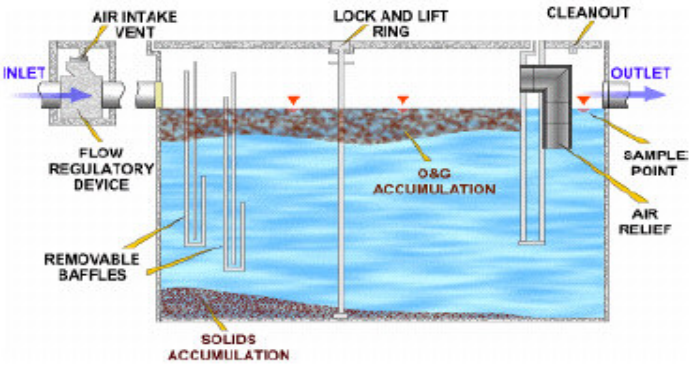
A proper maintenance procedure for these automatic grease removal devices includes:



Step	Action
1.	Empty - solids strainer and the outside grease cup daily
2.	Clean - wiper blades and grease outlet trough weekly
3.	Clean - the entire unit, including sediment at the bottom, a minimum of monthly.
4.	Replace - wiper blades every six months to ensure proper operating condition.
5.	Check - It doesn't work if it's not plugged in and the auto timer set properly.

Passive Grease Trap Maintenance

A proper maintenance procedure for a grease trap is outlined below:



Step	Action
1.	Bail out any water in the trap to facilitate cleaning. The water should be discharged to the sanitary sewer system.
2.	Remove baffles if possible.
3.	Dip the accumulated grease out of the interceptor and deposit in a watertight container. Remove all solids from the bottom of the trap. Scrape the sides, the lid, and the baffles with a putty knife to remove as much of the grease as possible.
4.	Mix grease and solid materials with "kitty litter" and dispose to dumpster.
6.	Replace the baffle and the lid.
7.	Record the date, name of attendant and volume of grease removed on the *maintenance log* (copy at end of this doc).

Inspection Checklist

Item	Item Description	Field Data	Compliance Status[1]
1.	The establishment has implemented a training program to ensure that the BMPs are followed.		
2.	"No Grease" signs are posted in appropriate locations.		
3.	The establishment recycles waste cooking oil and can provide records of this.		
4.	Water temperatures at all sinks, especially the pre-rinse sink before the mechanical dishwasher or the sinks in the three-sink system are less than 140° F. Measure and record temperature		
5.	The establishment "dry wipes" pots, pans, and dishware prior to rinsing and washing.		
6.	Food waste is disposed of by recycling or solid waste removal and is not discharged to the grease traps or interceptors.		
7.	Grease trap(s) is cleaned regularly. Note and record the frequency of cleaning.		
8.	Grease trap cleaning frequency is documented on a maintenance log (copy at end of this document).		
9.	Grease interceptor does not contain greater than 1/3 the depth in grease accumulation. Estimate and record amount of grease in interceptor.		
10.	Grease interceptor does not contain greater than 1/4 the depth in sediment accumulation. Estimate and record amount of sediment in interceptor if possible.		
11.	Grease interceptor is cleaned and maintained regularly. Note and record frequency of cleaning.		
12.	Grease interceptor cleaning and maintenance frequency is documented on a maintenance log .		
13.	Outdoor grease and oil storage containers are covered and do not show signs of overflowing.		
14.	Grease and oil storage containers are protected from discharge to storm drains.		
15.	Absorbent pads or other materials (not free flowing material such as cat litter) are used to clean up any spills or leakages that could reach the storm drain.		
16.	Storm drain catch basins show no signs of grease or oil.		
17.	The roof shows no signs of grease and oil from the exhaust system.		
18.	Exhaust system filters are cleaned regularly, which is documented by cleaning records. Note and record frequency of cleaning.		
	NOTES		

Inspector:_____ Establishment:_____
Signature:_____ Address:_____
Date:_____ Contact Name:_____
Time Inspection Started:_____ Phone:_____
Time Inspection Completed:_____

GREASE TRAP CLEANING LOG

The Sewer District requires suitable and adequate interception units (grease traps, oil interceptors, etc) for all food service type facilities that generate wastewater containing Fat/Oil/Grease (FOG). Such interceptors and traps are required to be inspected, cleaned regularly, and maintained in proper working condition by the user and at the user's expense. Maintenance and cleaning records shall be maintained by the user and made available to Pretreatment Inspectors for review upon request. Call the Sewer District Pretreatment Program at 384-3992 for more information about FOG management.

Date	Trap Condition – Full Half 1/4	Cleaned by: Signature
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	
	Full Half 1/4	

keeping citizens informed

DECEMBER 2011

DENTON CITIZEN CONNECTION

Start the Year Green: "Treecycle"

Last year, the City of Denton collected and composted 1,600 real holiday trees. This year, curbside collection of real trees begins the week after Christmas. Remove all decorations, including lights, tinsel, wire, tree skirts, and stands. Place your real tree at the curb by 7 a.m. at least four feet away from carts and other objects on your scheduled collection day. Artificial, flocked, or decorated trees cannot be composted; call (940) 349-8700 to schedule a trash collection of these trees. If you don't have curbside service, real trees can be taken to the City of Denton Landfill to be composted at no charge. Also remember: Any extra trash outside your cart must be scheduled for a special collection. Extra holiday recycling, such as large cardboard boxes, can be taken to one of our four Recycling Drop-off Centers. Visit **www.dentonrecycles.com** for more information.

A Healthier, Happier You in 2012

Kick start the new year by joining a group exercise program offered by the Parks and Recreation Department. Between multiple locations, the department provides the following programs to help you look and feel your best:

Zumba® – Now offered at all three recreation centers, this popular class uses international music and dance routines to create a fun yet effective workout.

Les Mills BodyPump™, BodyCombat™, and BodyFlow™ – The group exercise membership at North Lakes Rec Center features these internationally taught classes that draw from an array of popular influences: BodyPump™ uses the best weight-room exercises to target major muscle groups; the energetic cardio class, BodyCombat™ is inspired by karate, boxing, and muay thai; and BodyFlow™ mixes yoga, tai chi, and pilates to build flexibility and core strength.

Boot Camp – This athletic-conditioning class is available as an on-going program at North Lakes Rec Center or in registration-based sessions at MLK Jr. Rec Center.

Yoga – Practice yoga to tone muscles, regulate the body's energy level, and eliminate stress. Denia and North Lakes Rec Centers offer a variety of on-going programs, ranging from challenging to gentle and restorative.

Indoor Cycling – North Lakes Rec Center provides traditional and yoga-incorporated classes that burn a massive amount of calories while improving strength.

Step to Tone – Available at MLK Jr. Rec Center, this upper and lower-body workout uses aerobic steps and hand weights.

Energy Audits from Denton Municipal Electric

Make your home more comfortable and efficient by signing up for a free energy audit. Learn more at www.DMEPower.com or by calling (940) 349-7137.

DENTON MUNICIPAL ELECTRIC

CITY OF DENTON

ADA/ADEA/EOE · TDD: (800) 735-2989 · 11/11 · www.cityofdenton.com

Green Your Holidays

In many ways, reducing your environmental impact at the holidays will help you save money. Use these tips to decrease your carbon footprint this winter.

- Set outdoor holiday lights on a timer to save electricity.
- Save fuel; shop in Denton and buy locally produced goods.
- Bring your own shopping bags or consolidate new purchases in bags you already have.
- Give environmentally and economically conscious gifts, such as energy- or water-conservation devices.
- Buy items with little or no packaging and make sure any packing is recyclable.

Cease the Grease to Avoid Costly Repairs

Greasy buildup from apartment and household drains sticks to the insides of sewer pipes and eventually causes expensive blockages. Sewer overflows and back-ups can cause health hazards, damage home and apartment interiors, and threaten the environment. Here are some tips to Cease the Grease!

- Dispose of greasy leftovers in the trash, not the garbage disposal.
- Use paper towels to soak up excess oil and food residue before putting them in your sink or dishwasher.
- Recycle used cooking oil through the Home Chemical Collection program. To schedule a collection, call (940) 349-8700.

Curbside Holiday Collection Schedule

Christmas: There will be no curbside collection on Monday, Dec. 26. Everyone's pick-up day will move one day forward during the week of Dec. 26-30.

New Year's: There will be no curbside collection on Monday, Jan. 2. Everyone's pick-up day will move one day forward during the week of Jan. 2-6.

Happy Holidays from the Solid Waste & Recycling Department! To learn more, visit www.dentonrecycles.com or call (940) 349-8700.

DID YOU KNOW?

Denia Recreation Center houses a 20-foot, indoor rock-climbing wall with five courses, each varying in the degree of difficulty. By scheduling an appointment, climbers can either pay an hourly fee for staff to belay or complete an annual safety course to belay for one another. The center also utilizes the climbing wall in an introductory course for ages 7 to 15 and for birthday party rentals featuring a black light course. For more information, visit www.dentonparks.com or call (940) 349-8285.

Follow DME on Twitter

Get the latest news from Denton Municipal Electric (DME) in 140 characters or less by following us on Twitter @dmepower. You'll get timely updates on major outages, new programs for citizens, and more. Not on Twitter? You can also get the same up-to-the-minute news on DME's website, www.dmepower.com.

follow us twitter

DENTON
CITIZEN CONNECTION
A publication of the City of Denton's Public Communications Office, 11/2011
ADA/EOE/ADEA • TDD (800) 735-2989 • www.cityofdenton.com
Questions about the *Denton Citizen Connection*? Call (940) 349-8172.

CITY OF DENTON

Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System

Best Management Practices (BMPs)	Reason For	Benefits
Witness all grease trap or interceptor cleaning/ maintenance activities to ensure the device is operating properly. Make sure that the pumping company carries a permit from the Southern Nevada Health District.	Grease trap/interceptor pumpers may take shortcuts. If the manager inspects the cleaning operation and ensures it is consistent with the procedures in the section on Grease Trap and Interceptor Maintenance they are more assured of getting full value for their money. Making sure the pumper is permitted ensures they know and will more likely conform to health standards.	The establishment will ensure it is getting value for the cost of cleaning the grease trap or interceptor. Otherwise the establishment may be paying for cleaning more often than necessary.
Clean undersink grease machines every week. If grease machines are more than 50% full when cleaned weekly, the cleaning frequency needs to be increased.	Undersink grease machines have less volume than grease interceptors, so grease accumulates faster. Weekly cleaning of undersink grease machines by the establishment's own maintenance staff will reduce the cost of cleaning the grease interceptor. If there is no grease interceptor, the undersink grease machine is the only means of preventing grease from entering the sanitary sewer system. If the grease trap is not providing adequate protection, the installation of a building department-compliant grease interceptor may be required.	This will extend the length of the cleaning cycle for the grease interceptors that the establishment maintains.
Clean grease interceptors routinely.	Grease interceptors must be cleaned routinely to ensure that grease accumulation does not cause the interceptor to operate poorly. The cleaning frequency is a function of the type of establishment, the size of the interceptor, and the volume of flow discharged by the establishment.	Routine cleaning will prevent plugging of the sewer line between the establishment and the sanitary sewer system. If the line plugs, the sewer line may back up into the establishment, which is a substantial public health hazard, and the business will need to pay to unplug it.
Keep a maintenance log that also includes the name of the company that pumps from the grease traps/interceptors.	The maintenance log serves as a record of the frequency and volume of cleaning the interceptor. It is required by the pretreatment program to ensure that grease trap/interceptor maintenance is performed on a regular basis.	The maintenance log serves as a record of cleaning frequency and can help the establishment manager optimize cleaning frequency to reduce costs.

Prevent Fats, Oil, and Grease From Entering the Storm Drain System

Best Management Practices (BMPs)	Reason For	Benefits
Cover outdoor grease and oil storage containers. Please visit www.lvstormwater.com for more stormwater system protection BMPs.	Uncovered grease and oil storage containers can collect rainwater. Since grease and oil float, the rainwater can cause an overflow onto the ground. Such an overflow will eventually reach the stormwater system and nearby streams.	Storm drains are designed to collect rainwater, so they discharge to Lake Mead without advanced treatment. The discharge of grease and oil to the storm drain system will degrade the water quality of Lake Mead by adding biological and chemical oxygen demand to the stream. Based on the standards set in Clark County Code, Chapter 24.40, discharge of grease and oil to the storm drain might also result in legal penalties or fines.
Locate grease dumpsters and storage containers away from storm drain catch basins.	The farther away from the catch basin, the more time someone has to clean up spills or drainage before they can enter the storm drain system. Be aware of oil and grease dripped on the ground while carrying waste to the dumpster, and oil and grease that may "ooze" from the dumpster.	
Use absorbent pads or other material to clean up spilled material around outdoor equipment, containers or dumpsters. Remove absorbent or other material immediately and dispose of properly.	Absorbent pads or materials can help clean up spilled grease and oil from the ground and prevent it from entering the storm drain system.	
Routinely clean kitchen exhaust system filters. (Also a fire precautionary measure.)	If grease and oil escape through the kitchen exhaust system, it can accumulate on the roof of the establishment and eventually enter the storm drain system when it rains.	

Commercial Kitchen Grease Interceptor Maintenance:

Best Management Practices

Reduce your costs
Prevent grease blockages
Help protect our valley's water supply

Contact our Pretreatment Staff
if you have any questions:
(702) 668-8076

Clark County Water Reclamation DISTRICT
"The Clean Water Team"

www.cleanwaterteam.com

Prevent Blockages in the Sanitary Sewer System

Best Management Practices (BMPs)	Reason For	Benefits
Train kitchen staff and other employees about how they can help ensure BMPs are implemented.	People are more willing to support an effort if they understand the basis for it.	All the subsequent benefits of BMPs will have a better chance of being adopted.
Post "No Grease" signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	These reminders help minimize grease discharge to the traps and interceptors, reducing cleaning and disposal costs.
"Dry wipe" pots, pans, and dishware prior to dishwashing.	The grease and food that remains in pots, pans, and dishware will likely go to the landfill. By "dry wiping" and disposing in garbage receptacles, the material will not be sent to the grease traps and interceptors.	This will reduce the amount of material going to grease traps and interceptors, so that they will require less frequent cleaning, reducing maintenance costs.
Use a chemical sanitizer (such as Iodine in 12-25ppm or 200-400ppm Quaternary Ammonium) and lower water temperatures to less than 140° F but not less than 110°F in all sinks, especially the pre-rinse sink before the mechanical dishwasher. If you do not use a chemical sanitizer, the minimum allowed water temperature is 150°F. The mechanical dishwasher requires a minimum temperature of 150° F, but the Uniform Plumbing Code prohibits discharging the water to grease traps.	The minimum required temperature for dish washing water is 150°F, unless you use a chemical sanitizer. Temperatures above 140° F will dissolve grease, but the grease can re-congeal or solidify in the sanitary sewer collection system as the water cools, leading to blockages and backups, which are a substantial public health concern in restaurants. Using an approved chemical sanitizer allows water temperatures to be reduced to less than 140°F but not less than 110°F, which prevents grease from dissolving temporarily.	The food service establishment will reduce its energy costs because the water is heated to a lower temperature, which requires less energy, while still ensuring that the dishes are clean and sanitized.
Use a 3-compartment sink dishwashing system, which includes compartments for washing, rinsing, and sanitizing in a 50-100ppm bleach solution (or other approved sanitizer, such as Iodine in 12-25ppm or 200-400ppm Quaternary Ammonium). Keep water temperatures between 110°F-140°F. If you do not use a chemical sanitizer, the minimum allowable temperature is 150°F.	Use a 3-compartment sink dishwashing system, which includes compartments for washing, rinsing, and sanitizing in a 50-100ppm bleach solution (or other approved sanitizer, such as Iodine in 12-25ppm or 200-400ppm Quaternary Ammonium). Keep water temperatures between 110°F-140°F. If you do not use a chemical sanitizer, the minimum allowable temperature is 150°F.	The food service establishment will reduce its energy costs for heating the water for the mechanical dishwasher and for operating the dishwasher, while still ensuring that the dishes are clean and sanitized.
Recycle waste cooking oil with a Southern Nevada Health District-permitted liquid waste hauler.	There are waste oil recyclers in Nevada. This is a cost recovery opportunity.	The establishment will be paid for the waste material and will reduce the amount of garbage it must pay to have hauled away.
Dispose of food waste by recycling and/or solid waste removal.	Some recyclers will take food waste for animal feed. In the absence of such recyclers, the food waste can be disposed as solid waste in landfills by solid waste haulers.	Recycling of food wastes will reduce the cost of solid waste disposal. Solid waste disposal of food waste will reduce the frequency and cost of grease trap and interceptor cleaning.

Frequently Asked Questions about Fats, Oils and Grease (FOG)

City of Corpus Christi
WASTEWATER
DEPARTMENT

What is FOG and what is the FOG control program?

FOG stands for Fats, Oils and Grease. Fats, oils and greases are natural by-products of cooking and food preparation.

The FOG control program is being implemented by the Corpus Christi Wastewater Department in order to monitor and reduce the amount of FOG that enters our sanitary wastewater system.

Why shouldn't FOG go down the drain?

FOG sticks to the sides of pipes and eventually clogs them. A clogged pipe causes wastewater to overflow, possibly into your home, yard or street!

How does FOG create a wastewater pipeline blockage?

Fats, oils and grease in a warm liquid form may appear to be harmless since they flow easily down the drain. However, as the liquid cools, the FOG solidifies and separates from other liquids in the wastewater pipes. The layer of FOG sticks to the wastewater pipes and, over time, the flow of wastewater becomes restricted and causes backup or overflow.

What are the sources of FOG? Who produces FOG?

Common sources of FOG include meat fats, dairy products, food scraps, cooking oils, baked goods, sauces, dressings, sandwich spreads, gravies, marinades, dairy products, shortening, lard, butter and margarine. FOG is produced by restaurants, cafeterias, delis, bakeries, residential homeowners - basically anyone who deals with food preparation.

Why is the issue of wastewater overflows important?

Overflowing wastewater releases bacteria, viruses, and other pathogens that may be dangerous to human health. The wastewater may be released into your business or home, or into our waterways, streets, and parks. It is unpleasant and expensive to clean up, and if it occurs on private property, the property owner is responsible for the clean-up.

Is there a law against wastewater overflows?

Yes. The U.S. Environmental Protection Agency (USEPA) Clean Water Act and Texas Commission on Environmental Quality (TCEQ) have regulations prohibiting wastewater discharges.

Can the City of Corpus Christi tell where grease is coming from?

Yes. By checking manholes and using Closed Circuit Television inside wastewater pipes, the City can tell which sanitary service area and which specific building or neighborhood grease is coming from. If grease blockages are occurring frequently in a certain area, the City will make an effort to inform the residents in the area so that they can be more aware of their grease disposal methods and help to fix the problem.

What can I do to keep fats, oils and grease out of the wastewater collection system?

Start by following the recommendations provided and sharing this knowledge with family, friends and neighbors.

What should I do if I experience a wastewater pipe blockage or overflow?

First, call the City of Corpus Christi Customer Call Center at (361) 826-2489. A Wastewater Department crew will come and determine whether the blockage is on your property or City property. If the blockage is occurring on City property, the City staff will fix the problem. If the blockage is on your property, you will have to hire a plumber to fix the problem.

⇨

Frequently Asked Questions about Fats, Oils and Grease (FOG)

City of Corpus Christi
WASTEWATER
DEPARTMENT

What should I do with the oil used in deep fryers?

Wait until the oil in your fryer has cooled and use a funnel to pour the oil into a container. If you are not planning to reuse the oil, seal the container tightly and put it in the trash. Never pour oil down your home's plumbing or into the storm drain. If you have more than few gallons of used oil, do not put the oil into the trash.

Should I use my garbage disposal?

Home garbage disposals do not keep grease out of your wastewater pipes. In fact, garbage disposals contribute to the problem. Food particles stick to the grease that clings to pipe walls and speed the blockage of pipes. Garbage disposals use water and electricity. Reduce or eliminate usage to lower utility bills.

Should I use lots of detergent to wash grease down the drain?

No. Products such as detergents or enzymes that claim to dissolve grease may pass the grease down the pipeline and cause problems elsewhere. In short, you remove the grease from your immediate vicinity only to help create a problem downstream.

Why should homeowners take the responsibility for making the water cleaner?

Our environment affects us all. Being good environmental stewards and preventing wastewater overflows allows us all to live safer and healthier lives.

Why are oils that do not solidify a problem?

Oils entering the system cause problems in different ways; most do solidify and will therefore clog the system. If they do not solidify, they tend to bind to other forms of grease that do solidify. Those oils that move through the system without solidifying may not be fully removed in the treatment process at the wastewater plant, and end up in the bay.

How should I dispose of fats, oils and grease?

Hot fats, oils and grease left in pans from cooking should be put into in a tin can and cooled. They can be stored in the refrigerator or freezer until trash day. Once the container is full it can be discarded in your household garbage or taken to an oil recycling drop off. Smaller amounts of cooled grease, salad dressings and sauces should be scraped into the trash with a spatula. Excess grease can be absorbed with a paper towel and tossed into the garbage.

Isn't throwing containers full of grease into the landfill just creating a different problem?

Over time, fats, oils and grease are very effectively biodegraded under landfill conditions. Very low levels appear in water leached from landfills. Fats, oils and grease cause greater environmental problems when they enter the wastewater system.

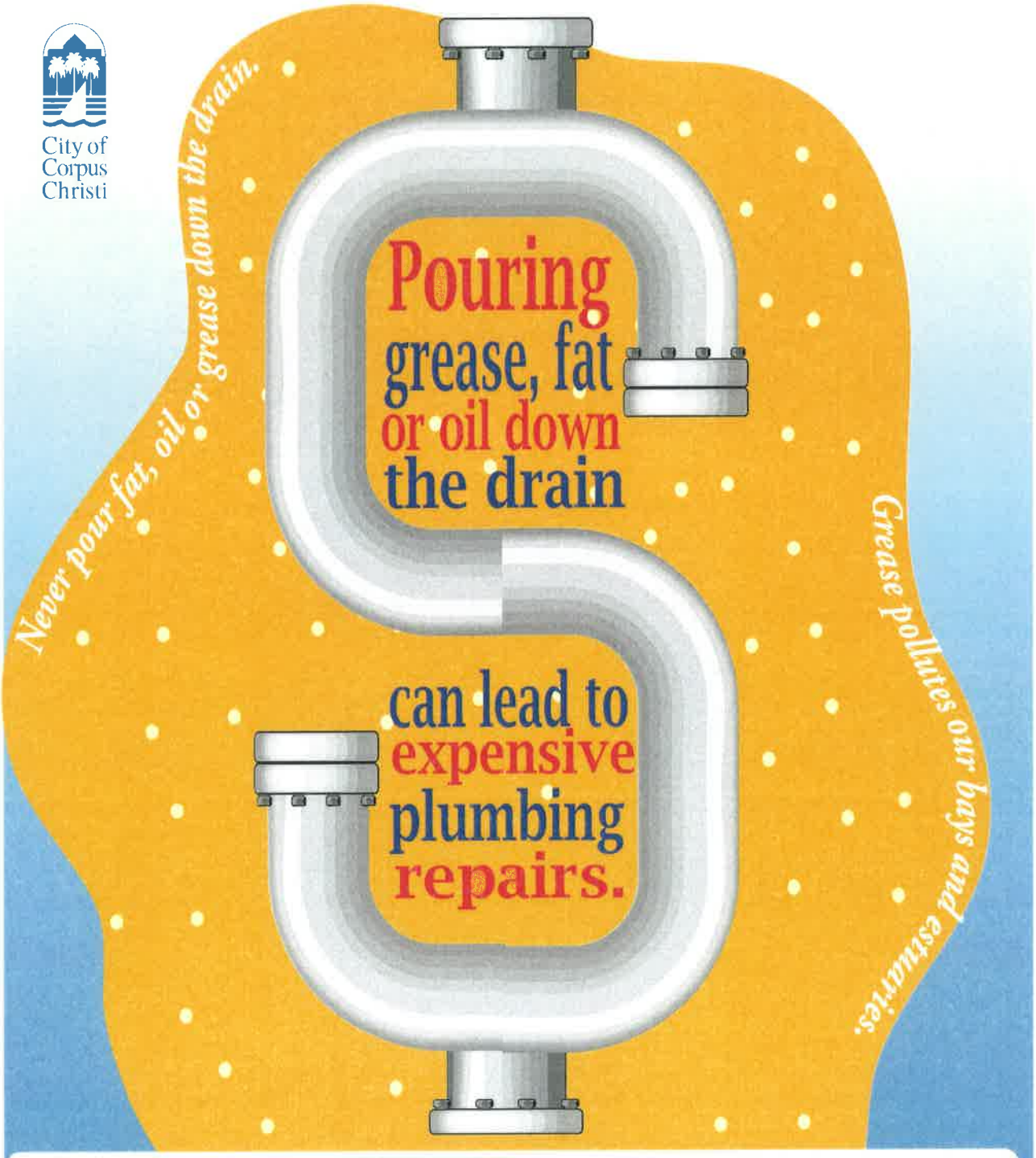
WASTEWATER POLLUTION IS SERIOUS.

PROPERLY DISPOSE OF ALL GREASE IN TRASH CANS.

Report Overflows by calling (361) 826-2489

RANGE KLEEN
Heavy Duty/Foil Lined • Robuste/Double aluminium
FAT TRAPPER BAG
Sac à matières grasses
Bolsa Atrapa Grasa
WASTE WATER
DEPARTMENT
Fat-Free Sewers
Prevent Fats, Oils, and Greases from Damaging Your Home and the Environment
ALCANTARILLAS SIN GRASA
Evite que las grasas y los aceites danen su hogar y el medio ambiente

City of Corpus Christi



Fats, oils and grease [FOG] solidifies and clog the pipes, causing you costly plumbing repairs. Plus,further down the pipeline, it causes wastewater back-ups and street overflows that threaten the environment.

Choose to let animal fat solidify in a lidded container, then dispose of in the trash.

City of Corpus Christi
WASTEWATER
DEPARTMENT

Call 361-826-1800 for more information on Grease Free environment or visit www.cctexas.com/wastewater.

BMPs for Restaurants and Food Facilities

1. Grease control equipment must be properly installed.

2. Routinely clean or pump out grease control equipment. The interceptor should be less than 25% full of grease and settled solids, contains outlet T's and the structure in good operating condition. Seek to hire an experienced vendor to clean and maintain grease control equipment.

3. Maintain a record of on-site grease control equipment pumping/cleaning and maintenance. Records must be presented to City of Corpus Christi Wastewater Department inspectors.

4. Train staff to implement best management practices on fats, oils and grease (FOG).

5. Clean stove hoods and wash hood filters in sinks that flow to grease retention devices.

Did you know?

Grease clogs drains and results in wastewater back up in your business.

Grease promotes rodent infestation.

You can avoid cost maintenance and potential fines.

For more information please contact City of Corpus Christi Customer Call Center at (361) 826-2489 www.cctexas.com/wastewater

August 2012

City of Corpus Christi
Wastewater Department
2726 Holly Road
Corpus Christi, TX 78415

Best Management Practices for Controlling Fats, Oils and Grease at Food Facilities

INSIDE - Best Management Practices

Restaurants are an essential part of our community; however, kitchen operations can seriously impact a wastewater treatment plant, clog wastewater lines, increase the cost of operations, and pollute bay waters. With so much riding on the proper disposal of grease, we remind restaurant owners and employees to support these best management practices.

- Train kitchen staff about grease control.
- Post "No Grease, No Food in Drain" signs.
- "Dry wipe food and oil from all pots, pans and plates before washing. This prevents the build up of grease in wastewater lines.
- Use sink drain strainers to catch food scraps and other solids. Contents of strainer should be emptied to a trash can.

Container Storage:

- Store grease in leak-proof containers with tight fitting lids. DO NOT pour grease down sinks or drains. DO NOT pour grease into storm drain or on the ground. This will clog the drains and pollute creek and bay waters.
- Use only containers in good condition.
- Secure containers to prevent accidental spills, vandalism, or unauthorized use.
- Conduct regular inspections of the storage area and regularly maintain the container and storage area.
- Store containers away from storm drains.

The built up of grease in this wastewater pipeline shows the impact made by the improper disposal of fats, oils, grease, and even food scraps.

Cleaning Floor Mats and Other Grease Equipment:

Wash all floor mats and grills in a mop sink so the wastewater goes to a grease retention device. Never clean this type of equipment in an area where wastewater can flow to the gutter, storm drain or street.

In the Event of a Grease Spill:

- Begin cleanup immediately.
- Do not use detergents or degreasers.
- Block or seal off nearby storm drains
- Contact a clean-up contractor. If the spill is unmanageable, contact the City Wastewater Department at (361) 826-1800.
- Never wash leaks, spills, or used clean-up materials onto nearby streets or into drains.
- Dispose of all used clean-up materials in a garbage can.

Why is Grease Control Equipment Installation Required?

Fats, oils and grease, known as FOG, can cause serious problems in the wastewater system and in a restaurant or food service establishments problems include:

- Raw sewage overflows due to blocked wastewater lines
- Rancid odors
- Potential contact with microorganisms that can cause hepatitis and gastroenteritis.
- Expensive cleanup, repair and replacement of damaged property.

OUTSIDE - Best Management Practices

Where Does Grease Come From?

Fats, Oils, and Grease (FOG) are a natural consequence of cooking and can also occur naturally in many foods. Grease is the common term for animal fats and vegetable oils. It can be found in such items as:

Lard	Butter	Margarine
Cooking Oil	Shortening	Food Scraps
Meat Fats		Baking Goods

FOGs constrict wastewater flow and can lead to overflows - costing us all a lot of money and affecting our wastewaster rates.

Prevention is the key.
Keep your pipes and drains "fat free".

Did you know?

Grease clogs drains and results in wastewater back up in your business.

Grease promotes rodent infestation.

You can avoid costly maintenance and ugly clean up.

August 2012

City of Corpus Christi
Wastewater Department
2726 Holly Road
Corpus Christi, TX 78415

CAN the GREASE!

Understanding the threat fats, oils and grease have on our homes, health and environment

City of Corpus Christi
WASTEWATER
DEPARTMENT

GREASE IS YOUR DRAIN'S WORST ENEMY!

Every year, thousands of dollars are spent to remove clogged wastewater lines caused by fats, oil and grease [FOG] that are allowed to go down the drain. FOGs collect and solidify around the inside wall of the pipelines much like plaque collects in the human arteries.

Only through resident intervention can pipe blockages and wastewater overflows be prevented by keeping grease out of the drain. Wastewater backups can cause damage to homes, produce health hazards and threaten the environment. With so much riding on the proper disposal of grease, we remind homeowners to support proper disposal of grease by putting it in the trash!

Never pour grease in the drain!

Grease is frequently poured down the sink drain because the warm oils are liquid and can be poured. It may not appear to be harmful but as the liquid cools, the grease solidifies and causes buildup inside the pipes, becoming a hardened mass. The build up restricts the flow of wastewater and clogs the pipes.

The Ugly Consequences of Raw Wastewater and FOGs

The built up of raw wastewater in plumbing lines can back up into your home, resulting in an unpleasant and expensive cleanup. Grease can also create problems in the City wastewater pipes, resulting in the overflow of raw sewage into parks, yards and streets. Raw wastewater carries potential disease-causing organisms and contact should be avoided. The increased cost of removing grease results in higher wastewater bills for all customers. The easiest thing to do is to keep grease out of the wastewater system in the first place.

Learn to Dispose of Grease Properly

- Never pour grease down the sink or into the toilet.
- Dry wipe all plates, pots and pans to remove grease and dispose of paper towels in the trash.
- Do not put food scraps down the garbage disposal. These units only shred solid material into smaller pieces and do not prevent grease from going down the drain.
- Use a strainer in the sink to catch food scraps and other solids.
- Allow hot oils, sauces, and gravies to cool before scraping into a plastic bag and then disposing of in your trash can.

Who Should I Call if I See a Wastewater Overflow?

Call us first. We are a 24/7 operation with staff on duty at all times. If you have a backup on your property or see an overflow occurring in the street, please call us.

Our emergency team will determine the source of the problem. If there is a back-up or clogged line in your clean out, we'll fix the problem, free of charge. However, if the back up is on your side of the plumbing, we will let you know so that you may contact a plumber.

Customer Call Center
(361) **826-2489** Weekdays 7am-7pm
(361) 826-1818 After Hours/Weekends

Live Green Corpus Christi

GREASE. YOUR DRAIN'S WORST ENEMY!

GREASE POLLUTES BAYS AND ESTUARIES!

NEVER POUR GREASE DOWN ANY DRAIN!

GREASE CAUSES WASTEWATER BACKUPS!

✓ DO

Put oil and grease in collection containers.

Remove oil and grease from kitchen utensils, pots, pans and food preparation areas with scrapers, paper towels or brooms.

Keep grease out of wash water.

Place food scraps in trash collection containers.

✖ DO NOT

Never pour oil and grease down drains.

Never use hot water to rinse grease off plates, pans or utensils.

Never put food scraps down drains or garbage disposal.

CITY OF CORPUS CHRISTI WASTEWATER DEPARTMENT
For more information on proper grease disposal,
call 361-826-2489 or visit www.cctexas.com/wastewater

City of Corpus Christi
WASTEWATER
DEPARTMENT

LA GRASA. ¡EL PEOR ENEMIGO DE SU DRENAJE!

¡LA GRASA CONTAMINA BAHÍAS Y ESTUARIOS!

¡LA GRASA CAUSA EL BLOQUEO DE LA PLOMERÍA Y DRENAJE PÚBLICO!

¡NUNCA PONGA GRASA EN EL DRANAJE!

✓ Siempre Haga

Ponga el aceite y la grasa en contenedores de colección.

Quite el aceite y la grasa de los utensilios, ollas, sartenes y areas de preparación con raspadores, toallas de papel o escobas.

Mantenga la grasa fuera del agua de el lavador.

Ponga las sobras de comida dentro de contenedores de colección.

✗ ¡Nunca Haga!

Nunca tire aceite y grasa dentro de los drenajes.

Nunca use agua caliente para enjuagar la grasa de las platos, sartenes o utensilios.

Nunca ponga las sobras de comida dentro de los drenajes o triburador de basura.

CITY OF CORPUS CHRISTI WASTEWATER DEPARTMENT
Para mas información, llamé al 361-826-1800 or visite www.cctexas.com/wastewater

City of Corpus Christi
WASTEWATER
DEPARTMENT

RANGE KLEEN
Heavy Duty/Foil Lined • Robuste/Doublé aluminium
FAT TRAPPER BAG
Sac à matières grasses
Muy Resistente/Forrado de aluminio • Bolsa Atrapa Grasas
Dispose of grease properly.
Prevent damage to your sewer pipes.
Permet d'éliminer les matières grasses correctement.
Prévient les dommages aux canalisations d'égouts.
Deseche la grasa adecuadamente.
Evite dañar las cañerias de los desagües.
INSTRUCTIONS:
•Pour hot grease, oil and fat into the bag.
•Construction holds liquids up to 200°F. Heat and moisture-proof. Won't leak or seep
•Close bag and store in out of way area.
•When bag is full, simply fold the top and toss in the garbage.
MODE D'EMPLOI:
•Verser les matières grasses (graisse, huile, etc.) chaudes dans le sac.
•Étanche, humidifuge et calorifuge. Retient les liquides jusqu'à 200 °F
•Fermer le sac et ranger-le dans un endroit à l'écart
•Lorsque le sac est plein, replier le dessus et le jeter aux ordures.
INSTRUCCIONES:
•Vierta la grasa o aceite caliente en la bolsa.
•Hecha para aguantar liquidos calientes de hasta 200°F. A prueba de calor y humedad. No goteará ni se filtrarán los liquidos.
•Cierre la bolsa y guarde en un lugar fuera de paso.
•Cuando la bolsa esté llena, simplemente doblar por la parte superior y tirar a la basura
NOT SUITABLE FOR MICROWAVE OVEN USE.
NE PAS UTILISER DANS UN FOUR À MICRO-ONDES.
NO ES APROPIADO PARA USAR EN EL HORNO MICROONDAS.
For more information about our many other great products for your home, go to:
Pour plus de renseignements sur nos nombreux autres produits pour la maison, visitez :
Para más información sobre otros de nuestros maravillosos productos para su hogar, vaya a:
www.rangekleen.com.
Range Kleen Mfg., Inc.
4240 East Road • Lima, OH 45807 USA
Phone: 419.331.6000 • Fax: 419.331.4538
TRAP the GREASE
www.trapthegrease.com
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D445B
City of Corpus Christi
WASTE WATER
DEPARTMENT
(361) 826-1800

Fats, Oil and Grease
Best Management Practices Manual

Information, Pollution Prevention, and Compliance Information For Food Service Facilities

Pinellas County Utilities
Water Quality Management Division
Grease Management Program

Introduction

This manual is written to provide municipal pretreatment staff, along with food service facility business managers and owners, with information about animal and vegetable-based oil and grease pollution prevention techniques focused on their businesses, effective in both reducing maintenance costs for business owners, and preventing oil and grease discharges to the sewer system.

Many of the nation's food service facilities participate in Fats, Oils, and Grease (FOG) recycling programs. Ensuring that grease traps and grease interceptors are properly installed and most importantly, properly maintained is more difficult. This manual focuses on proper maintenance of grease traps and interceptors.

Is grease a problem?

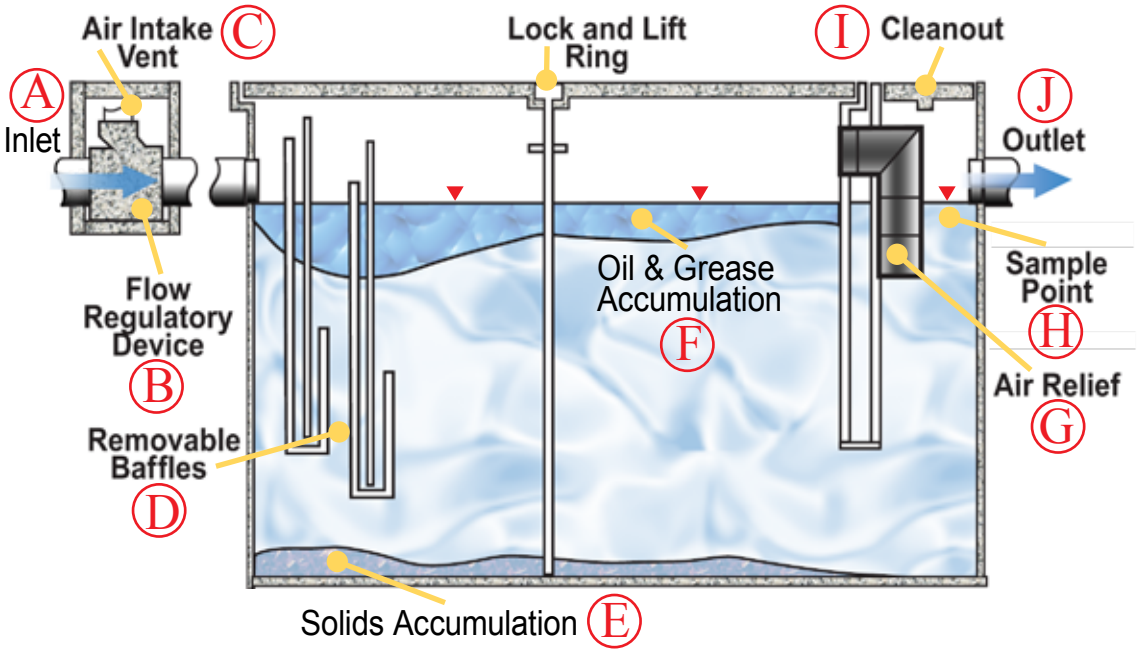
Large amounts of oil and grease in the wastewater system cause problems in the collection system pipes. Grease is a major contributor to sewer system overflows (SSOs). Every year SSOs discharge millions of gallons of waste water to the environment and surrounding bodies of water. Fats, oils and grease decreases pipe capacity and, therefore, requires that piping systems be cleaned more often and/or some piping to be replaced sooner than otherwise expected. Grease leads to stoppages and backups into residential and commercial properties. Oil and grease also hamper effective treatment at the wastewater treatment plant.

Grease in a warm liquid may not appear harmful. But, as the liquid cools, the grease or fat congeals on the surface of settling tanks, digesters, and the interior of pipes and other surfaces which may cause a shutdown of wastewater treatment units.

Problems caused by wastes from restaurants and other grease-producing establishments have served as the basis for ordinances and regulations governing the discharge of grease materials to the sanitary sewer system. This type of waste has forced the requirement of the installation of preliminary treatment facilities, commonly known as grease traps or interceptors.

What is a grease trap?

A trap is a small reservoir built into the wastewater piping a short distance from the grease producing area. Baffles in the reservoir retain the wastewater long enough for the grease to congeal and rise to the surface. The grease can then be removed and disposed of properly.



Grease Trap

A Flow from kitchen fixtures enters the grease trap.

B An approved flow control or restricting device is installed to restrict the flow to the grease trap to the rated capacity of the trap.

C An air intake valve allows air into the open space of the grease trap to prevent siphonage and back-pressure.

D The baffles help to retain grease toward the upstream end of the grease trap since grease floats and will generally not go under the baffle. This helps to prevent grease from leaving the grease trap and moving further downstream where it can cause blockage problems.

E Solids in the wastewater that do not float will be deposited on the bottom of the grease trap and will need to be removed during routine grease trap cleaning.

F Oil and grease floats on the water surface and accumulates behind the baffles. The oil and grease will be removed during routine grease trap cleaning.

G Air relief is provided to maintain proper air circulation within the grease trap.

H Some grease traps have a sample point at the outlet end of the trap to sample the quality of the grease trap effluent.

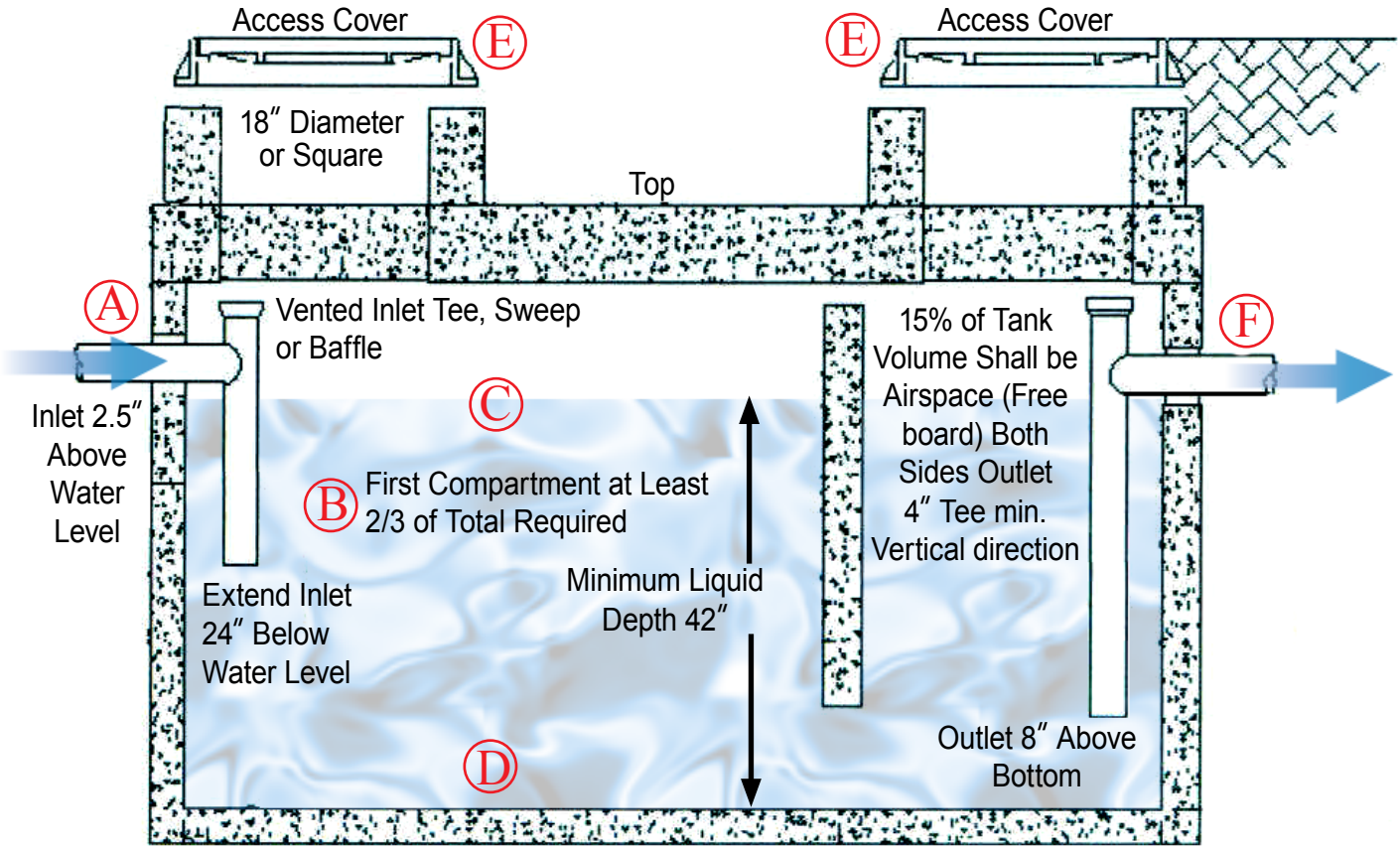
I A cleanout is provided at the outlet or just downstream of the outlet to provide access into the pipe to remove any blockages.

J The water exits the grease trap through the outlet pipe and continues on to the grease interceptor or to the sanitary sewer system.

What is a grease interceptor?

An interceptor is a vault with a minimum capacity of 750 gallons and a maximum capacity of 1250 gallons that is located on the exterior of the building. The capacity of the interceptor provides adequate residence time so that the wastewater has time to cool, allowing any grease time to congeal and rise to the surface where it accumulates until the interceptor is cleaned.

750 Gallons minimum/1250 gallons maximum volume located outside.
Two-way cleanout tee at inlet and outlet required.



Grease Interceptor

A Flow directly from plumbing fixtures enters the grease interceptor.

B The inlet pipe extends 24 inches below the water level and allows air into the open space of the grease interceptor to prevent siphonage and back-pressure.

C Oil and grease floats on the water surface and accumulates behind baffle wall separating the compartments. The oil and grease will be removed during routine grease interceptor cleaning.

D Solids in the wastewater that do not float will be deposited on the bottom of the grease interceptor and will need to be removed during routine grease interceptor cleaning.

E Access covers are required to be gas tight load bearing manholes over the inlet and outlet sides of the interceptor.

F Flow exits the interceptor through the outlet pipe which extends to within 8 inches from the bottom of the interceptor floor and continues on to the sanitary sewer system.

Best Management Practices

Prevent Blockages in the Wastewater Collection System

1. Train kitchen staff and other employees about how they can help ensure Best Management Practices (BMPs) are implemented. People are more willing to support an effort if they understand the basis for it.
2. Post "No Grease" signs above sinks and on the front of dishwashers. Signs serve as a constant reminder for staff working in kitchens.
3. "Dry wipe" pots, pans, and dishware prior to dishwashing. This will reduce the amount of material going to grease traps and interceptors, which will require less frequent cleaning, reducing maintenance costs.
4. Disposing of food wastes into the trash will reduce the frequency and cost of grease trap and interceptor cleaning. The use of garbage disposals or food grinders can cause the increase in grease trap and interceptor cleaning.
5. Use water temperatures less than 140° F in all sinks, especially the pre-rinse sink before the mechanical dishwasher. Temperatures in excess of 140° F will dissolve grease, but the grease can re-congeal or solidify in the sanitary sewer collection system as water cools. The food service establishment will reduce its costs for the energy, gas or electric for heating the water.
6. Do not discharge caustics, acids, solvents, or other emulsifying agents. Caustics, acids, and solvents can have other harmful effects on the wastewater treatment system and can be a hazard to employees working in the wastewater collection system.
7. Do not utilize biological agents for grease remediation without permission from the sanitary agency receiving the waste.

Properly Maintain Grease Traps and Interceptors to Prevent Introduction of Grease into the Wastewater Collection System

1. Clean under sink grease traps weekly. If grease traps are more than 50% full when cleaned weekly, the cleaning frequency needs to be increased. If the grease trap is not providing adequate protection, the local sewer agency may require installation of a grease interceptor.
2. Clean grease interceptors routinely. Grease interceptors must be cleaned routinely to ensure that grease accumulation does not cause the interceptor to operate poorly. Grease interceptors cleaning and maintenance shall include pumping the interceptor until empty every 30 days; however a facility may apply for an alternate pumping frequency by applying for a variance. A variance will range in frequency from 60 days to 180 days. Grease interceptors must be cleaned at least twice each year.
3. Witness all grease trap or interceptor cleaning/maintenance activities to ensure the device is properly operating. This practice will ensure the food service facility is getting value for the cost of cleaning the grease trap or interceptor and not paying for unnecessary cleanings.
4. Keep a maintenance log. The maintenance log serves as a record of the frequency and volume of cleaning the interceptor. It is required by the grease management program to ensure that grease trap/interceptor maintenance is performed on a regular basis.

Maintenance Log:

a. Date of Grease Interceptor Cleaning
b. Method of Disposal
c. Managers Signature

Prevent Grease from Entering Surface Waters through the Storm Drain System

1. Cover outdoor oil and grease storage containers. Since oil and grease float, the rainwater can cause an overflow onto the ground. Such an overflow can adversely impact local water bodies.
2. Locate grease dumpsters and storage containers away from storm drain catch basins.
3. Use absorbent pads or other material to clean up spilled material around outdoor equipment, containers or dumpsters. Do not use free flowing absorbent materials such as “kitty litter” or sawdust that can be discharged to the storm-drain system.

Grease Trap Maintenance

Grease trap maintenance is usually performed by the maintenance staff, or other employees of a food service facility Food services facilities are not required to contract with a grease hauler to maintain grease traps; however, grease trap(s) must be cleaned weekly.

1. Bail out any water in the trap or interceptor to facilitate cleaning. The water should be discharged to the sanitary sewer system.
2. Remove baffles if possible.
3. Dip the accumulated grease and solids out of the interceptor and deposit in a watertight container.
4. Scrape the sides, the lid, and the baffles with a putty knife to remove as much of the grease as possible, and deposit the grease into a watertight container.
5. Contact a hauler or recycler for grease pick-up or discard waste into the trash.
6. Replace the baffle and the lid.
7. Record the cleaning in the maintenance log.

a. Date of Grease Trap Cleaning
b. Grease Hauler/ Method of Disposal
c. Managers Signature

Best Management Practices Manual
Frequently Asked Questions

Can you recommend a maintenance schedule?

All grease interceptors should be cleaned every month, however a food service facility may apply for a variance or alternate cleaning schedule. Grease interceptors must be cleaned at least twice each year. Some establishments will find it necessary to clean their interceptors more often than once per month. If the establishment has to clean it too often, the owner should consider installing a second interceptor in series.

Grease traps are required to be cleaned on a weekly basis. Some establishments may have to clean the grease traps more frequently; however, the food service facility is not required to have a contractor or grease hauler clean the grease trap.

Do I have a grease trap or a grease interceptor?

If the establishment is uncertain whether it has a grease trap or grease interceptor, the owner or manager should contact the grease management program for assistance.

Do I need a grease removal device?

Any food service facility that introduces oil or grease into the sewage system is required to install a grease trap or interceptor. Interceptors are usually required for high volume restaurants and large commercial establishments. Grease traps are required for small volume establishments. Medium volume establishments may be required to install an interceptor depending upon the size of the establishment.

Is the grease trap I have adequate?

The Florida Plumbing Code requires that the maximum capacity for a grease trap is no greater than 50 gallons per minute (gpm). The size of the trap depends upon the number of fixtures connected to it and the volume of those fixtures. If the volume of the fixtures is greater than 50 gallons the food service facility is required to install a minimum of a 750 gallon grease interceptor or a maximum of 1250 gallon grease interceptor. If the facility needs an interceptor greater than 1250 gallons, a second or third interceptor may be required to be installed in series. The size will also depend largely upon the maintenance schedule. If a grease trap or interceptor is not maintained regularly it will not provide the necessary grease removal. The food service facility should work out a specific cleaning schedule that is right for the establishment.

What if I don't install a grease trap?

If the establishment uses oil and grease in food preparation, it will eventually encounter a maintenance problem with a plugged building sewer line. The blockage can create a sewer backup situation and ultimately a potential health problem in the food service facility. If the problem is in the building sewer line, then the establishment has direct responsibility for paying for the maintenance. If the blockage or restriction is in the public sewer main and it can be proven that the establishment is the cause of the blockage, then the establishment may have to pay for the public sewer to be maintained. Blocking a sanitary sewer line is also a violation of the federal Clean Water Act.

Who determines if I need a grease trap or interceptor?

The grease management program will determine if a food service facility is required to have a grease trap or interceptor. An approved grease trap or interceptor shall be installed according to the Florida Plumbing Code. The grease management program prohibits the discharge of fats, oils and grease that can solidify and create blockages in the wastewater collection system or treatment plants.

How can I get in compliance?

The food service facility should contact the grease management program. The establishment will be asked to submit an application and a pre-permit inspection will be set up with the facility. This will enable the grease management program to assist the establishment in developing a cleaning schedule, suggestions of how to upgrade the grease removal device and advise them if there is problem showing up in the wastewater collection system. A grease management permit is required regardless of whether the establishment has an existing grease trap/interceptor or is installing a new one.

If you have any questions regarding the information in this document please contact:

Matthew Wotowiec or Bob Vaughn
Water Quality Management Division
Grease Management Program

1620 Ridge Road, Bldg. A
Largo, Florida 33778
Phone: (727) 582-2379
Fax: (727) 582-2386

Website: www.pinellascounty.org/

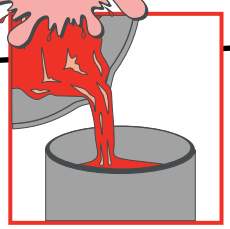
CAN THE GREASE GLOB

Let's Tackle the Grease in This Kitchen!

Why should I help?

- Prevent grease buildups from blocking sewer lines.
- Stop sewer overflows into streets and storm drains.
- Save money spent on costly cleanups of sewage spills.
- Reduce the number of times you have to clean your grease trap (food services).
- Protect the quality of our water.

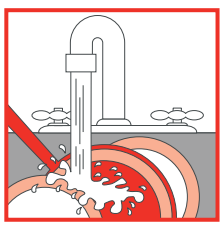
DO!



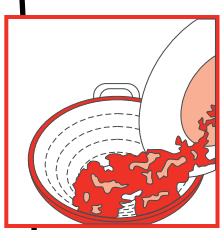
✓ Put oil and grease in covered collection containers.

✓ Scrape food scraps from dishes into trash cans and garbage bags and dispose of properly. Avoid using your garbage disposal.

✓ Remove oil and grease from dishes, pans, fryers, and griddles. Cool first before you skim, scrape, or wipe off excess grease.



✓ Prewash dishes and pans with cold water before putting them in the dishwasher.

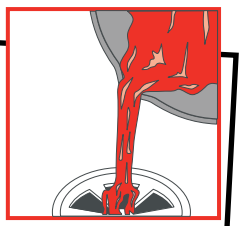


✓ Cover kitchen sink with catch basket and empty into garbage can as needed.

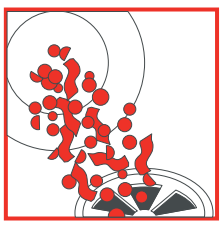
✓ Cover floor drain with fine screen and empty into garbage can as needed.

DON'T!

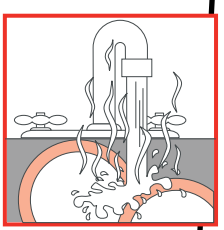
Don't pour oil and grease down the drain. ✗



Don't put food scraps down the drain. ✗



Don't run water over dishes, pans, fryers,and griddles to wash oil and grease down the drain. Don't rinse off oil and grease with hot water. ✗



More Ways to Tackle Grease

- Use environmentally safe cleaning products instead of harsh detergents or cleaners that can damage sewer lines.
- If you generate large amounts of used cooking oil, recycle it. To find a recycler, check the phone book under "recyclers" or "rendering companies."
- If you generate small amounts of used cooking oil, pour it into a container you can throw away. Never pour it down the drain.
- Start a compost pile at your home with scraps that are not meat. Find out about composting in the TCEQ publication, "A Green Guide to Yard Care" (GI-028).

For more information, contact the
Texas Commission on Environmental Quality (TCEQ)
Small Business & Local Goverment Assistance Section
1-800-447-2827
www.tceq.state.tx.us
Or visit the
North Texas Grease Abatement Council at
www.ceasethegreasentx.org

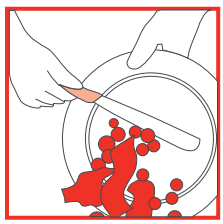
¡Combatamos la grasa en esta cocina!

¿Por qué tengo que ayudar?

- Para evitar acumulaciones de grasa que obstruyan las tuberías de desagüe.
- Para impedir los desbordamientos del sistema de alcantarillado.
- Para ahorrar dinero que se gastaría en limpiezas costosas de derrames dealcantarillas.
- Para reducir la frecuencia con que se tienen que limpiar las trampas de grasa (servicio de alimentos).
- Para proteger la calidad de nuestra agua.

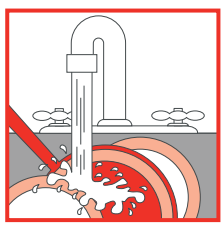
¡HACER!

✓ Poner el aceite y la grasa en recipientes cerrados para su recolección.

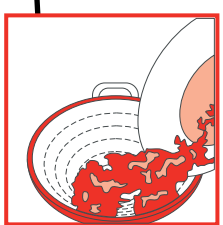


✓ Quitar las sobras de comida de los trastes, tirarlas en bolsas de basura y desecharlas de la forma debida. Evitar usar el triturador de basura.

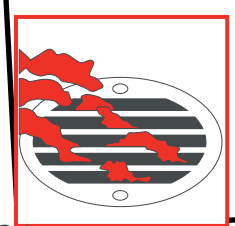
✓ Quitar el aceite y la grasa de los platos, ollas, sartenes y planchas. Primero enfriar antes de tallar o limpiar el exceso de grasa.



✓ Enjuagar los platos y ollas con agua fría antes de ponerlos en el lavaplatos.



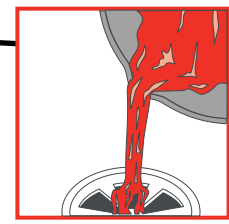
✓ Colocar en el fregadero de la cocina una canasta para depositar los desechos y vaciarla en el bote de basura conforme sea necesario.



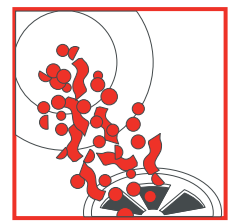
✓ Cubrir el desagüe del piso con un cedazo fino y tirarlo en el bote de basura conforme sea necesario.

¡NO HACER!

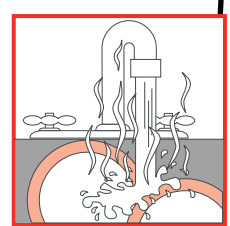
No verter aceite ni grasa por el desagüe. ✗



No tirar sobras de comida por el desagüe. ✗



No enjuagar platos, ollas, sartenes ni planchas con agua para verter el aceite y la grasa en el desagüe. No enjuagar el aceite ni la grasa con agua caliente. ✗



Más maneras de combatir la grasa

- Use productos de limpieza seguros para el medio ambiente en lugar de detergentes o limpiadores abrasivos que puedan dañar las tuberías de desagüe.
- Si genera grandes cantidades de aceite comestible usado, recíclelo. Si desea encontrar un centro de reciclaje, busque en el directorio telefónico bajo “reciclaje”.
- Si genera pequeñas cantidades de aceite comestible usado, luego viértalo en un recipiente que pueda tirar. No lo vierta nunca en el desagüe.
- Empiece a hacer abono en su casa con sobras de alimentos que no contengan carne. Infórmese acerca de la técnica de abonar en la publicación de TCEQ: Una Guía Verde para el Cuidado del Jardín (GI-028).

Para mayor información, comuníquese con la
Comisión de Calidad Ambiental de Texas (TCEQ, por sus siglas en inglés)
Sección de Asistencia a Pequeños Comercios y Gobiernos Locales
1-800-447-2827
www.tceq.state.tx.us
O visita
North Texas Grease Abatement Council:
www.ceasethegreasentx.org

A DallasWater Utilities Liquid Waste Inspector will visit your restaurant to verify your grease trap is serviced at least every 90 days. The inspector will ask to see your manifest (records) from a permitted transporter, conduct an inspection of your kitchen and measure the accumulation of grease and solids in your grease interceptor.

The inspector may increase your pump out frequency if your interceptor is undersized or needs more maintenance. Citations may be issued for not having a grease interceptor, failure to service your grease interceptor at least every 90 days, not having manifests onsite or using a non-permitted transporter.

Understanding Grease Removal And The 25% Rule

Per City Ordinance, all food service establishments must have grease removal devices maintained by a City of Dallas permitted transporter when they reach 25% of the design capacity OR a minimum of quarterly.

Does this example meet the 25% rule?

- Total FOG on top of interceptor = 0.5 ft.
- Total solids at bottomof interceptor = 1.0 ft.
- Total depth of interceptor contents = 4.0 ft.

Percentage of FOG + solids:

$$\frac{(FOG) + solids)}{Depth\ of\ interceptor\ contents} = \frac{(0.5' + 1.0')}{4.0'} =$$

$$= \frac{1.5'}{4.0'} = \mathbf{37.5\%}$$

Answer: No, the 25% Rule has been exceeded and the FSE needs to increase pump out frequency.

Grease Trap must be serviced by a City of Dallas permitted transporter

DWU Liquid Waste Section at 214-670-6749
Or visit www.ceasethegrease.org

09/10:76

dallas water utilities
city of dallas

Grease Interceptors

Grease Interceptors

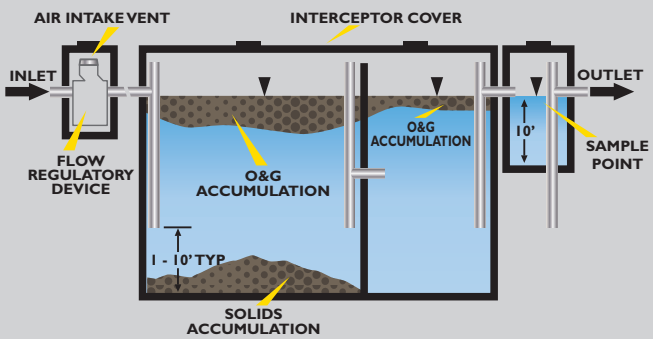
All food service establishments (FSEs) in the City of Dallas must have a grease trap or interceptor. If you hold a food establishment permit from the City, you are an FSE and are required by City Code to have a grease interceptor or trap.

Grease interceptors must be maintained and inspected regularly. The Dallas City Code was amended in October 2007 and requires all grease traps and interceptors be pumped out at least every 90 days or when it is 25% full of solids and grease.

Best Management Practices To Maintain Your Grease Interceptor

- ✓ Scrape food scraps into the trash
- ✓ Avoid using the disposal
- ✓ Use sink strainers
- ✓ Wipe greasy utensils and dishware with paper towels before washing
- ✓ Recycle fry oil and cooking grease
- ✓ Bacterial and enzyme products will not decrease your pump out frequency
- ✓ Keep manifests on site for 3 years!

Grease Interceptor Diagram



A grease interceptor is a device that holds or traps the cooking oil, grease and food solids to be removed by a licensed waste hauler. Grease interceptor sizes are determined by Developmental Services, Plumbing Inspector at 214– 948-4480. Many factors will determine the size of your interceptor, including hours of operations, seating capacity and dishware utilization.

Verify that your liquid waste transporter is permitted by the City of Dallas by visiting www.ceasethegrease.org

FSEs are required by City Code to witness every grease interceptor clean out

Contact DWU Liquid Waste Section at 214-670-6749 Or visit www.ceasethegrease.org

Appendix 4

City FOG Outreach Resources

Fats, Oils and Grease can come from many different types of food and cooking

- Fat and grease residues left over from cooking meats.
- Used cooking oils from frying or sautéing foods.
- Butter and other dairy products.
- Any type of oily, greasy or fatty food scraps.

For More Information, Please Contact:

Tyler Water Utilities

Stormwater Program

903-531-1239

City of Tyler and Smith County

Proper Disposal of Fats, Oils and Grease

Stormwater Program

Preventing Sewer Backups is As Easy As 1, 2, 3...

1. Collect cooking oils in a disposable container and throw into a trash bin.

2. Scrape food scraps from dishes into trash cans or bags. Avoid using your garbage disposal.

3. Remove oil and grease from dishes, pans, fryers and griddles with a paper towel before washing.

Other Things You Can Do...

- Prewash dishes with cold water before putting them in the dishwasher.
- Don't rinse off grease or oils with hot water.
- Cover kitchen sinks with a catch basket or use strainers over sink drains to catch food wastes. Empty the baskets or strainers into the trash can as needed.
- Cover floor drains with fine screen and empty into trash cans as needed.

Never put fats, oils and grease down the drain.

When you put Fats, Oil and Grease down the drain or disposal, it clings to the sides of sewer pipes which can cause the following problems:

- It can plug your sewer service line causing sewage backups in your home. This can be hazardous to your health and can result in expensive cleaning and plumbing repair bills.
- It can plug your septic system or drain lines causing odors and/or sewage backups in your yard.
- It can plug sewer mains causing sewage backups in the street or in storm drains. This can be hazardous to the environment.

Keeping untreated wastewater inside the sewer pipes protects the health of your family and the quality of our drinking water.

Appendix 5

Inspection Forms

STANDARD OPERATING PROCEDURES
GREASE TRAP INSPECTIONS

Grease from restaurants, homes, and industrial sources are the most common cause of blockages within a city's wastewater collection system. Grease is a problem because as it travels through collection system it solidifies and reduces the inside diameter of the pipe and blocks flow, leading to sewer overflows.

Controlling grease discharges will help the City of Tyler prevent these blockages and sewer overflows that attribute to public health and water quality problems. Currently the City of Tyler does not have a formal grease trap ordinance, but does have a grease trap inspection program. This program maintains an inventory of grease traps within the City and aids in identifying problem areas through inspections.

The City of Tyler has approximately 350 restaurants with grease traps. Sizes can range from no grease trap at all to as large as 2000 gallons and will be located under sinks, in the kitchen floor, above ground and in ground at various locations on the property.

It is the responsibility of the Pretreatment Inspector to inspect all grease traps at least once per year. Inspections are documented on the Sanitary Waste-Grease Trap Maintenance Inspection Report (Attachment A) and information from that report is maintained in a master list/database entitled Grease Trap Inspections.xls located on the "W" drive of the City's computer system. Inspections are performed utilizing past records, GPS location, and various tools.

The following steps should be taking with performing a grease trap inspection:

1. Select traps to be inspected from the master list/database mentioned above and exampled below, record any notes helpful to performing the inspection, including grease trap GPS locations. Review past inspections for those selected. Group inspections as close as possible to minimize travel time and fuel usage.

BUSINESS NAME	PUMPER	ADDRESS	# / Y	JAN	FEB	NOV	DEC	COMMENTS
A&W GROCERY	AAA	900 W. BOW	1					
ALBERTSONS	DALWOR	1900 ESE LOOP 323	2	1				Grocery Store
Adalante		1723 Troup Hwy	1					
All Saints School	DALWOR	2695 S.W. Loop 323	1					
ALTERRA STERLING HOUSE	LES	3505 UNIVERSITY BLVD.	2					
Andy's Custards		6106 S Broadway	1	1				

2. Prepare truck for sampling. Organize equipment to be used. (Pick, lid key, hammer, wrenches, etc.)

3. Upon arriving at designated inspection site, locate utilizing notes and GPS if necessary. Use appropriate tool(s) to remove lid.

4. For an outside trap, use white measuring rod to check the thickness of grease or visible floatables in the influent and effluent sides of the trap. If it is a small internal trap, remove lid and measure the thickness of grease or visible floatables when possible.

5. Enter all data collected onto the City of Tyler Sanitary Waste-Grease Trap Maintenance Inspection Report (Attachment A). Go over the inspection with the manager, have manager sign the inspection, and have manager post inspection at facility.

6. Move to the next facility.

7. Add all information collected to the database and file paperwork in appropriate file after returning to office.

Attachment A

SANITARY WASTE – GREASE TRAP
MAINTENANCE INSPECTION REPORT

Date: _____

Time: _____

SECTION I: General Information

Business Name: _____

Address: _____

Manager / Contact: _____ Phone#: _____

SECTION II: Facilities

Grease Trap Location: _____

Grease Trap Capacity: _____ Gallons

SECTION III: Visual Observations

Depth of Floatables: _____

Sample Point Description: Sample Port ☐ Cleanout ☐ Neither ☐

Size / Condition of Sample Point: _____ Good ☐ Bad ☐

General Condition of Trap: Good ☐ Fair ☐ Bad ☐ Poor ☐

SECTION IV: Manifest

Serviced By: _____

Last Date Serviced: _____ Gallons: _____ Disposed: ☐ Processed: ☐

Trap Cleaned: Monthly ☐ Qtrly ☐ Yearly ☐ Other ☐

Comments: _____

_____

_____

_____

_____ _____

Manager / Contact Pretreatment Inspector

Standard CHAIN OF CUSTODY RECORD

WECK WKO#_____

CLIENT NAME:	PROJECT:
ADDRESS:	PHONE: FAX: EMAIL:
PROJECT MANAGER	SAMPLER

SPECIAL HANDLING

- ☐ Same Day Rush 150%
- ☐ 24 Hour Rush 100%
- ☐ 48-72 Hour Rush 75%
- ☐ 4 - 5 Day Rush 30%
- ☐ Rush Extractions 50%
- ☐ 10 - 15 Business Days
- ☐ QA/QC Data Package

Charges will apply for weekends/holidays

Method of Shipment:

ID# (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	Cl_2 Y/N	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT.	ANALYSES REQUESTED	COMMENTS

RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME
RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME
RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME

SAMPLE CONDITION:

Actual Temperature:

Received On Ice	Y / N
Preserved	Y / N
Evidence Seals Present	Y / N
Container Attacked	Y / N
Preserved at Lab	Y / N

SAMPLE TYPE CODE:

AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY
OVER UNSCHEDULED RUSH REQUESTS

SPECIAL REQUIREMENTS / BILLING INFORMATION

COC version 042707

NET HEALTH
NORTHEAST TEXAS PUBLIC HEALTH DISTRICT

ENVIRONMENTAL HEALTH DEPARTMENT
815 N. BROADWAY AVE.* TYLER, TX 75702*PHONE: (903)-535-0037*FAX: (903)592-0413
WEB: WWW.HEALTHYEASTTX.ORG *EMAIL: ENVIRONMENTALHEALTH@NETPHD.ORG

PLAN REVIEW APPLICATION

*****Completion of this form does not constitute authorization to open an establishment.*****
*****All establishments must be inspected and permitted prior to operation.*****
A Plan Review Fee ($175) is required for EACH application.

Purpose of Application:

☐ New Construction ☐ Major Remodel ☐ Change of Service ☐ Change of Ownership ☐ Advance Consultation

Type of Application: (Check all that apply)

☐ Retail Food Establishment (Includes Child/Adult Care Centers)
☐ Commercial Pool/Spa/Public Interactive Water Feature
☐ Other_____

Site Type: (Check all that apply)

☐ Restaurant ☐ Bakery ☐ Donut Shop	☐ School ☐ Child/Adult Care Ctr	☐ Mobile Home Park ☐ H.O.A. ☐ Apt.
☐ Fast Food ☐ C-Store ☐ Grocery Store	☐ Nursing Home ☐ Assisted Living	☐ Camp ☐ Athletic Complex ☐ Resort
☐ Catering Service ☐ Bar ☐ Mall/Shop Ctr	☐ Medical Facility ☐ Church	☐ Hotel ☐ Motel ☐ Golf Club
☐ Commissary ☐ OTHER: _____	☐ OTHER: _____	☐ OTHER :_____

Establishment and Owner Information:

Name of Establishment:
Physical Address:
Name of Owner:
Owner's Mailing Address:
Owner's Telephone: Alternate #:
Owner's Email Address (Required):

Applicant Information: ☐ *Same as above*

Applicant's Name:
Title (owner, manager, contractor, etc.):
Applicant's Telephone: Alternate #:
Applicant Email Address:
Projected Date for Start of Project:
Projected Date for Completion of Project:

Documentation required to be submitted with this application: *(Not applicable for requested advance consultation)*

☐ Floor Plan with All Required Contents of the Floor Plan Guidance Document.
☐ Supplemental Information Specified in the Plan Review Guidance Document.

OFFICE USE ONLY:

Date Received:_____ Pmt. Method:_____ Adv. Consult Fee($50): _____ Amt. Owed: $____ Amend Fee: $20 ___
Master File #: _____ Inv #: ____ Prog. Element: _____ Location Code: _____ District: _____
Menu: ___ CFM: ____ Sales Tax ID: ____ Fed. EIN: ___ 501(c)(3): ____ DL/ID for personal check:___ Ownership Info: _____
Floor Plan Rec'd:___ Rev. Floor Plan Req.:___ Floor Plan Approved:___ Issued to Inspector:___ Date Issued to Inspector:_____

FOOD ESTABLISHMENT PLAN REVIEW GUIDANCE DOCUMENT

To Be Completed by the Owner/Operator and Submitted to the
Northeast Texas Public Health District (NET Health)
Environmental Health Department
with Application

(FAILURE TO DO SO MAY RESULT IN DELAYS)

Date: _____ ☐ New Construction ☐ Major Remodel ☐ Change of Service ☐ Change of Ownership

CONTACT INFORMATION:

Name of Establishment: _____

Operating Address: _____

Applicant's Name and Title: _____

Phone #: _____ Email Address: _____

OPERATING INFORMATION:

Operating Hours: _____ Number of Staff per Shift: _____

Number of Seats: _____ Total Square Feet of Facility: _____

Number of Restrooms: _____ Number of Floors: _____

Projected Number of Plates per Day: _____ Frequency of Food Deliveries: _____

MATERIALS CHECKLIST – *The following documents are REQUIRED to complete your review:*

☐ **Detailed Proposed Menu**
- including seasonal, off-site catering, and banquet menus

☐ **Equipment Schedule (ALL)**
- **ANSI Equipment Schedule i.e.** equipment certified or classified for sanitation by an ANSI accredited certification program such as NSFI, UL-EPH, ETL-Sanitation, BISSC/ETL-Verified
  - PROVIDE manufacturer's name and model numbers
- **NON-ANSI Equipment Schedule** (Subject to NET Health Approval)
  - PROVIDE manufacturer's name, model numbers, *and* manufacturer's specification sheets

☐ **Site Plan**
- showing location of business in building; location of building on site including alleys, streets; and location of any outside equipment (dumpsters, grease interceptor, well, septic system, etc.).

☐ **Floor Plan of Food Establishment**
- showing location of equipment, plumbing, electrical services and mechanical ventilation
- professionally drawn-to scale ¼" renderings on an 11" x 17" paper minimum. (Refer to NET Health District Order 2016-1 page 19)

☐ **Reflected Ceiling Plan/Lighting Plan**
☐ **Finish Schedule**
☐ **Plumbing Plan**

FOOD MANAGER KNOWLEDGE – facility has (*check all that apply*):

☐ A designated person in charge that is a Certified Food Manager and that can demonstrate knowledge of food-borne disease prevention, application of food safety principles, and the requirements of the REGULATIONS will be available during all hours of operation (REQUIRED);
☐ A written Employee Health policy that excludes or restricts food workers who are ill or have infected cuts or lesions;
☐ A written policy for reporting imminent health hazards to a regulatory authority.
☐ A written policy for employees to follow when cleaning up a contamination event.
☐ Consumer advisory on menu to notify customers that specific animal based foods (such as meat, poultry, fish, shellfish or eggs) when served raw or undercooked are not processed to eliminate pathogens.

CATERING SERVICE

☐ Yes (Provide details below including but not limited to transportation, storage and prep space, equipment, and employee training procedures. Use additional blank paper if needed.)
☐ No
☐ In the future (Subject to another plan review)
☐ N/A

_____
_____
_____

DRY STORAGE – *see Dry Storage Space Calculator on NET Health Website (www.healthyeasttx.org)*

Dry Storage space (square feet): _____ Number of Shelving Units: _____

Type of Service Ware: ☐ Disposable ☐ Reusable ☐ Both

Returnable/damaged goods storage – state location if applicable: _____

COLD STORAGE – *see Refrigerated Space Calculator on NET Health Website (www.healthyeasttx.org)* ☐ N/A

Refrigerated Storage space (square feet): _____ Number of Refrigeration Units: _____

Frozen Storage space (square feet): _____ Number of Freezer Units: _____

Will raw meats, poultry and seafood be stored in the same refrigerators and freezers with cooked/ready-to-eat foods:

☐ Yes ☐ No

If yes, how will cross-contamination be prevented? _____

_____

_____

FOOD PREPARATION: ☐ N/A

Will all produce be washed on-site prior to use? ☐ Yes ☐ No ☐ N/A

If no, will pre-washed and packaged produce be used? ☐ Yes ☐ No ☐ N/A

Does the operator have HACCP plans for the following special processes? **(Please submit separate Variance Request Form (VRF))**

Smoking Food - Preservation	☐ Yes	☐ No	☐ N/A
Curing Food	☐ Yes	☐ No	☐ N/A
Food Additives/ Adding Components - Preservation	☐ Yes	☐ No	☐ N/A
Live Molluscan Shellfish Tank	☐ Yes	☐ No	☐ N/A
Custom Processing Animals	☐ Yes	☐ No	☐ N/A
Reduce Oxygen Packaging / Sous Vide	☐ Yes	☐ No	☐ N/A
Sprouting Seeds / Beans	☐ Yes	☐ No	☐ N/A
Other Food/Beverage Special Processes	☐ Yes	☐ No	☐ N/A
Pets on the Patio (No HACCP plan required only VRF)	☐ Yes	☐ No	☐ N/A

Will the facility be serving food primarily to a highly susceptible population (elderly or children)? ☐ Yes ☐ No ☐ N/A

THAWING FROZEN POTENTIALLY HAZARDOUS FOOD: (Use additional blank paper if needed) ☐ N/A

Thawing method(s) – *check all that apply*:

☐ Refrigeration ☐ Running Water ☐ Microwave ☐ Other (*describe*) _____

COOKING / REHEATING: *How will foods be cooked to temperatures that kill pathogens?* (Use additional blank paper if needed) ☐ N/A

List cooking equipment: 1) _____

2) _____

3) _____

Type of ventilation hoods for equipment: ☐ Type I w/suppression ☐ Type II

HOT HOLDING: *How will hot PHF/TCS foods be maintained at 135°F or above during holding prior to service?* ☐ N/A

List type and quantity of hot holding equipment: (Use additional blank paper if needed)

1) _____

2) _____

3) _____

COOLING: *How will hot TCS foods be cooled to 41°F within 6 hours (135°F to 70°F in 2 hours, then 70°F to 41°F in 4 hours)?* ☐ N/A

Check all cooling methods to be used: ☐ shallow pans ☐ ice baths ☐ ice paddle

☐ reduced volumes ☐ blast chiller ☐ refrigerators

☐ walk-in refrigerator ☐ other: _____

List foods that will be subject to cooling: (Use additional blank paper if needed)

1) _____

2) _____

3) _____

4) _____

5) _____

SINKS – *indicate quantity of each* ☐ SEE PLANS ☐ N/A

Location	4-Comp Sinks	3-Comp Sinks	Single Prep Sinks	Double Prep Sinks	Wall-Hung Hand Sinks	Built In Hand Sinks	Mop Sinks	Dump Sinks
Food Preparation Areas								
Ware Washing								
Restrooms								
Mop Room/Garbage Area								
Bars								
Wait Stations								
Drainage Methods *(FS, FD, Direct)*								

DISHWASHING FACILITIES: *How will cooking utensils and service ware be washed? (*REQUIRED)* ☐ N/A

Equipment	Indicate Quantity or N/A	Sanitizing Method
*3-compartment sink w/drainboards	_____	☐ Hot Water ☐ Chemical (☐ Chlorine ☐ Quat)
4-compartment sink w/drainboards	_____	☐ Hot Water ☐ Chemical (☐ Chlorine ☐ Quat)
Dishmachine	_____	☐ Hot Water ☐ Chemical (☐ Chlorine ☐ Quat)

Other *(describe)*: _____

INSECT AND RODENT CONTROL:

Area	Air Curtain	Screening/Weather-Stripping	Self-Closure	Dock Boots	
Food Preparation Areas	☐	☐	☐	☐	☐ N/A
Service Doors	☐	☐	☐	☐	☐ N/A
Receiving Doors/Dock	☐	☐	☐	☐	☐ N/A
Service Windows	☐	☐	☐	☐	☐ N/A

Name of Contracted Pest Control Company: _____

FINISH SCHEDULE: *complete ONLY if not otherwise provided in plans* ☐ SEE PLANS

Indicate which materials (quarry tile, stainless steel, FRP, etc.) will be used in the following areas:

Location	Floor	Wall	Ceiling	Base Covering
Food Preparation Areas				
Storage Areas				
Hand/Dump Sinks				
Ware Washing				
Restrooms				
Mop Room/Garbage				
Outside Dumpster Areas				
Walk-in Refrigerators/Freezers				
Bars				
Patio				

LIGHTING SCHEDULE: *complete ONLY if not otherwise provided in plans* ☐ SEE PLANS

Location	Fixture Type	Shielded		Illumination @ 30 inches (FOOT CANDLES)	
WIC / WIF / Dry Storage		☐ Yes	☐ No	10 FTC	
Mop / Garbage Rooms		☐ Yes	☐ No	10 FTC	
Customer Self-Service Areas		☐ Yes	☐ No	20 FTC	
RIC/RIF/Under-Counter Units (Inside)		☐ Yes	☐ No	20 FTC	
Warewash / Handwash Areas		☐ Yes	☐ No	20 FTC	
Equipment / Utensil Storage		☐ Yes	☐ No	20 FTC	
Restrooms		☐ Yes	☐ No	20 FTC	
Food Prep Areas Including Bars		☐ Yes	☐ No	50 FTC	☐ N/A

WATER SUPPLY/PLUMBING CONNECTIONS:

Water Supply: ☐ Public ☐ Private (attach copy of PWS approval)

Ice: ☐ Made on Premises (provide ice machine specifications) ☐ Purchased Commercially ☐ N/A

Hot Water: Recovery capacity of hot water system _____ KW/BTU _____ #Gallon Capacity

Backflow Protection: RPZ = Reduced Pressure Assembly (Zone); AVB = Atmospheric Vacuum Breaker

Hose Bibs	☐ RPZ	☐ AVB	☐ Other: _____
Carbonator	☐ RPZ	☐ AVB	☐ Other: _____
Chemical Dispensers	☐ RPZ	☐ AVB	☐ Other: _____
Other	☐ RPZ	☐ AVB	☐ Other: _____

SEWAGE DISPOSAL:

Sewage Disposal	☐ Municipal System	☐ Private (attach copy of permit/approval)	
Refrigeration Condensate	☐ Evaporation Pans	☐ Floor Sink	☐ Other: _____
Lift Stations/Sumps	Describe: _____		

GARBAGE, REFUSE, GREASE COLLECTION:

Designated, curbed and plumbed area for garbage can and/or floor mat cleaning? ☐ Yes ☐ No ☐ N/A

Location: _____

Dumpster Provided? ☐ Yes (Name of Company) _____ ☐ No

Grease Collection Method *(check all that apply)*: ☐ N/A

- ☐ Disposed of as Solid Waste Contractor: _____
- ☐ Grease Interceptor / Trap Location: _____ Contractor: _____
- ☐ Grease Machine Location: _____ Contractor: _____
- ☐ Grease Recovery System Location: _____ Contractor: _____

LINENS / LAUNDRY SERVICE:

Location: ☐ Onsite (Provide Details) ☐ Offsite – Professional Service Contract (Provide Name) ☐ Other ☐ N/A

_____

_____

EMPLOYEES' DRESSING AREAS & LOCKERS / OTHER SUITABLE FACILITIES (PERSONAL ITEMS STORAGE):

Describe Location and/or procedures to prevent contamination of food and/or food related/contact items and/or areas:
(Use additional blank sheet if needed)

_____

_____

_____

I hereby certify that the above information is correct, and I fully understand that any deviation from the above without prior permission from the Northeast Texas Public Health District (NET Health) may nullify final approval.

Signature(s): _____

Title(s): _____ Date: _____

****

Approval of these plans and specifications by the Northeast Texas Public Health District (NET Health) does not indicate compliance with any other code, law or regulation that may be required by federal, state, or local agencies. It further does not constitute endorsement or acceptance of the completed establishment (structure, equipment, or operational plans).

A pre-opening inspection of the establishment with equipment installed and operational is required prior to commencing operations.

FOR OFFICE USE ONLY

Reviewed with Operator on (date): _____ ☐ Accepted ☐ Not Accepted

Reviewer: _____ Reason for not accepting: _____

☐ APPROVED – NO CONDITIONS ☐ APPROVED – Conditional on stipulations noted on Preliminary Inspection Checklist / Plan Review Checklist

☐ NOT APPROVED – Reason: _____

Appendix 6
Approved Hauler List

By ordinance, waste haulers must be licensed by TCEQ and permitted by the City of Tyler.

TYLER WATER UTILITIES

APPLICATION FOR SEPTAGE DISPOSAL PERMIT

Business Name: _____ TCEQ Registration No.: _____

Address: _____ Business Phone: _____

City/State: _____ Zip Code: _____

Name of Owner: _____ Residence Phone: _____

Residence Address: _____ City/State/Zip: _____

Social Security No: _____ Emergency Phone: _____

Parent Company Name, Address, and Phone (If Applicable):

_____

_____

Provide the Following Specific Information on the Vehicles to be Permitted:

Veh No.	Year	Make	Model	License Number	Vehicle ID Number (VIN)	Gallons	Type Meter	Inspected & Approved By	Amt Fee

(Attach a Color Photograph of Each Vehicle)
(Attach a Photocopy of Each Driver's Motor Vehicle Operator's License)

I, the undersigned, hereby make application to dispose of Septage in the City of Tyler, Texas, and declare to accept and abide by all pertinent ordinances and regulations in the City of Tyler, Texas. I understand\ that falsification of any information submitted in the application shall be cause for termination of the Septage Disposal Permit and that each permit shall be renewed on an annual basis.

_____
Signature of Owner Date

STATE OF TEXAS
COUNTY OF SMITH

This instrument was acknowledged before me on the _____ day of _____, 20_____, by _____.

_____
Notary Public in and for Smith County, Texas

REVIEWED AND APPROVED BY:

_____
Manager, Water Production & Water Quality

CITY OF TYLER

SEPTAGE DISPOSAL PERMIT
TYL-07-67

In accordance with the City Code, a PERMIT IS HEREBY GRANTED TO:

COMPANY NAME: _____

MAILING ADDRESS: _____

_____

TELEPHONE NUMBER: _____

OWNERS NAME: _____

for disposal of SEPTAGE at the City's disposal facility for a period of one (1) calendar year beginning January 1 and ending December 31 using only the following VEHICLE(S):

VEHICLE NO	YEAR	MAKE	MODEL	CAPACITY	LICENSE NO	VIN

DISPOSAL WILL BE IN ACCORDANCE WITH CHAPTER 30 ARTICLE V OF THE CODE OF ORDINANCES, CITY OF TYLER, TEXAS.

THIS PERMIT IS NON-TRANSFERABLE.

APPROVED THIS _____ DAY OF _____, 2017

_____

Manager, Water Production &
Water Quality

Appendix 7
Sample Notice Of Violation (NOV) Letters

Received By:_____
Print

Signature/Date:_____

Date

Restaurant
Address
Address

Subject: Notice of Violation

Dear Wastewater Customer:

The City of Tyler Code of Ordinances sets forth uniform requirements for users of the wastewater collection system of the City of Tyler. It provides the City the authority to comply with all applicable state and federal laws.

Inspection of the above facility on Date showed that the required Grease Interceptor pumping frequency was not being followed. This facility has a minimum grease pumping frequency of once every ninety (90).

Restaurant is in violation of the Ordinance.

This letter serves as a Notice of Violation (NOV) and requires specific actions. This facility is required to pump out the grease interceptor at the required frequency and keep a minimum of 5 (five) years worth of pumping manifest receipts on site. If compliance is not achieved a Violation Referral Form will be forwarded to the Municipal Court.

In addition, a copy of the applicable Code of Ordinances may be obtained or online at: http://library.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:tyler_tx If you have any questions, or require further information, please call Environmental Health Department at _____. Thank you for your attention to this matter.

[Paginate when complete]
Sincerely,

City of Tyler

SAMPLE

Hand Delivered

Received By (print): _____

Signature/Date: _____

DRAFT
[Date]

[Restaurant Name
Address
Tyler, TX]

Subject: Notice of Violation

Dear Wastewater Customer:

The City of Tyler Code of Ordinances sets forth uniform requirements for users of the wastewater collection system of the City of Tyler. It provides the City the capability to comply with all applicable state and federal laws.

This letter serves as a Notice of Violation (NOV) and requires specific actions. According to the Texas Food Establishment Rules TAC 25, Part 1, Chapter 229.170 (h) Sewage, all waste water and sewage generated from your facility shall be disposed of through an approved sanitary sewage system that is constructed, maintained and operated according to law. In accordance with that requirement as well as the Ordinance, your facility needs to maintain acceptable levels of Fats, Oil and Grease. You must install a grease interceptor as required in the Ordinance. Under the Texas Food Establishment Rules 229.166(j) Food establishment drainage systems, including grease traps, that convey sewage shall be designated and installed as specified under subsection (f)(1)(A) of this section. This requires you to engage a licensed plumber to properly size and install a grease interceptor for your establishment. Your plumber must use the 2006 International Plumbing Code with the City of Tyler revisions for the design, and will submit the plans for review and approval to the Northeast Texas Public Health District and Building Services prior to installation. You have sixty days from the date of this letter to submit the plans, and then another 60 days following approvals to have the grease interceptor installed, inspected and operational. When the interceptor is operating we will then arrange for retesting of your waste discharge for compliance with the Ordinance.

In addition, a copy of the applicable Code of Ordinances may be obtained or online at:

http://library.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:tyler_tx

If you have any questions, or require further information, please call the Environmental Health Department at _____ . Thank you for your attention to this matter.

[Paginate when complete]
Sincerely,

SAMPLE

Appendix 8
Food Service Establishments (FSE) List

This list should be updated annually and include all businesses, schools, churches, etc. that have GRD or sand traps that require periodic inspection and are regulated by ordinance.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
1	ABC Daycare	13931 State Hwy 31 W
2	Abuelo's Mexican Restaurant	8926 S. Broadway Ave.
3	Adalanté Catering & Events	1723 Troup Hwy
4	Amelia's Sweetery(CLOSED)	1694 S Beckham Ave
5	Andy's Frozen Custard	6106 S. Broadway Ave.
6	Angela's Kitchen & Catering	4815 Old Bullard Rd
7	Applebees	5502 S. Broadway Ave.
8	Arby's	4006 S. Broadway Ave.
9	Aspen Creek Grill	1725 W SW Loop 323
10	Athena Greek/American	1593 W.S.W. Loop 323
11	Atria Copeland	6317 Copeland Rd.
12	Atria Willow Park	3500 S. Vine Ave.
13	Azalea Place	812 S. Porter
14	Azalea Trail Assisted Living	5550 Old Jacksonville Hwy.
15	Bahama Buck's	6623 S Broadway Ave
16	Basil Thai Café -CLOSED-	1700 S.S.E. Loop 323
17	BBQ/Pollo Hernandez	501 S. Glenwood Blvd.
18	Bernard's	212 Grande Blvd.
19	Big Mama's Soul Food(CLOSED)	1224 N. Palace Ave.
20	BJ's Brewhouse	210 W.S.W. Loop 323
21	Boba-Loompia	3979 University Blvd suite 200
22	Bodacious BBQ	4030 Frankston Hwy.
23	Bodacious BBQ 1879	1879 Troup Hwy.
24	Braums #259	3635 Troup Hwy.
25	Braums #266	7101 S. Broadway Ave.
26	Breakers Seafood	5106 Old Bullard Rd.
27	Briarcliff Health Ctr.	3404 S. Vine Ave.
28	Broadway Square Mall	4601 S. Broadway Ave.
29	Brookdale Tyler East	3505 University Blvd.
30	Brookshires #09	2020 Roseland Blvd.
31	Brookshires #28	2734 E. 5th St.
32	Brookshires #51	100 Rice Rd.
33	Brookshire's Dairy	200 N. Fuller St.
34	Brookshires Fresh	6991 Old Jacksonville Hwy.
35	Bruno's Pizza 1400	1400 S. Vine Ave.
36	Bruno's Pizza 15770	15605 FM 2493
37	Bud Jones Bayou	500 E Erwin St
38	Buffalo Wild Wings	7916 S. Broadway Ave.
39	Bunny's Truck Stop	638 E NE Loop 323
40	Burger King #1677	4113 S. Broadway Ave.
41	Burger King #17173	2801 W.S.W. Loop 323
42	Burger King #17323	7445 S. Broadway Ave.
43	Burger King #3265	1602 S.S.E. Loop 323
44	Burger King #4280	530 S.S.W. Loop 323
45	Burger King #9046	3904 Troup Hwy.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
46	Caldwell Zoo	2203 W Martin Luther King Jr Blvd
47	Candies Funnel cakes &More	2122 N Grande Ave.
48	Casa Olé	3701 Troup Hwy.
49	Cascades Country Club	2611 Cascades Blvd.
50	Catfish King	1216 S. Beckham Ave.
51	Cefco #78	5011 Troup Hwy.
52	Cenikor Foundation	1827 W Gentry Pkwy
53	Cheddars	6701 S. Broadway Ave.
54	Cheng's China Bistro	3300 Troup Hwy.
55	Chez Bazan Bakery	5930 Old Bullard Rd.
56	Chiang Mai Thai Kitchen	8970 S Broadway Ave
57	Chicken Express 1270	1270 S.S.W. Loop 323
58	Chicken Express 6363	6363 Old Jacksonville Hwy.
59	Chick-Fil-A #1034	3830 Troup Hwy.
60	Chick-Fil-A #871	5716 S. Broadway Ave.
61	Chick-Fil-A 4601	4601 S. Broadway Ave.
62	Chili's Bar & Grill	531 W.S.W. Loop 323
63	China Café Super Buffet	2001 W.S.W. Loop 323
64	China King Buffet	4542 S. Broadway Ave.
65	Chinastar Express & Grill	510 S.S.W. Loop 323 B
66	Chipotle Mexican Grill	4751 S. Broadway Ave.
67	Chuck E. Cheese's Pizza	736 W.S.W. Loop 323
68	Church's Chicken #10759	120 S.S.E. Loop 323
69	Church's Chicken #1533	127 W.S.W. Loop 323
70	Church's Chicken #714	822 W. Gentry Pkwy.
71	Church's Chicken #762	535 S. Beckham Ave.
72	Church's Chicken 105	105 N.N.W. Loop 323
73	Chuy's	5935 S. Broadway Ave.
74	Cici's Pizza 1938	1938 E.S.E. Loop 323
75	Cici's Pizza 211	211 N.N.W. Loop 323
76	Clairmont Nursing Home	900 S. Baxter St.
77	Clear Springs Seafood	6519 S. Broadway Ave.
78	Club Sky	900 W. Bow St.
79	Coachs & Cowboys	8374 Paluxy Dr.
80	Collin Street Bakery	4815 Old Bullard Rd.
81	Colonial Tyler Nursing Home	930 S. Baxter St.
82	Cookies By Design	4742 S. Broadway Ave.
83	Cork Food & Drink	5210 S. Broadway Ave.
84	Corner Bakery Café	3306 Troup Hwy
85	Cosina Mexicana	915 W. Gentry Pkwy.
86	Cotton Patch Café	322 E.S.E. Loop 323
87	Country Donut	215 N. Beckham Ave.
88	Country Meat Market	2308 E. Front St
89	Courtyard Marriott	7424 S. Broadway Ave.
90	Cox's Grill	706 W. Front St.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
91	Coyote Sam's	5424 Old Jacksonville Hwy.
92	Cracker Barrel(OoA)	13821 US Hwy 69 N
93	Currents	6011 S. Broadway Ave.
94	Dairy Queen	12050 Hwy. 64 East
95	Dairy Queen	8850 S. Broadway Ave.
96	Dairy Queen #5	1809 E.S.E. Loop 323
97	Dairy Queen #7	2611 E. 5th St.
98	Dairy Queen 16818	16818 FM 2493
99	Dairy Queen 3250	3250 W. Gentry Pkwy.
100	Dakota's Steak and Chop House	4803 Old Bullard Rd #1
101	Daniel Boone's	1920 E.S.E. Loop 323
102	Denny's	3244 W. Gentry Pkwy.
103	Dickey's BBQ Pit	1501 W.S.W. Loop 323
104	Dino's Pizza (CLOSED)	2002 E.S.E. Loop 323
105	Dominoes Pizza 5371	5371 S. Broadway Ave.
106	Dominoes Pizza 701	701 W. Gentry Pkwy.
107	Don Juan Mexican Restaurant	1313 E. Erwin St.
108	Don Juan On The Square	113 E. Erwin St.
109	Donut Land (CLOSED)	1723 Troup Hwy.
110	Donut Land 2	1246 N.N.W. Loop 323
111	Donut Palace 1400	1400 S. Beckham Ave.
112	Donut Palace 2311	2311 E.S.E. Loop 323
113	Donut Palace 3009	3009 E. 5th St.
114	Donut Palace 6004	6004 S. Broadway Ave.
115	Donut Palace Etc	4007 S. Broadway Ave.
116	DoubleDaves Pizzaworks	5201 S. Broadway Ave.
117	Dunkin/Baskins	1400 W.S.W. Loop 323
118	East Texas Donuts	215 W MLK Blvd. Ste10
119	Einstein Bros Bagels	4500 S. Broadway Ave.
120	El Charro On The Ridge	6899 Oak Hill Blvd.
121	El Mejicano Café	678 W.S.W. Loop 323
122	El Pollo Regio	614 E. Valentine St.
123	ETMC Behavioral Health Center	4101 University Blvd.
124	ETMC Hospital	1000 S. Beckham Ave.
125	FD's Grillhouse	8934 S. Broadway Ave. #494
126	Fish City Grill	7428 Old Jacksonville Hwy
127	Five Guys Burgers & Fries	4510 S. Broadway Ave.
128	Frazolis	7205 S. Broadway Ave.
129	Freebirds Time Square	5105 S. Broadway Ave.
130	Fusion 11	5377 S. Broadway Ave.
131	Fuzzy's Taco Shop	1871 Troup Hwy.
132	Ganache's Pop Shop	5380 Old Bullard Rd.
133	Garden Estates	2055 Grande Blvd.
134	Genghis Grill (CLOSED)	3709 Troup Hwy.
135	Geribaldi	2412 W. Erwin St.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
136	Go Fish	121 WSW Loop 323
137	Golden Corral	5602 S. Broadway Ave.
138	Grandy's	1226 S. Beckham Ave.
139	Great American Cookie Co.	4601 S. Broadway Ave.
140	Great Foundations	307 N. Glenwood
141	Green Acres Baptist Church	1701 Troup Hwy.
142	Greenberg's Smoked Turkeys	221 Mcmurry Dr.
143	Greenbrier Nursing Home	3526 W. Erwin St.
144	Grub Burger Bar	6421 S Broadway Ave #130
145	Gusanos	7278 Old Jacksonville Hwy
146	Hampton Inn	3130 Troup Hwy.
147	Happy's Fish House	2202 E. 5th St.
148	Harvey Hall	2000 W. Front St.
149	Health South Rehab	3131 Troup Hwy.
150	Heights Of Tyler	2650 Elkton Trail
151	Hickory Fare BBQ	1717 W. Gentry Pkwy.
152	Hilton Garden Inn	220 E. Grande Blvd.
153	Holiday Inn Select	5701 S. Broadway Ave.
154	Hollytree Country Club	6700 Hollytree Dr.
155	Holy Guacamole	7212 Old Jacksonville Hwy
156	Honeybunz Café	7490 S Broadway Ave
157	I-HOP #3414	209 S.S.W. Loop 323
158	I-HOP 115	115 W.S.W. Loop 323
159	J El Norteno	2268 Montgomery Gardens
160	Jack In The Box #3803	1703 S. Broadway Ave.
161	Jack In The Box #3804	6915 S. Broadway Ave.
162	Jack In The Box 121	121 N.N.W. Loop 323
163	Jake's On The Square	111 E. Erwin St.
164	Jalapeno Tree	420 W.S.W. Loop 323
165	Jalisco/Pollo Regio	614 W Valentine St
166	Jalpita	794 E.N.E. Loop 323
167	Janie's Cakes	308 E. Front St.
168	Jason's Deli	4913 S. Broadway Ave.
169	Jersey Mike's Subs 1690	1690 S. Beckham Ave.
170	Jersey Mike's Subs 4754	4754 S. Broadway Ave.
171	Jimmy John's	1847 Troup Hwy.
172	Jucy's Hamburgers 2330	2330 E. 5th St.
173	Jucy's Hamburgers 6421	6421 Old Jacksonville Hwy.
174	Juls	7212 Old Jacksonville Hwy
175	Jumbo's Seafood	3278 Mineola Hwy.
176	Kabayan Asian Food Market	6004 S Broadway Ave
177	Kabob Lounge	2252 Shiloh Rd
178	Kawa's Hibachi Grill & Lounge	1024 W SW Loop 323
179	Ken's Pizza	4500 S. Broadway Ave.
180	KFC 3630	3630 Troup Hwy.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
181	KFC 6901	6901 S. Broadway Ave.
182	Kidd Jones	5015 S. Broadway Ave.
183	la Madeleine French Bakery &	419 W SW Loop 323
184	La Michoacana Meat Market	310 N. Beckham Ave.
185	La Plazita	11980 TX-64
186	Lago Del Piño	14706 C.R. 1134
187	Liang's Chinese	1828 E.S.E. Loop 323
188	Lindo Mexico #2	2410 E. Gentry Pkwy.
189	Little Caesars	512 E. Front St.
190	Little Caesar's Pizza	510 S.S.W. Loop 323
191	Little Caesar's Pizza 1735	1735 Troup Hwy.
192	Little Ceasars	2251 Three Lakes Pkwy #101
193	Little Italy	3320 S. Broadway Ave.
194	Loggins Restaurant	137 S. Glenwood Blvd.
195	Lolas Handcrafted Sandwiches	16700 FM2493
196	Long John Silver's	2611 Gentry Pkwy.
197	Long John Silver's #31074	205 W.S.W. Loop 323
198	Los Gueros Taqueria	929 S. Vine Ave.
199	Luby's Cafeteria	1815 Roseland Blvd.
200	Mama's	2105 E. 5th St.
201	Marble Slab	4915 S. Broadway Ave.
202	Margarita's	1327 E. Front St.
203	Mario's Italian	7916 S. Broadway Ave.
204	Mazzio's Pizza 2605	2605 E. 5th St.
205	Mazzio's Pizza 405	405 W. Front St
206	McAllister's Deli	4325 Old Bullard Rd.
207	McDonalds	180 S SE Loop 323
208	Mcdonald's #28046	2705 E. 5th St.
209	McDonalds #33272	12881 FM 14
210	Mcdonald's #33526	3820 TX-64
211	Mcdonald's #6031	3109 W. Gentry Pkwy.
212	Mcdonald's #7818	1300 S. Beckham Ave.
213	Mcdonald's #7823	2034 E.S.E. Loop 323
214	Mcdonald's #7834	5802 S. Broadway Ave.
215	Mcdonald's 4014	4014 S. Broadway Ave.
216	McDonanlds	5894 Old Jacksonville Hwy
217	Meadow Lake	16044 CR 165
218	Meals On Wheels	3001 Robertson Rd.
219	Melrose Nursing Center	1501 W. 29th St.
220	Menchie's Frozen Yogurt	8926 S Broadway Ave
221	Mercado's Café	2214 W.S.W. Loop 323
222	Mi Mexico Lindo	801 S.S.E. Loop 323
223	Mi Ranchito	412 S. Herndon Ave.
224	Ming's Café	5707 S. Broadway Ave.
225	MooYah	4803 S. Broadway Ave.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
226	Mother Francis Hospital	825 E. Houston St.
227	Natural Grocers	4820 S. Broadway Ave.
228	New York Pasta & Pizza	1621 S. Broadway Ave.
229	Newks	3985 Old Jacksonville Hwy.
230	Nothing Bundt Cakes	4917 S. Broadway Ave.
231	Oak Hill Terrace	2651 Elkton Trail
232	Old Chicago Pizza	405 W SW Loop 323
233	Olive Garden	5520 S. Broadway Ave.
234	Oliveto	3709 Troup Hwy.
235	On The Border	4301 S. Broadway Ave.
236	Orange Leaf	3979 Old Jacksonville Hwy.
237	Outback Steak House	5704 S. Broadway Ave.
238	Palace Seafood	721 N. Palace Ave.
239	Palacios Tortilleria	200 N. Palace St.
240	Paleteria Polar	1203 E. Erwin St.
241	Paleteria Polar 917	917 S. Vine Ave.
242	Palio's Pizza Café	6611 S Broadway Ave #100
243	Panaderia San Miguel	1419 E. Erwin St.
244	Panda Express	6910 S Broadway Ave.
245	Panda Express	3904 Troup Hwy
246	Panera Bread	5755 S. Broadway Ave.
247	PANjOZ Pizza	5111 Troup Hwy.
248	Papa John's Pizza #1227	631 S. Beckham Ave.
249	Papa John's Pizza 6751	6751 S. Broadway Ave.
250	Papa Murphey's Take & Bake	1847 Troup Hwy.
251	Papacita's Mexican	6704 S. Broadway Ave.
252	Park Place Nursing Home	2450 E. 5th St.
253	Peking Chinese Restaurant	1021 E. 5th St.
254	Pho Vietnamese Rest.	3837 Hwy. 64 W.
255	Piada	8942 SOUTH BROADWAY AVE
256	Pinecrest Nursing Home	3505 Old Jacksonville Hwy.
257	Pinehurst Alzheimer's	5403 Plantation Dr.
258	Pizza Hut #2888	7925 S. Broadway Ave.
259	Pizza Hut #2890	1817 S. Broadway Ave.
260	Pizza Hut 6710 (CLOSED/MOVED)	6710 S. Broadway Ave.
261	Polo's Grocery	621 E. Oakwood St.
262	Popcorn Junction	4744 S. Broadway Ave.
263	Popeye's Chicken 2316	2316 E. 5th St.
264	Popeye's Chicken 3820	3820 W. Elm St.
265	Portofino's	3320 Troup Hwy.
266	Posados	3040 W Gentry Pk
267	Posados 2500	2500 E. 5th St.
268	Posados 3707	3707 Westway St.
269	Potpourri House	3320 Troup Hwy.
270	Prestige Estates, The	6928 Paluxy Dr.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
271	Providence Park Nursing	5505 New Copeland Rd.
272	Quality Inn Conference Center	2843 W.N.W. Loop 323
273	Race Runner 8 (CLOSED)	1801 S.S.E. Loop 323
274	Raising Canes	4186 S. Broadway Ave.
275	Ramada Inn	3310 Troup Hwy.
276	Razoos Cajun Café	7011 S. Broadway Ave.
277	Red Lobster	1500 W.S.W. Loop 323
278	Reggies Burgers	1400 W.S.W. Loop 323
279	Republic Ice House	3807 University Blvd.
280	Reunion Inn	1515 Rice Rd.
281	Reunion Plaza	1401 Rice Rd.
282	Rheas Hot Links	204 S. Fannin Pkwy.
283	Rib Masters	2301 S. Broadway Ave.
284	Rick's On The Square	104 W. Erwin St.
285	Roast Social Kitchen	1125 E 5th St
286	Rosewood Estates	506 Rice Rd.
287	Rotolo's Pizzeria (Market Square)	8970 S. Broadway Ave.
288	Rounder's Pizza	1400 W.S.W. Loop 323
289	Rowdy Taco 1714	1714 S. Beckham Ave.
290	Rowdy Taco 7922	7922 S. Broadway Ave.
291	Royal Donuts	1625 N.N.W. Loop 323
292	Royal Donuts 2626	2626 Old Henderson Hwy.
293	Royal Donuts 3213	3213 W. Gentry Pkwy.
294	Rudy's BBQ	1410 S.S.W. Loop 323
295	Rufis Restaurant	1816 E. Gentry Pkwy.
296	Sake Sushi Japanese & Asian	5875 Old Bullard Rd
297	Salsarita's	6621 S Broadway Ave #100
298	Salsaritas/Roost #1085	3314 Troup Hwy.
299	Salvation Army	633 N. Broadway Ave.
300	Sam's Club	2025 S.S.W. Loop 323
301	Sam's Southern Eatery	2215 W Gentry Pkwy
302	Schlotzsky's 2105	2105 S.S.E. Loop 323
303	Schlotzsky's 709	709 S. Beckham Ave.
304	Schlotzsky's 720	720 W.S.W. Loop 323
305	Scooters Coffee	3979 University Dr.
306	Seafood Shack	2301 S Broadway Ave A4
307	Seoul Garden	109 E Grande Blvd
308	Shogun Of Japan (Sushi Bar)	3521 S. Broadway Ave.
309	Shogun Of Japan Steak House	5515 S. Broadway Ave.
310	Sister 2 Sister Cookies	322 E.S.E. Loop 323
311	Skyline Café	150 Airport Dr.
312	Slim Chickens	7925 S. Broadway Ave.
313	Slim Chickens	3922 Troup Hwy
314	Smallcakes Cupcakery	5875 Old Bullard Rd.
315	SmashBurger #1110(CLOSED)	7484 S. Broadway Ave.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
316	Smith Co. Jail	206 E. Elm St.
317	Smith Co. Low Risk	2811 Public Rd.
318	Smoothie King	1849 Troup Hwy.
319	Soju	6361 Old Jacksonville Hwy.
320	Sonic #3	3710 Troup Hwy.
321	Sonic #3710	2501 W. Gentry Pkwy.
322	Sonic #4	102 N.N.W. Loop 323
323	Sonic #6313	5980 Old Jacksonville Hwy.
324	Sonic 5611	5611 S. Broadway Ave.
325	Sonoma Grill	5875 Old Bullard Rd. #500
326	Southern Classic Chicken	411 S. Glenwood Blvd.
327	Southern Maid Donuts	1514 W. Gentry Pkwy.
328	Spark Café and Hookah Bar	407 E NE Loop 323
329	Speed Track	2615 E. Commerce St.
330	Spring Creek BBQ	5810 S. Broadway Ave.
331	Stanley's BBQ	525 S. Beckham Ave.
332	Star Donuts 1611	1611 S. Broadway Ave.
333	Star Donuts 1940	1940 Troup Hwy.
334	Starbucks Coffee	4925 S. Broadway Ave.
335	Starbucks Coffee #14399	113 N.N.W. Loop 323 A
336	Starbucks Coffee #9616	1817 E.S.E. Loop 323
337	Steak 'N Shake	3915 University Blvd.
338	Studio Movie Grill	8954 S. Broadway Ave
339	Subway	2701 W.S.W. Loop 323
340	Subway @ UT Tyler	3900 University Blvd.
341	Subway 118	118 W. Erwin St.
342	Subway 11980	11980 Texas 64
343	Subway 1230	1230 W. Gentry Pkwy.
344	Subway 1949	1949 S.S.E. Loop 323
345	Subway 2021	2021 E.S.E. Loop 323
346	Subway 2350	2350 W. Grande Blvd.
347	Subway 400	400 S.S.W. Loop 323 A
348	Subway 403	403 S.S.E. Loop 323
349	Subway 4201	4201 S. Broadway Ave.
350	Subway 5050	5050 Troup Hwy.
351	Subway 613	613 S. Beckham Ave.
352	Subway 6801	6801 S. Broadway Ave.
353	Subway 7490	7490 S. Broadway Ave.
354	Summerfield's Restaurant	5701 S. Broadway Ave.
355	Super 1 Foods	1105 E. Gentry Pkwy.
356	Super 1 Foods	172 Centennial Pkwy
357	Super 1 Foods	Broadway Ave.
358	Super 1 Foods #605	3828 Troup Hwy.
359	Super 1 Foods #625	113 N.N.W. Loop 323 B
360	Super Food Mart	1700 N.N.W. Loop 323

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
361	Super Mercado Monterrey	510 S.S.W. Loop 323 A
362	Sweet Sues	3350 S.S.W. Loop 323
363	Taco Bell #28277	2611 W. Gentry Pkwy.
364	Taco Bell 2760	2756 E. 5th St.
365	Taco Bell 3808	3808 S. Broadway Ave.
366	Taco Bell 3825	3825 Troup Hwy.
367	Taco Bell 500	500 S.S.W. Loop 323
368	Taco Bell 5978	5978 Old Jacksonville Hwy.
369	Taco Bell 7425	7425 S. Broadway Ave.
370	Taco Bueno #8026	1305 S.S.E. Loop 323
371	Taco Bueno #8034	4907 Old Bullard Rd.
372	Tacos Mexico	1510 E Gentry Pkwy.
373	Taj Mahalto	5221 S. Broadway Ave.
374	Taqueria El Lugar I	1716 E. Gentry Pkwy.
375	Taqueria El Lugar II	3320 Troup Hwy.
376	Taquiera El Lugar III	2121 E. 5th St.
377	Target	7003 S. Broadway Ave.
378	Target Deli	7003 S. Broadway Ave.
379	Teodora's Enchiladas	1813 Duncan St.
380	Texas Donuts	1627 S. Vine Ave.
381	Texas Roadhouse	2101 E.S.E. Loop 323
382	Texas Spine & Joint Hospital	1814 Roseland Blvd.
383	Texas State Veterans Home	11466 Honor Lane (Hwy 155)
384	TGI Friday's #265	4300 S. Broadway Ave.
385	The Burger Grind	1700 S.S.E Loop 323
386	The Catch	1714 S Beckham Ave.
387	The Corner Bakery Café /	3304 Troup Hwy.
388	The Diner	7924 S. Broadway Ave.
389	The Egg & I	150 E. 9th St.
390	The Hamptons at Pine Forest	4250 Old Omen Rd
391	The Kettle (CLOSED)	1597 W.S.W. Loop 323
392	The King Tortas #2	2112 E. Gentry Pkwy.
393	The Stand Hot Dogs and Sausages	16700 Fm 2493 #1600
394	Three Z Asian Cuizine	5201 S. Broadway Ave.
395	Times Square Theater	5201 S. Broadway Ave.
396	Top Donut	7205 S Broadway Ave #400
397	Torchy's Tacos	426 E SE Loop 323
398	Tortilleria Y Taqueria Martinez	903 E. Erwin St.
399	Traditions	6205 S. Broadway Ave.
400	Trane	6200 Troup Hwy.
401	Trinity Mother Frances Hospital	800 E. Dawson St.
402	Trisha Diner and Bakery	1010 State Hwy 110
403	Tuskan Slice(CLOSED)	1725 W.S.W. Loop 323
404	Tyler Bingo	1631 S. Vine Ave.
405	Tyler Donuts	508 W. Front St.

Food Service Establishment (FSE) List - September 5, 2017

Item	Business Name	Address
406	Tyler Packing Co	2209 E. Erwin St.
407	Tyler Pounds Regional Airport	700 Skyway Blvd.
408	Tyler Tennis & Swim Club	320 Shiloh Rd.
409	Tyler Tortilla Factory	513 N. Border Ave.
410	Valero 351	351 Glenwood Blvd.
411	Valero 5006	5006 Paluxy Dr.
412	Villa of Tyler Rest Home (4)	3323 Garden Valley Rd.
413	Villa Montez	3324 Old Henderson Hwy.
414	Villagio Del Vino	4815 Old Bullard Rd
415	Walmart Neighborhood Market	1900 E.S.E. Loop 323
416	Walmart Neighborhood Market	5976 Old Jacksonville Hwy
417	Walmart Neighborhood Market	2151 Frankston Hwy
418	Walmart Super Center #1022	3820 Hwy. 64 W.
419	Walmart Super Center #1044	5050 Troup Hwy.
420	Walmart Super Center #2688	6801 S. Broadway Ave.
421	Wasabi	5617 Donnybrook Ave.
422	Waterton Inn/Plaza	2875 Shiloh Rd.
423	Wendy's #107	421 W. Front St.
424	Wendy's #203	3920 S.S.W. Loop 323
425	Wendy's 3816	3816 Hwy. 64 W.
426	Whatabout Kabob	713 W.S.W. Loop 323
427	Whataburger #086	1919 W. Gentry Pkwy.
428	Whataburger #130	6849 S. Broadway Ave.
429	Whataburger #32	1739 S. Beckham Ave.
430	Whataburger #580	1717 S.S.E. Loop 323
431	Whataburger #667	345 S.S.W. Loop 323
432	Whataburger #887 (Out of City	6288 US. 271
433	Whataburger #972	12405 Hwy. 155 S.
434	Whataburger #980	5003 Troup Hwy.
435	Whataburger 137	137 W.S.W. Loop 323
436	Where's Rufus Sports Bar	6100 S. Broadway Ave.
437	Wienerland (Closed)	1325 E. 5th St.
438	Williams Chicken	1102 W. Gentry Pkwy.
439	Willow Bend Center	2902 S. Hwy. 31 E.
440	Willow Brook Country Club	3205 W. Erwin St.
441	Wingstop #558	7496 S. Broadway Ave.
442	Wingstop 1918	1918 E.S.E. Loop 323
443	Wingstop 400	400 S.S.W. Loop 323 B
444	Wok Box	3502 S. Broadway Ave.
445	Wrights BBQ	8336 Paluxy Dr.
446	Yamato	2210 W.S.W. Loop 323
447	Youth & Family Enrichment Center	14023 TX 155
448	Zoe's Kitchen	8926 S Broadway Ave #104

Appendix 9

FOG Software

For Future Use: Addition of written FOG software instructions and database maintenance.

Appendix D

Sanitary Sewer Overflow Response Plan

SSORP

Tyler Water Utilities
Sanitary Sewer Overflow Response Plan (SSORP)

This document is intended to be reviewed in conjunction with the CMOM Plan and updated as procedures and reporting forms are changed. Changes to the SSORP Manual should be documented by revision number and date.

Revision 1
September 28, 2017

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APPENDIX 1 NOTICE OF WASTEWATER OVERFLOW/SPILL FORMS
APPENDIX 2 LIFT STATION POWER OUTAGE PLAN AND SOPS
APPENDIX 3 EMERGENCY CONTACT INFORMATION
APPENDIX 4 SITE DISINFECTION AND SSO/SPILL QUANTIFICATION
APPENDIX 5 EXAMPLE NOTIFICATION LETTERS
APPENDIX 6 TRAINING
APPENDIX 7 REFERENCE REGULATIONS AND CODE

- TCEQ TITLE 30, CHAPTER 327.32 SPILL REPORTING
- TCEQ SUBCHAPTER A: MONITORING AND REPORTING SYSTEM

- TCEQ SUBCHAPTER C: PUBLIC NOTICE OF SPILLS OR ACCIDENTAL DISCHARGES FROM WASTEWATER FACILITIES OWNED OR OPERATED BY LOCAL GOVERNMENTS

- TEXAS WATER CODE TITLE 2 WATER ADMINISTRATION SUBTITLE D, WATER QUALITY CONTROL CHAPTER 26, WATER QUALITY CONTROL SUBCHAPTER A, ADMINISTRATIVE PROVISIONS

  - SEC.26.001. DEFINITIONS
  - SEC.26.039. ACCIDENTAL DISCHARGES AND SPILLS.

1.0 BACKGROUND AND PURPOSE

This manual documents the City of Tyler's Sanitary Sewer Overflow Response Plan (SSORP) including procedures and reporting requirements of the Texas Commission on Environmental Quality (TCEQ) and Environmental Protection Agency (EPA). The City of Tyler permits with the above agencies are:

Southside Treatment Plant
TPDES Permit WQ0010653002/TX0047988

Westside Treatment Plant
TPDES Permit WQ0010653001/TX0047996

The Sanitary Sewer Overflow Response Plan (SSORP) is designed to ensure that reports of suspected overflows or wastewater spills are confirmed, and once confirmed overflows are addressed so the impact of the overflow/spill can be minimized with respect to public health, adverse effects on water quality and customer service. The procedures outlined in this manual provide guidance to staff in responding to SSOs and wastewater spills and documents procedures to evaluate the cause. The SSORP also includes provisions to ensure appropriate notification and reporting to local, state and federal authorities. **This plan only applies to wastewater overflows and spills and does not apply to any other non-wastewater overflow/spill including hazardous waste spills or overflows of hazardous waste. Hazardous material response team or fire department will assume control of any suspected hazardous waste spill or overflow regardless of source.**

This manual will be used by staff to inform and provide direction for SSO/spill reporting and follow-up procedures to maintain the City's compliance with Federal and State regulations as they apply to the wastewater collection system. It is important that the SSORP and CMOM Plan be reviewed and updated as needed on a regular biennial basis. Figure 1 presents the Utility organization chart with staff responsibilities as they relate to the SSORP. Note that the Lift Station Response Plan (LSRP) is an integral part of the SSORP and is detailed in Appendix 2.

1.1 OBJECTIVES

The primary objectives of the SSORP are (1) the protection of public health and the environment, (2) compliance with requirements governing the procedures for responding to SSOs/spills, and (3) minimization of the risk of enforcement actions against the City.

Figure 1
Tyler Water Utilities
Collection System Organization Chart

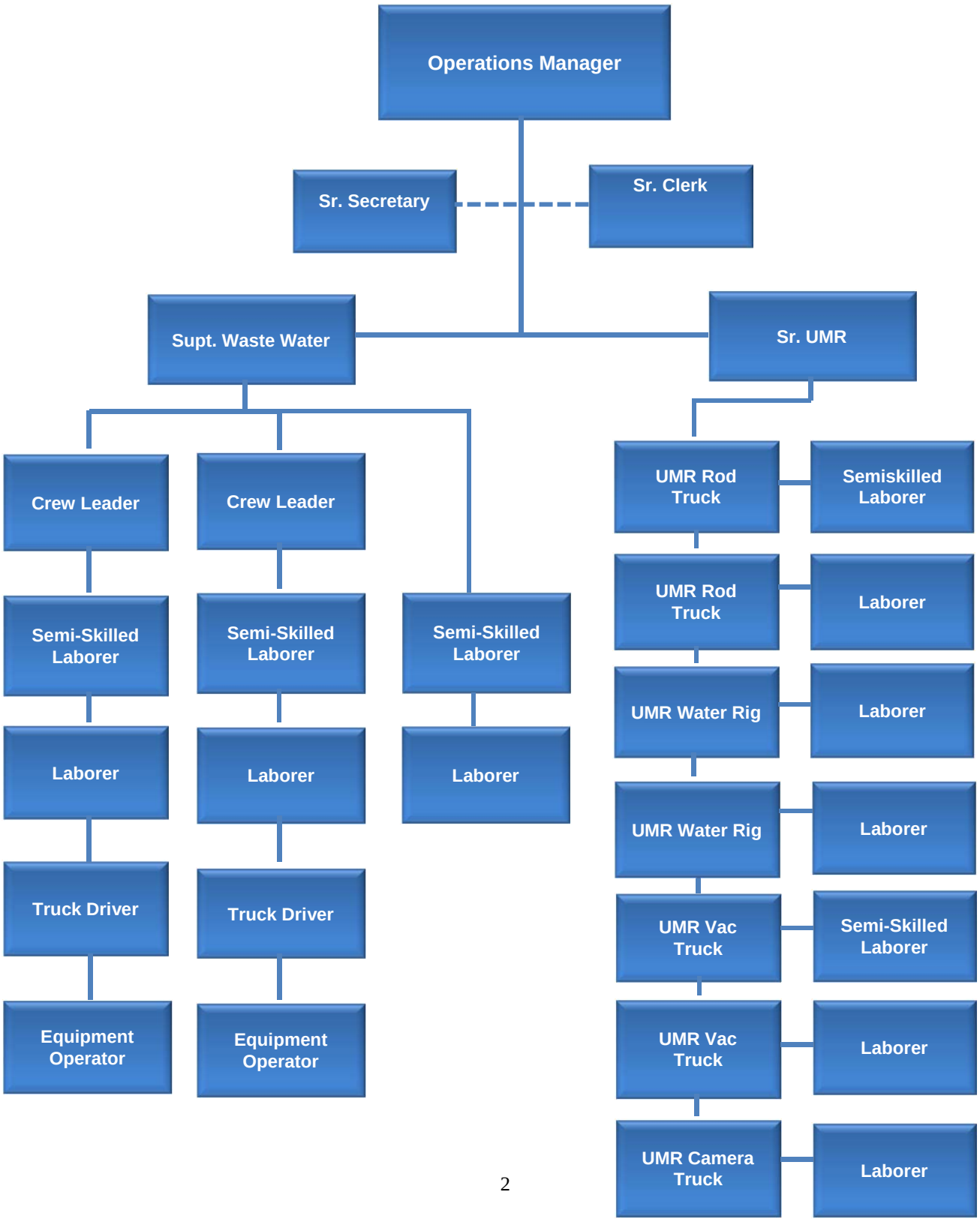
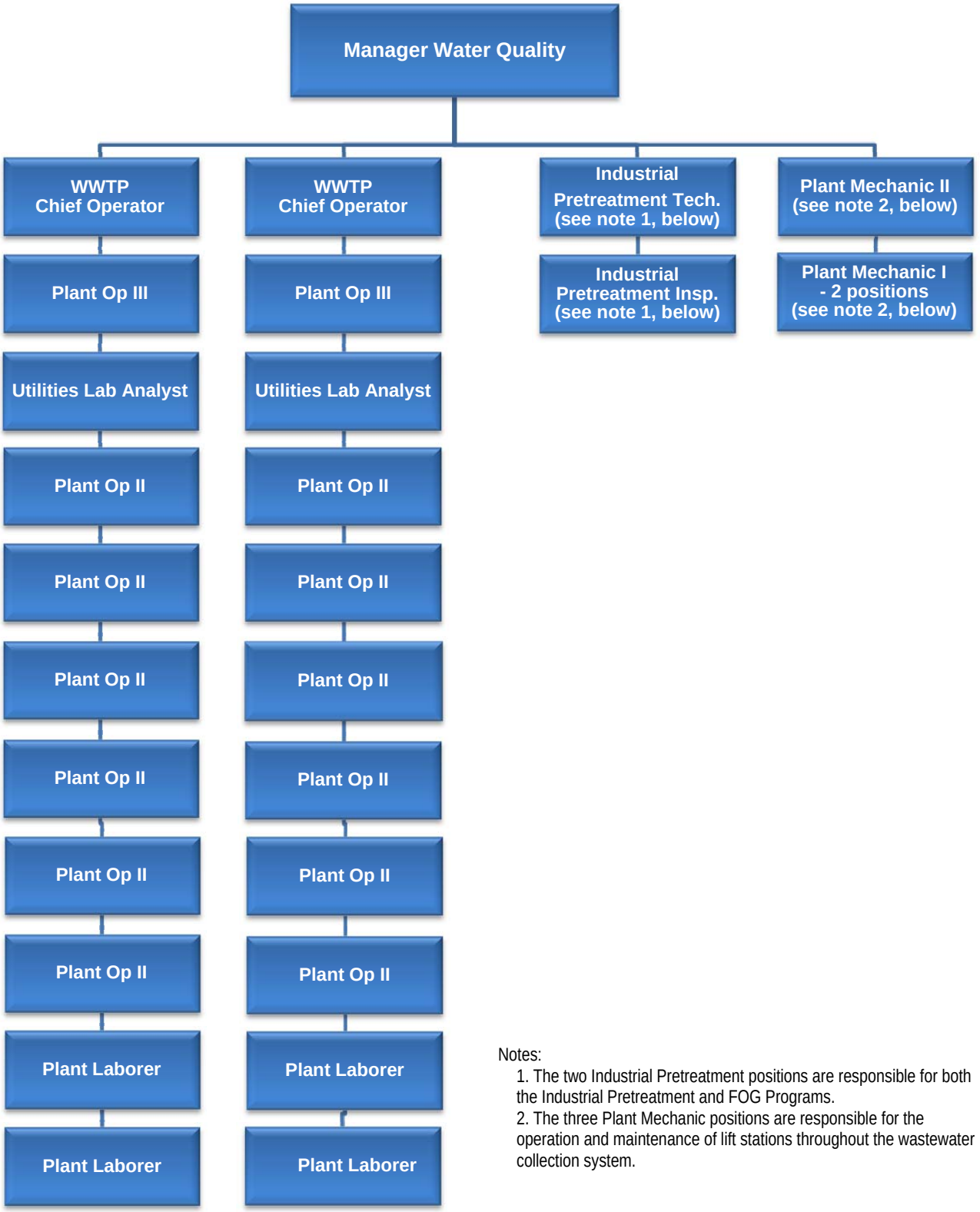


Figure 1 (Continued)
Tyler Water Utilities
Wastewater Treatment Organization Chart



Notes:

1. The two Industrial Pretreatment positions are responsible for both the Industrial Pretreatment and FOG Programs.
2. The three Plant Mechanic positions are responsible for the operation and maintenance of lift stations throughout the wastewater collection system.

The SSORP shall not supersede other City emergency operations plans or Standard Operating Procedures (SOPs) unless determined and directed otherwise by the appropriate authority.

1.2 APPLICABILITY

Regulatory and enforcement agencies applicable to this plan:

- State of Texas - TCEQ
- United States of America - United States Environmental Protection Agency (USEPA) Region 6 – Dallas, Texas

Sanitary Sewer Overflow is any discharge of wastewater or in general any wastewater spill in excess of 1,000 gallons. On May 11, 2016, TCEQ commissioners adopted the Volume Based Exemptions for Certain Accidental Discharges (Senate Bill (SB) 912, 84th Legislature). These rules allow any single, accidental discharge or spill of treated or untreated domestic wastewater that occurs at a wastewater treatment or collection system owned or operated by a local government to be reported to the TCEQ monthly, as a summary of spills (TCEQ Form 20756), provided the following conditions are met:

- the spill volume is 1,000 gallons or less;
- it is not associated with another accidental discharge or spill;
- it is controlled or removed before entering water in the state;
- it does not adversely affect a public or private source of drinking water;
- it will not endanger human health or safety or the environment; and
- it is not otherwise subject to local regulatory control and reporting requirements.

The rule requires the City to use standard methods established by the TCEQ when calculating the volume of an accidental discharge or spill. Additionally, the rules created a definition for the history of noncompliance and allow the TCEQ to require more frequent reporting based on that history.

For those SSOs that do not meet the above “Spill” criteria the TCEQ notification should be initiated by the City’s designated staff member within 24 hours of the first responder's confirmation. A written report on the SSO, using TCEQ Form 501, is due within five (5) days of the event. For the purpose of this SSORP, bypasses refer to pipes or channels constructed or intended as a temporary path for the flow within the Tyler collection system during a SSO response event. Bypasses within the collection system are not SSOs, but are a mitigation technique that may be used during a SSO response. Bypasses within the treatment plant shall be reportable when they impact the treatment process or effluent quality in accordance with 30 Texas Administrative Code, Chapter 305, Subchapter O. Employees will have a working knowledge of this plan and will be responsible for ensuring each SSO or spill is handled in a manner that complies with this plan and TCEQ/EPA regulations.

The Texas Water Code applies to any accidental discharge of untreated or partially untreated wastewater from a collection system. However, an overflow at a customer cleanout or private lateral (not caused by the City mainline or lateral sewer) located on private property is defined as a stoppage, not a SSO, and is not reported to TCEQ. Both the TCEQ and USEPA consider an "overflow", "spill", and "treatment plant bypass" events that require reporting per Tyler permit requirements.

Note: Potable water discharges, usually from water line breaks or flushing water mains, are reportable to TCEQ if the discharge causes or may cause pollution or results in an environmental impact (such as a fish kill). Potable water spills are considered "other waste" by TCEQ and must be reported as soon as possible and at least within 24 hours.

For purposes of the CMOM and SSORP, a TECQ accidental discharge or spill is a sub-category of SSO that has a different reporting requirement. Section 2.5 of this SSORP presents information on SSO and spill reporting. Appendix 7 presents referenced TCEQ regulations.

2.0 OVERFLOW RESPONSE PROTOCOL

Spreadsheets that electronically file and track the frequency and location of collection system overflows and lift station overflows are maintained by the Operations Manager and Manager Water Quality respectively. The spreadsheets will assist in directing corrective measures and prioritizing maintenance activities where chronic problems have been encountered.

The response time is embedded within the CityWorks™ work order system for every work order issued. The CityWorks™ Work Order system documents the time the work order is issued. The responding crew record the arrival time and time the work is completed. Crew location at the time a potential SSO call comes into the Service Center will impact the crew response time. The goal of TWU is to respond to reports of backups in homes or businesses within an average time of 1.0 hours and resolve the issue within an average of 4 hours.

After an overflow event has been resolved and cleaned up, a review will be undertaken to address the following criteria:

1. An attempt will be made to determine the cause of a sewer overflow by review of the Notice of Wastewater Overflow field report (Appendix 1) by the Superintendent or designee. Where the cause of the SSO is uncertain, then additional actions may be initiated depending on the suspected cause.
2. Follow-up inspections (including visual inspection or televised inspection) may be performed at the site of a sewer overflow in order to determine the cause of the SSO and the corrective action(s) needed to prevent reoccurrence. Data will be captured in the CityWorks™ Work Order system. If no additional evidence of cause is found, these inspections may be terminated.
3. After each sewer overflow, the Preventive Maintenance (PM) schedule for the affected sewer(s) for cleanings, inspections, etc., may be considered in order to prevent similar future occurrences. The site of the sewer overflow will remain on a more frequent PM schedule, if necessary, until it is reasonably determined that the site is no longer a risk for a future occurrence due to maintenance needs.
4. After the occurrence of a sewer overflow, notification of relevant parties will be conducted (if applicable) in order to prevent future similar occurrences. Examples of relevant parties include employees and management of restaurants, manufacturers, construction sites, etc. if their actions contributed to an overflow. Notification may include information on City Ordinances applicable to the given parties and type of operation, requirements that must be met in order to comply with the given ordinance, and the measures to be taken by the personnel to eliminate future overflows.

The overflow response protocol presents a strategy for the City to mobilize labor, materials, tools and equipment to correct or repair and mitigate any condition which may cause or contribute to: 1) an un-permitted discharge (i.e., discharge to surface waters); and, 2) other sewer overflows and lift station overflows which are successfully contained and present no threat to jurisdictional waters of the State (surface waters). The plan considers a wide range of potential system failures that could create a SSO to surface waters, structures, and/or land surfaces.

2.1 RECEIPT OF INFORMATION REGARDING A SEWER OVERFLOW/SPILL

A sewer overflow or spill may be detected by City employees, residents, businesses or by others. The City answers telephone calls dialed to the Service Center at 903-531-1285. The Service Center is primarily responsible for receiving phone calls from the public and dispatching them to the appropriate staff. The Service Center is responsible for receiving calls of possible sewer overflows/spills from the wastewater collection system (e.g., sewer pipes and lift stations) and for notifying the appropriate personnel in the City. After normal business hours and weekends, calls are forwarded to the Golden Road Water Treatment Plant 903-597-6541 where on-call crews are dispatched. Citizens can contact the City of Tyler or receive information from the City using the following methods:

1. Service Center: For water emergencies call 903-531-1285 during regular business hours; for after hour emergencies call 903-597-6541. These numbers are posted on the City web site, publications and provided to media.
2. On-line Services: The City of Tyler web site, www.cityoftyler.org, provides information on each department, frequently asked questions and notification numbers. In addition, Tyler Public Works maintains a web site, www.tylerpublicworks.com, specific to the utility. Tyler Public Works is a joint effort between the City of Tyler Engineering Department and Tyler Water Utilities to highlight capital improvement projects, city standards, consent decree information and ongoing public works projects.
3. Social media accounts, Facebook, Twitter, YouTube, Pinterest and LinkedIn are used by various City departments to keep citizens up to date on current issues that may affect their services.
4. Newsletters: The City publishes electronic newsletters that residents can receive or download from the city web site. The My Tyler email newsletter was launched in 2003 as a tool to keep citizens better informed about their municipal government. The email newsletter is produced by the Communications Department and sent out periodically to those who register on the My Tyler page on the City website. The emails include the latest information, announcements and programming updates from all City of Tyler Departments.

In general, residents are not well versed in the difference between a water line leak, a sanitary sewer overflow or overflowing storm sewer. Many calls from residents, particularly during dry weather, are therefore not properly identified until the responding crew arrives on scene. SSO reports from customers may actually be water main leaks. Although the Service Center will attempt to obtain accurate information from the resident, the responding crews will confirm if an SSO actually exists. The first responders will clarify and document the on-site conditions and impacted waters, if any. For possible sanitary sewer overflows, the Service Center obtains information offered by the caller and attempts to collect other relevant information regarding the possible overflow, including:

a. Contact/Customer Name.
b. Contact/Customer Phone and E-mail.
c. Location of the suspected overflow.
d. Observations of the caller (e.g., odor, duration, back or front of property).
e. Other relevant information that will enable the responding crews, if required, to quickly locate and respond to the caller's observation.

The Service Center prepares a service request and enters this information into the CityWorks™ work order system and creates a new work order. The service center dispatcher notifies the crew of

suspected overflows. In the event possible overflow calls outnumber the available response staff, calls will be prioritized in the following manner (listed in order from highest to lowest priority):

- Sewage in a creek; sewer overflow or lift station overflow to dry land with immediate and direct public access.

  This is the highest priority. The dispatcher will IMMEDIATELY DISPATCH this call to the On-Call supervisor responsible or designee. If the dispatcher is unable to contact the supervisor or designee, dispatcher will continue calling until a supervisor or crew leader is reached, regardless of her/his area of responsibility.

- Sewer Overflow or Lift Station Overflow to Dry Land with no immediate and direct public access. Order of Priority for Cave-In:
  a. Sewer pipes damaged/suspected damage
  b. No reported damage

- Utilities damaged by a construction activity

- Locating utilities. When receiving such calls, confirm whether or not the call is for emergency related locating of utilities.

- Customer service requests

The Service Center dispatcher provides notification of suspected sewer overflows directly to the appropriate crew.

Sewer overflows detected by any personnel in the course of their normal duties shall be reported immediately to the service center where a service request will be initiated. The service center dispatcher shall record the relevant overflow information, create a CityWorks™ work order, and notify the appropriate crew.

The responding crew shall confirm any reported possible sewer spill or lift station overflow. The on-site supervisor or designee shall document the SSO using the Field Reporting Form (See Appendix 1). Until confirmed, the reported spill or overflow should be referred to as a "possible" spill or overflow. The Operations Manager (for collection system SSOs) or Water Quality Manager (for lift station SSOs) will notify TCEQ within 24 hours of a confirmed SSO. The TCEQ Water Quality Noncompliance Notification Form TCEQ - 501 shall be reviewed and signed by the Operations Manager or Manager Water Quality and then submitted within 5 days of confirmation of the reported overflow to the TCEQ Regional Office and TCEQ Austin Office. If the event was reported within 24 hours via phone, or an incomplete form was submitted as part of the 5 day reporting requirement, a completed and signed updated (supplemental) Form 501 shall be faxed or mailed as soon as possible to the TCEQ Regional Office and Austin Office. A copy will be mailed to the Austin address located at the bottom of the form.

Applicable supervisory or management personnel will be responsible for reviewing these completed forms to determine follow-up actions to minimize the SSO re-occurrence. Table 1 summarizes the overflow response tracking protocol.

The personnel on duty shall immediately convey all information regarding lift station failures and overflows to the Manager Water Quality and initiate the investigation and correction. The Lift Station Power Outage Response Plan provides specific information on procedures associated with each lift station outage. The detailed Lift Station Power Outage Response Plan resides with each of the following and is being used as guidance in minimizing the impact of power outages or lift station failures:

- *Operations Manager*
- *Manager Water Quality*

Copies are distributed to responding staff and posted at lift stations and distributed at training sessions.

TABLE 1
Sewer Overflow Response Tracking Protocol

Step Event/Activity

1. Report of possible sewer overflow or lift station overflow received by the Service Center at 903-531-1285 (after hours at Golden Road Water Treatment Plan 903-597-6541).

2. Service Center Dispatcher prepares a service request through CityWorks™ documenting the caller-provided information.

3. Service Center Dispatcher contacts crew personnel who deploy a response crew to investigate the possible reported sewer overflow.

4. Verification of SSO/spill by response crew and initiate corrective actions.

5. Responding crew completes investigative work order and reports to supervisor and provides an assessment of the significance of the overflow (e.g., volume/flow rate of spill, contained vs. discharge to surface water) and confirms overflow.

6. Supervisor confirms collection system overflows to the Operations Manager or Lift Station overflows to the Manager Water Quality. The Operations Manager or Manager Water Quality contacts TCEQ Regional Office within 24 hours of confirmed SSO. Director of Utilities completes the 5 day report TCEQ Notice of Wastewater Overflow Form 501 and submits to both TCEQ Regional Office and TCEQ in Austin.

7. In the case of a TCEQ spill, summarize monthly spill report using TCEQ Form 20756. Save the sent SSO confirmation FAX report to document FAX transmission to Regional Office and mail copy to Austin.

8. For overflow events lasting longer than 24 hours or events that require updating of initial 24 hour notice, Operations Manager or Manager Water Quality will prepare a supplemental TCEQ Form 501 and send updated form to applicable regulatory agencies. All SSO events require written 5 day reports.

9. Operations Manager, Manager Water Quality and Utilities Director will make the decision based on established criteria by TCEQ on Public Advisory Procedures and Media Notification Procedures to be implemented, if any.

2.2 DISPATCH CREWS TO SITE OF SEWER OVERFLOW

The purpose of immediate response to a failure of any element within the wastewater collection, treatment and lift station systems, which threatens to cause or causes a sewer overflow, is to isolate and correct the problem. Crews and equipment shall be made available to respond to any actual sewer overflow location. Figure 2 presents the standard Daily Crew and Equipment Staffing available to respond to overflows. Also, additional maintenance personnel, materials and equipment shall be called as needed.

1) Dispatching Crews

- Service Center prepares service request work orders created for reported overflows and notifies the appropriate On-Call designee or Plant Mechanic. Observations will be logged on the active work order.
- Upon confirmation by the responding crew of a reported sewer overflow, if necessary, the Supervisor shall directly call for support or if requested to do so, the service center may be contacted to call up appropriate additional crews and resources on behalf of the responding crew.

2) Crew Instruction and Work Orders

- Responding crews shall be dispatched, and shall receive instructions from their supervisor regarding appropriate crews, materials, supplies and equipment to be deployed.
- The utilities dispatcher, communicating with crews responding to a request for service, shall ensure that the entire communication has been received and acknowledged by the responding crews. To avoid delay, all standard communications procedures shall be followed. All employees dispatched to the site of a sewer overflow shall proceed immediately to that site. Any delays or conflicts in assignments must be immediately reported to the appropriate Supervisor or designee for resolution.
- Responding crews shall report their findings, including damage to private and public property or threat to public health and safety, to their supervisor or designee as frequently as necessary to keep him/her abreast of the conditions found.
- Supervisor or designees and utilities dispatcher shall assist, as necessary, at crew shift changes, in the transfer of all pertinent information to the next shift, including any details of the problems and observations described by customers.

3) Preliminary Assessment of Damage to Private Property

- The responding crew shall use discretion in providing assistance to a property owner/occupant who has sustained property damage. The responding crew should not enter private property for purposes of assessing damage unless directed otherwise by a supervisor or designee. Residents should be instructed to contact the Senior Utility Specialist at 903-531-1238 to make damage claims. The City of Tyler letter to residents affected by building backups is provided in Appendix 5. This letter will be handed out to affected residents and provide information on obtaining cleanup assistance. The City of Tyler Senior Utility Specialist is responsible for addressing any claims residents may have regarding backups.

- If property damage was caused by the use of a Tyler Water Utilities jetter or vactor, contact the Senior Utility Specialist (903-531-1238) who will assist the resident in the claim protocol. After hours and on weekends, responding crews will provide the resident contact information for making a claim.

4) Field Supervision and Inspection

- The supervisor or designee assigned to a confirmed sewer overflow shall visit the site of the overflow to assure that provisions of this overflow response plan and other directives are met. The supervisor or designee will determine if outside vendor services is required and will make the initial contacts to facilitate needed outside services.
- In the case of a lift station overflow to a creek or dry land, the superintendent shall be responsible for notifying the Manager Water Quality.

5) Coordination with Hazardous Material Response

- Responding crew shall contact their supervisor as soon as possible whenever a suspicious substance (e.g., oil sheen, foamy residue) is found on the ground surface, surface waters or ponded areas, or upon detection of a suspicious odor (e.g., gasoline) not common to the sewer system.
- Should the supervisor decide it is necessary to alert the TCEQ in consultation with the local Fire Department, the responding crew shall await the arrival of the hazardous material response team to take over the scene. Remember that any vehicle engine, portable pump or open flame (e.g. cigarette lighter) can ignite an explosion or fire where flammable fluids or vapors are present. Keep a safe distance and observe caution until assistance arrives. The on-site staff shall also take measures to keep the general public away from the impacted area. Perimeter control of pedestrian and vehicular traffic shall be established using traffic barricades, barricade warning tape, or temporary barrier/safety fencing with signage, "Caution Do Not Enter" where appropriate.
- The Fire Department's hazardous material response team shall be contacted by dialing 911 if the overflow contains or is thought to contain hazardous material.
- Upon arrival of the hazardous material response team, the responding crew shall take direction from the lead person with that team. Only when that authority determines it is safe and appropriate for the responding crew to proceed under the SSORP with the sewer overflow containment, correction and clean-up activities, can they then proceed.

2.3 OVERFLOW CORRECTION, CONTAINMENT, AND CLEANUP

Overflows may result from blocked sewers, pipe failures, lack of capacity, power outages, treatment plant, lift station malfunctions, contractors or mechanical malfunctions among other natural and manmade causes. City staff is on alert and shall respond immediately upon receipt of notification of a possible overflow. This section describes specific actions to be performed by the responding crews during a sewer, treatment plant or lift station overflow. Table 2 presents the SSO Checklist. These actions are instrumental for:

- Protecting public health, environment and property from sewer overflow and restore the surrounding area back to normal as soon as practical.
- Establishing perimeters and control zones with appropriate traffic cones and barricades, vehicles or use of natural topography (e.g., hills).
- Promptly notifying regulatory agencies of preliminary overflow information and potential impacts.
- Containing the sewer overflow to the maximum extent practical including preventing the discharge of sewage into surface waters and returning as much of the sewage back into the collection system as practical.
- Minimizing the City exposure to any regulatory agency penalties and fines.

Under most circumstances, TWU will handle response activities with its own work forces. The City possesses the skills and experience to respond rapidly and in the most appropriate manner. An important issue with respect to an emergency response is to ensure that temporary actions necessary to divert flows and repair the problem do not produce problems elsewhere in the system. For example, the repair of a force main requires the shutdown of the lift station. If the closure is not handled properly, a backup of sewage may create other overflows. Circumstances may arise when the City requires the support of an outside construction contractor. This may occur when a deep pipeline requires an emergency repair in order to resolve the overflow and extensive shoring or bypass pumping is necessary.

Containment of the SSO is critically important to minimize the impact of the SSO. Responding crews must evaluate the local conditions and select equipment and techniques to contain the SSO. The method used for containment will vary based on site conditions. General options for containment and equipment are summarized in Table 2. Dry weather SSOs may be temporarily contained in the storm sewer system by plugging the pipeline (pneumatic plugs or sand bags) downstream of the SSO location. Lift stations tributary to the SSO should be turned off where possible and/or manually controlled to maximize system storage upstream of the SSO location.

Information that can be distributed to residents to address building backups is presented in Appendix 5. On-site crews and supervisors should maintain copies of the information for distribution to residents following a backup or overflow on private property.

2.4 RESPONSIBILITIES OF RESPONDING CREW UPON ARRIVAL

It is the responsibility of the first responding personnel who arrive at the site of a sewer, treatment plant or lift station overflow to protect the health and safety of the public by mitigating the impact of the overflow to the highest extent possible. Emergency contact telephone numbers are presented in Appendix 3 should conditions warrant immediate notification. The crew shall take responsible actions to protect public health and water quality by mitigating the impact of the overflow to the greatest extent possible. However, should the cause of the overflow not be the responsibility of the City, e.g., caused by an overflowing private sanitary sewer, but there is imminent danger to public health, public or private property, or to the quality of waters of the State, then prudent emergency action shall be taken until the responsible party assumes responsibility and provides appropriate action. Upon arrival at an overflow the responding crew shall do the following:

1. Determine the cause of the overflow, e.g. sewer line blockage, sewer line break, lift station mechanical or electrical failure, treatment plant process flow problem, etc.
2. Identify and request, if necessary, assistance or additional resources to correct the overflow or to assist in the determination of its cause.
3. Determine if private property has been affected. If yes, contact the Senior Utilities Specialist at 903-531-1238.
4. Take immediate steps to stop the overflow, e.g. relieve pipeline blockage, manually operate lift station controls, repair pipe, etc. Extraordinary steps may be considered where overflows from private property threaten public health and safety (e.g., an overflow running off of private property into the public right-of-way).
5. Extra care should be taken in securing the work site immediately adjacent to or around private property.
6. Request additional personnel, materials, supplies or equipment that will expedite and minimize the impact of the overflow.

TABLE 2
SSO Response Checklist

- ✓ Investigation, SSO Confirmation and Site Assessment
- ✓ Dispatch Initial Response Personnel and Equipment
- ✓ Stop and Contain Overflow
- ✓ Assess Best Cleanup Method
- ✓ Initiate Site Remediation
- ✓ Inspect Receiving Waters (if applicable)
- ✓ Initiate Sampling of Affected Waters (if applicable)
- ✓ Post Warning Signs (if applicable)
- ✓ TCEQ Initial Notification within 24 hours
- ✓ Public Notifications (if applicable)
- ✓ Complete Remediation
- ✓ Collect Follow-up Samples (if applicable)
- ✓ Remove Signs (if applicable)
- ✓ TCEQ 5 day report
- ✓ Follow-up SSO Root Cause Analysis

Major SSO Containment Options and Required Equipment

Overflow onto Ground	Required Equipment
• Create earthen trench or berm to contain or divert SSO	• Sand bags
• Place sand bags in gutter or around low ponding area	• Plastic sheets
• Turn off or manually control tributary lift station if possible	• Bypass pumps/hose or pipe

Overflow Into Storm Sewer or Open Ditch	Required Equipment
• Contact storm water department to coordinate containment	• Sand bags/pneumatic plugs
• Locate storm drain/ditch at downstream end point	• Plastic sheets
• Plug affected storm system outlet(s) and coordinate with Operations Superintendent to contain and cleanup SSO	• Bypass pumps/hose or pipe
• Turn off or manually control tributary lift station if possible	

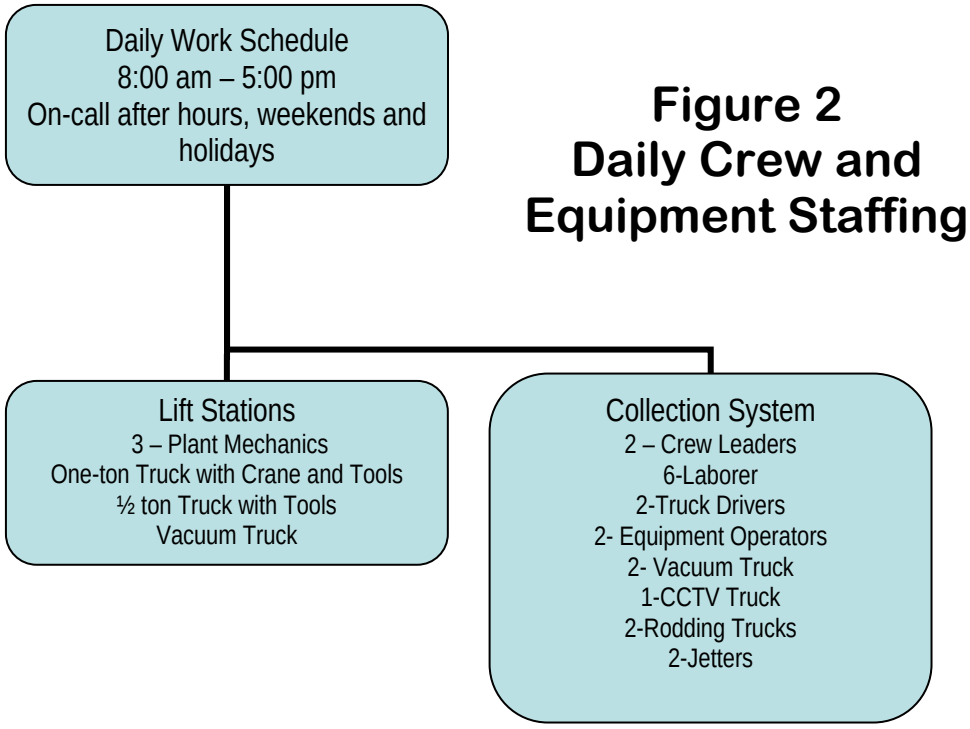


Figure 2
Daily Crew and Equipment Staffing

In general the first response equipment and crew will be a trouble truck dispatched to the potential site. Upon confirmation and extent of the SSO a request of additional crew(s) and equipment may occur. Equipment available for secondary response includes:

- 2-Vactors
- Generators
- Backhoe
- Portable pumps (Local Vendor)
- Bypass pipe/hoses
- Portable lighting equipment
- Sand bags
- Spill containment supplies
- Disinfectant
- Posting signage

2.5 Initial Measures for Containment and Reporting

Figure 3 summarizes the Sewer Overflow Response Plan. Crews arriving initially will:

- ✓ Initiate measures to contain the overflowing sewer and recover, where possible, sewage which has already spilled, minimizing the impact to public health or the environment.
- ✓ Determine the immediate destination of the overflow, e.g. storm drain, surface water, ground surfaces, structure, etc.
- ✓ Identify and request additional materials and equipment to contain or isolate the overflow, if not readily available.
- ✓ Take immediate steps to contain the overflow, e.g., block or bag storm drains, recover through vacuum truck, divert/pump into downstream sanitary sewer manhole, etc.
- ✓ Check treatment plant process equipment/lift station status.

In the event of a prolonged sewer line blockage or collapse, treatment plant issues, or lift station outage, a determination shall be made in a timely fashion to operate a portable pump-around operation to direct flows around the defective or damaged facility. Personnel shall be trained in proper portable pump capacity selection and the setup of temporary suction and discharge piping to assure safe and reliable emergency operation. Other methods of bypassing shall be utilized when appropriate such as fluming and berms to contain flows while repairs are made.

Appropriate measures shall be taken to determine the proper size and number of portable pumps required to effectively handle the sewer bypass pumping operation. Any regulatory agency issues that arise as a result of a prolonged pumped bypass situation (e.g., need for redundancy of portable pumping) shall be addressed in conjunction with emergency repairs.

Sewer overflow sites including contaminated soil, stream and riverbanks, and shorelines of other types of bodies of water, shall be thoroughly cleaned after an overflow. No readily identifiable residues (e.g., fecal matter, rags, papers, or plastics) shall remain.

Where practical, the area shall be thoroughly flushed with the wash-down water which should be contained and properly disposed. Heavy flushing could make containment of wash down water impractical. Solids and other debris shall be flushed, swept, raked, picked-up and transported to proper disposal area.

The overflow site shall be secured to prevent contact by the public until the site has been thoroughly cleaned. Posting, if required, shall be undertaken.

Where appropriate, the overflow site shall be disinfected and deodorized.

If a ponded area contains sewage which cannot be pumped dry, it shall be treated with bleach or dry high-test hypochlorite (HTH). If sewage has entered a body of water that may contain fish or other aquatic life, bleach or other disinfectants shall not be applied. Appendix 4 contains additional guidance on the quantification of SSOs and the use of disinfectants.

The Notice of Wastewater Overflow Form and CityWorks™ Work Order shall be completed by the responsible Supervisor. The TCEQ shall be notified, as specified in Section 6.0, immediately following confirmation of a spill into a waterway and no later than 24 hours after confirmation. The hard copy 5 day report (Form 501) for a SSO to surface waters is forwarded to TCEQ and EPA when repair work on the sewer is completed but no later than five days of confirmation of a SSO. If a SSO

Confirmed Sanitary Sewer Overflow or Spill

Sanitary Sewer Overflow:

1. Contain if possible
2. Correct problem causing SSO
3. If significant SSO requiring Public Notice (see Public Notice Guidelines below):
   a) contact Operation Manager or Water Quality Manager who will notify TCEQ within 24 hours
   b) Determination to deploy signage
   c) Director notifies City Manager and Communications Director
   d) Media Notifications
4. Clean affected area and disinfect
5. Operations Manager or Water Quality Manager will report SSO within 5 days (Form 501)

Public Notice Guidelines:

1. The SSO is 50,000 gallons or more where one or more of the following conditions also exists:
   A. the SSO occurs within ½ mile of a public or private source of drinking water;
   B. the SSO occurs within ½ mile of a private drinking water well;
   C. the SSO occurs within ½ mile up-gradient of a surface water intake of a public or private source of drinking water;
   D. the SSO occurs in an active groundwater recharge area;
   E. the SSO occurs up-gradient and within ½ mile of a karst terrain or shallow alluvial well that is a source of drinking water; OR
2. The SSO is 100,000 gallons or more.
3. Send copy of public notice to TCEQ within 48 hours

Sanitary Sewer Spill:

1. Contain and correct problem causing spill
2. Contact Operations Manager or Water Quality Manager who will report spill to TCEQ monthly (Form 20756)

Report all SSOs within 24 hours using TCEQ Form 501 Reporting Form UNLESS it meets the following Spill criteria, then report monthly on TCEQ Form 20756 Reporting Form:

1. the spill volume is less than 1,000 gallons;
2. it is not associated with another accidental discharge or spill;
3. it is controlled or removed before entering water in the state;
4. it does not adversely affect a public or private source of drinking water;
5. it will not endanger human health or safety or the environment; and
6. it is not otherwise subject to local regulatory control and reporting requirements.

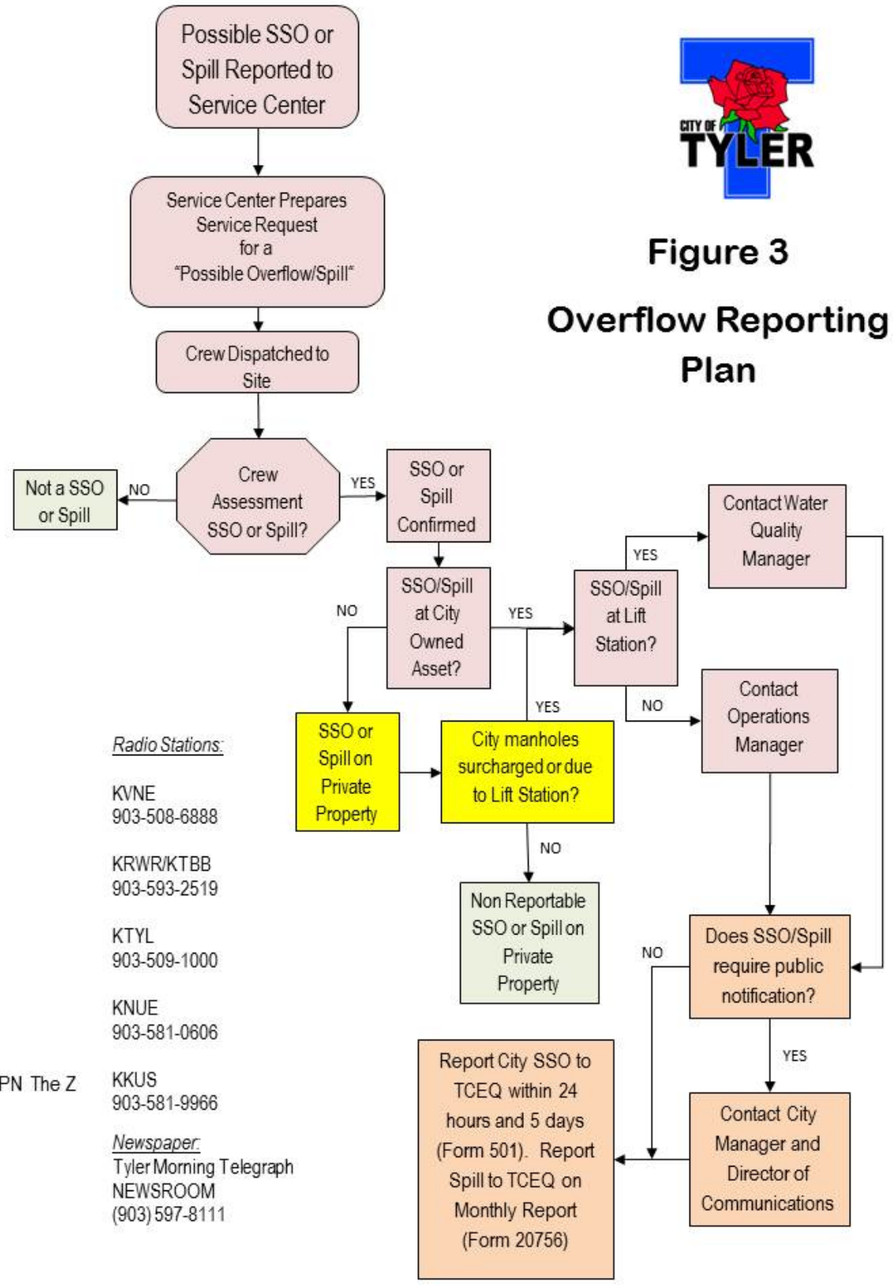


Figure 3

Overflow Reporting Plan

U.S. Environmental Protection Agency (EPA)
Phone: (214) 665-6444
Fax: (214) 665-7446
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Texas Commission on Environmental Quality (TCEQ)

TCEQ Region 5, Tyler
TCEQ Regional Office
Attn: Lisa Fisher
2916 Teague Drive
Tyler, TX 75701-3734
Tel: 903-535-5137
Fax: 903-525-0384

Austin Office Mailing Address
TCEQ
Water Quality Compliance Monitoring Team MC 224
Enforcement Division
P.O. Box 13087
Austin, Texas 78711-3087

Texas Parks & Wildlife Department (TPWD) - Kills and Spills Region 2
Greg Conley
11810 FM 848
Tyler, Texas 75707
Office: (903) 566-2518
Cell: (903) 520-3821
Fax: (903) 566-2357
Email: greg.conley@tpwd.state.tx.us

TPWD 24-Hour Communication Center
4200 Smith School Road
Austin, Texas 78744
Phone: (512) 389-4848

Television Stations:

KYTX CBS19 & MYTX
2211 ESE Loop 323
Tyler, TX 75701
903-581-2211
Fax: 903-581-5769

KLTV ABC 7
105 West Ferguson Street
Tyler, TX 75702
(903) 597-5588

KETK NBC/KFXK FOX51/KTPN The Z
4300 Richmond Road
Tyler, Texas 75703
(903) 581-5656

Radio Stations:

KVNE
903-508-6888

KRWR/KTBB
903-593-2519

KTYL
903-509-1000

KNUE
903-581-0606

KKUS
903-581-9966

Newspaper:
Tyler Morning Telegraph
NEWSROOM
(903) 597-8111

Note: All communications with any media will be coordinated through the City's Communication Department

requires more than 24 hours to correct, a written status report shall be forwarded by certified mail to TCEQ every five days until correction of the spill is completed. Information recorded for Sewer Overflows should include the following:

1. Indication of whether there was an actual observation of sewer overflow or lift station overflow running into surface waters, or whether there was only an indication (e.g. sewer residue on the ground surface leading to the surface water) that sewage had possibly flowed to surface waters but was not actually observed.
2. Indication that the sewer overflow had not reached surface waters. Guidance in characterizing these overflows as dry land only includes:

    a. Sewer overflow to underground storm drains (with no public access) where a Maintenance Crew verifies, by inspection, that the entire volume is contained in an impoundment and where complete cleanup occurs, leaving no residue.
    b. Overflow where observation or on-site evidence clearly indicates all sewage was retained on land and did not reach surface water and where complete cleanup occurs leaving no residue.

A determination of the start time of the sewer overflow using one or more of the following methods:

a. Date and time report of an overflow was received by the Service Center representative.
b. Date and time of a visual observation by a City employee.
c. Lift station flow charts and other recorded data.
d. Treatment plant observations.

A determination of the stop time of the sewer overflow using the following method:

a. When the blockage is cleared or flow is controlled or contained
b. Visual observations.

A determination of the volume or rate of the sewer overflow or lift station overflow:

a. When the rate of sewer overflow or lift station overflow is known multiply the duration by the rate of flow to determine the volume of the overflow.
b. When the rate of overflow is not known, investigate the surrounding area for evidence of ponding, obtain dimensions of ponding and calculate volume in gallons. Total volume divided by the appropriate time interval will provide a flow rate.
c. If a manhole is observed overflowing use the chart and photographs in Appendix 4 to estimate the rate of overflow, then multiply by the duration of the overflow.

An assessment of any damage to public and private property should be documented. Personnel shall not enter private property for purposes of estimating damage to structures, floor and wall coverings, and personal property.

The supervisor or designee confirming the reported sewer overflow shall make follow-up contact with the customer(s) reporting the incident summarizing the actions taken to resolve the overflow, to clean up the area, and to post and barricade the area if necessary.

Note: The City of Tyler currently notifies the TCEQ Regional office by telephone within 24 hours of a confirmed sanitary sewer overflow. The 5 day report, using TCEQ form 501, is transmitted by FAX to the Regional TCEQ Office and a copy is mailed to TCEQ in Austin.

The TCEQ Form 501 is also used for TCEQ defined spills and marked as "Monthly" and is not submitted to TCEQ. Rather this information is used to complete the monthly TCEQ Form 20756 (Monthly Spill Reporting Form) to summarize TCEQ defined spills. This summary report is sent to the TCEQ Regional Office via FAX and a copy mailed to TCEQ in Austin monthly.

2.6 Post SSO Primary Cause Analysis

The Operations Manager, for collection system overflows, or Manager Water Quality, for lift station overflows, is responsible for reviewing and maintaining the SSO spreadsheet and database. Part of the review process is the evaluation of the primary cause of the SSO following containment and cleanup. The primary cause of the SSO will be analyzed to determine if other actions are necessary to prevent future SSOs at this location. The Managers may implement additional actions to establish the cause and then initiate actions to prevent future SSOs at the location. For purposes of addressing repeat backups, blockages and SSOs, a "chronic problem" is defined as a backup, blockage or SSO that occurs at the same asset and/or same line segment at a frequency of more than once in two calendar years. Following are activities the Manager or designee may initiate to further evaluate and address the SSO:

- Evaluate the location and identify line segment(s) for televised inspection
- Review video and logs to isolate the primary cause of the SSO
- Review available historical data including SSO history, cleaning and inspection history
- Determine if the site is a chronic problem that warrants detailed investigation
- Prepare work order and place line segment on a preventive maintenance cleaning schedule or where a maintenance schedule already exists, increase cleaning frequency
- Prepare work order and place line segment on root removal list
- Prepare work order and place line segment(s) or specific location(s) within the line on repair list
- Contact FOG Coordinator (Manager Water Quality) with area suspected of contributing to grease blockage. FOG coordinator will review and may generate work order for increased inspections in the area, distribute FOG outreach educational materials in the area, and/or issue notice of violation where appropriate.

Data collected during the analysis will be used to update the SSO spreadsheet with primary cause for the SSO. The updated spreadsheet will be the basis for the TCEQ reporting. The Operations Manager or Manager Water Quality will review the primary causes for SSOs and make necessary adjustments to preventive maintenance cleaning schedules, root removal activities, pipeline repair or rehabilitation schedules, etc. to prevent repeat SSOs.

3.0 MONITORING/SAMPLING OF SURFACE WATERS AFFECTED BY SEWER SPILLS

The City will monitor and sample surface waters affected by sewer overflows. Once reported, personnel from the City will respond to the location of the spill. These personnel will take the following steps, immediately after initiating efforts to stop the overflow:

- Stop spill and determine volume of spill (i.e. total gallons).
- Determine if spill goes to a stream or receiving water. The impact of the spill on water quality is assessed by visual inspection for abnormal conditions such as effects on aquatic life, abnormal color, odor, etc.
- Notify sampling team if a SSO reaches a stream or receiving water. If a storm or other conditions present an unsafe sampling environment, sampling may be omitted and impacts will be based on visual observations only until sampling can be resumed.
- Post signs for restricting public access if necessary.

Requests for sampling during overflows may be initiated by the Operations Manager or Manager Water Quality. The Manager Water Quality shall be contacted to initiate sampling actions due to overflows. If a contact is not available, leave a message telling each person who you are and that you have preceded in contacting staff and with whom you plan to speak. The supervisor is responsible to see that the Manager Water Quality is contacted in the case of any overflow where sampling is required. Figure 4 presents a general sampling flow diagram that summarizes the sampling procedures. The sampling request shall be made by contacting:

Manager Water Quality
Office: (903) 939-8278

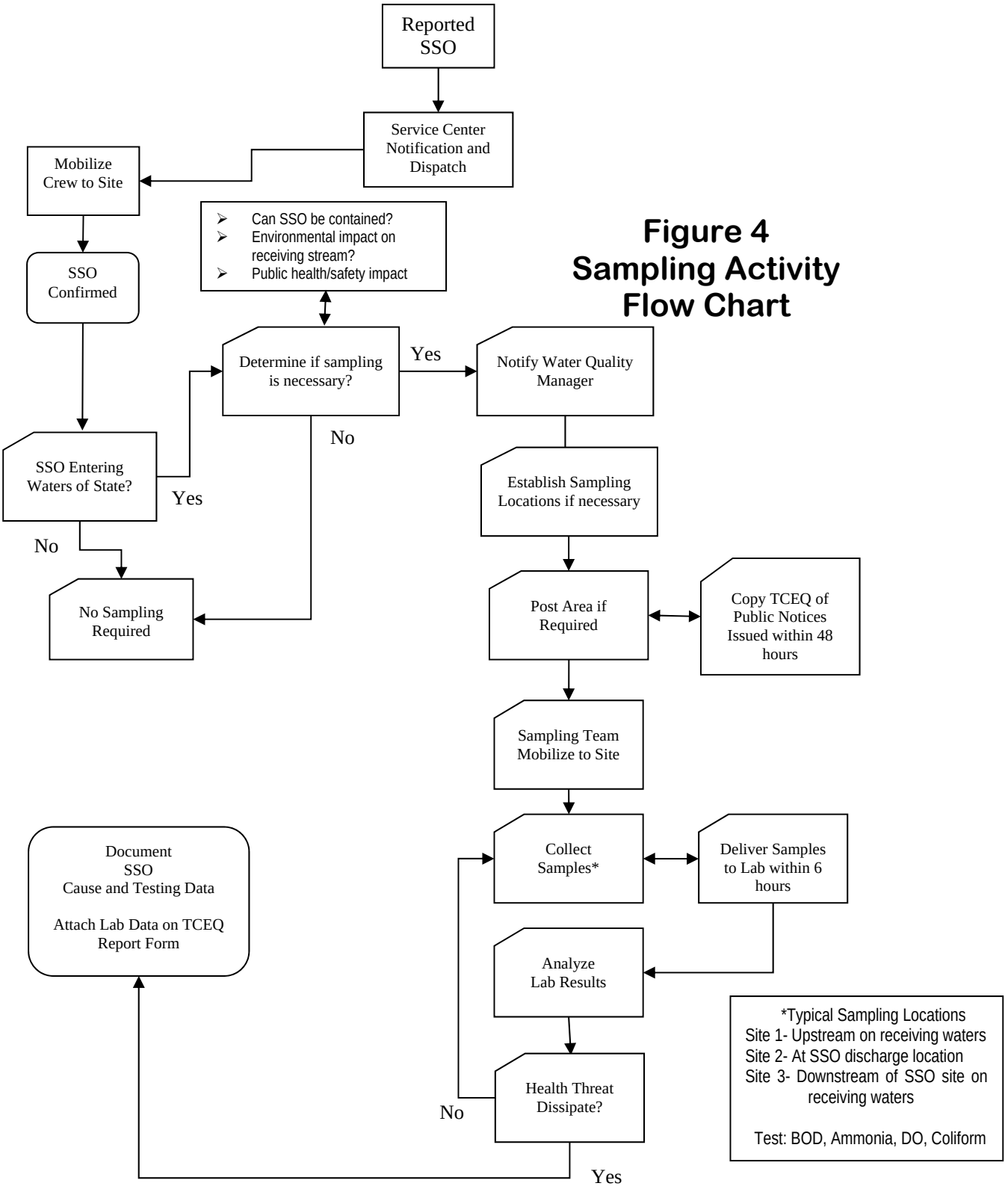


Figure 4
Sampling Activity Flow Chart

4.0 NOTIFICATION PROCEDURES

This section describes the actions the City may take, in cooperation with TCEQ and EPA to protect the public and limit public access to areas potentially impacted by overflows. Actions to limit public access to areas impacted by sewer overflows and lift station overflows which do not reach surface water but affect ground surfaces, structures or other resources are also addressed.

4.1 POSTING AND SIGNAGE

TWU has primary responsibility for determining whether signage (see Figure 5) is necessary for areas affected by sewer overflows to ground surfaces, structures or surface waters. The main factor in determining when and where to post signs is the degree of public access to any effects of the overflow that may remain at the site. The posting of signage would not necessarily prohibit use or access to the area unless posted otherwise, but provide a temporary warning of potential public health risks due to a recent sewage contamination. TWU may elect to use such signs, for example, where heavy flushing made it impractical to recover all of the wash-down water commingled with sewage. In cases when posting of signs is not sufficient or not feasible, door hangers may be used instead of, or in addition to, signs. The Operations Manager and Manager Water Quality shall make this decision. Table 3 outlines the posting decision process for City personnel.

Table 3
SANITARY SEWER OVERFLOW (SSO) POSTING DECISION PROCESS

Step Event/Action

1. Responding superintendent or crew supervisor confirms reported SSO.
2. Supervisor makes recommendation on intent to either post or not to post, or intent to use other public notification measures depending on the degree of the public's accessibility of the area impacted by the spill.
3. Regardless of the posting decision, the Operations Manager (for collection system SSOs) or Manager Water Quality (for lift station SSOs) calls TCEQ when making the 24 hour initial report. SSO data is forwarded to the Senior Utility Specialist for compiling the 5 day SSO report (Form 501) for the Director to sign and submit to TCEQ. Note that the Operations Manager and Manager Water Quality also submit spill data to the Senior Utility Specialist for compiling the monthly report (Form 20756) for the Director to sign and submit to TCEQ.
4. The Operations Manager or Manager Water Quality is advised of the final posting recommendation. Operations Manager or Manager Water Quality will determine to either post or not to post.
5. Locations of overflows to surface waters must be posted until the area is free from contaminates as evidenced by the on-site observations or laboratory test results.

Figure 5
SANITARY SEWER OVERFLOW (SSO)
POSTING SIGNAGE

Note: The Operations Manager or Manager Water Quality will determine which signage, if any, is appropriate for the location and report to the Director.

4.2 OTHER PUBLIC NOTIFICATION

Should it be determined that the posting of signs indicating that surface waters, ground surfaces or structures have been subject to a sewer overflow are not sufficient, the Operations Manager or Manager Water Quality shall determine the need for further public notification. This additional notification will be accomplished through the use of pre-scripted notices made available to the print or electronic news media for immediate publication or airing, or by other measures. See Appendix 5 for example news releases. Circumstances under which further public notification may be considered include:

- When permanent repairs to resolve an overflow condition will take in excess of 24-48 hours and the reduction in the usage of water in homes and businesses would assist in managing the operation of the locally affected sewer or lift station;
- When permanent repairs to resolve an overflow condition will take in excess of 24-48 hours and the citizenry need to be advised of repair schedules and possible traffic detours in the vicinity of the repairs and/or sewer or lift station pump-around operations;
- When permanent repairs to resolve an overflow condition which took in excess of 24-48 hours are completed and the City wishes to recap the episode such as the circumstance(s) contributing to the cause of the overflow, measures taken to repair and cleanup the affected area, time required to effect repairs, total gallons of the overflow, and any continuing monitoring of surface waters/ if applicable; and,
- When posting of waterways and ground surfaces affected by overflows cannot be effectively accomplished to adequately protect public health and safety (e.g., receiving water is bordered by private property).

4.3 REGULATORY AGENCY NOTIFICATION PLAN

Agency notifications shall be performed in parallel with other City internal notifications. The procedures for providing notification to the media of a sewer overflow are presented in this section. Internal notification and mobilization of personnel are detailed in Section 2.0 – Overflow Response Procedure.

Using data supplied from the confirmation of reported possible overflows and subsequent updates from response personnel, the supervisor shall notify the Operations Manager or Manager Water Quality. The Operations Manager or Manager Water Quality shall notify TCEQ within 24 hours of all SSOs. A five (5) day report (Form 501) will be prepared and submitted. Spills that meet TECQ requirements (refer to Section 1.2) will be grouped and reported monthly on Form 20756.

Laboratory and/or field sampling test data will be attached or sent when available as a supplemental report.

4.4 TCEQ PUBLIC NOTIFICATION REQUIREMENTS

The Texas Commission on Environmental Quality regulations addresses public notification requirements. Subchapter C: Public Notice of Spills or Accidental Discharges from Wastewater Facilities Owned or Operated by Local Governments (Chapter 319.302 Notification Requirements and 319.303 Notice to Local Officials and Local Media) states:

§319.302. Notification Requirements.

(a) The owner of a facility must designate a responsible individual to comply with this subchapter.

(b) In addition to the noncompliance notification to the commission required by §305.125(9) of this title (relating to Standard Permit Conditions) and any notification required under Chapter 327 of this title (relating to Spill Prevention and Control), the owner of a facility, through its responsible individual, must notify appropriate local government officials and the local media (see §319.301 of this title (relating to Definitions)) whenever one of the following types of spills occurs from the facility:

(1) a spill, regardless of volume, that the facility owner knows or has reason to know, will adversely affect a public or private source of drinking water;

(2) a spill with a volume of 50,000 gallons or more where one or more of the following conditions also exists:

(A) the spill occurs within 1/2-mile of a public or private source of drinking water;

(B) the spill occurs within 1/2-mile of a private drinking water well which is located within 1/2-mile of a public water supply well;

(C) the spill occurs within 1/2-mile up-gradient of a surface water intake of a public or private source of drinking water;

(D) the spill occurs in an active groundwater recharge area;

(E) the spill occurs up-gradient and within 1/2-mile of a karst terrain or shallow alluvial well that is a source of drinking water;

(3) a spill of 100,000 gallons or more.

(c) The responsible individual must issue the notice as quickly as possible, but not later than 24 hours after the facility becomes aware of the spill. The notice may be hand-delivered, sent by facsimile, e-mail, or by phone with follow-up written notice. The contents of the notice must comply with §319.303 of this title (relating to Notice to Local Officials and Local Media.)

(d) Within 48 hours of providing notice to appropriate local government officials and local media, the responsible individual must provide to the commission regional office in whose region the spill occurred a copy of the notice, the date notice was provided to local officials and local media, and a list of notice recipients.

§319.303. Notice to Local Officials and Local Media.

(a) Persons responsible for a wastewater spill must ensure notice complies with subsections (b) and (c) of this section. Responsible persons may contact the commission to obtain a template which may be used in the event of a wastewater spill.

(b) For all wastewater spills as referenced in §319.302(b) of this title (relating to Notification Requirements) the notice must contain the following:

(1) one of the following statements:
(A) a spill from a wastewater treatment facility has occurred; or
(B) a spill from a collection facility has occurred;
(2) the facility name;
(3) person to contact for further information;
(4) the location of the spill;
(5) the estimated date and time of the spill;
(6) the estimated volume of the spill (number of gallons);
(7) the type of the spill (domestic, industrial, etc.);
(8) a description of the area potentially affected, including a down-gradient and lateral distance from the spill site;
(9) the suspected cause of the spill; and
(10) a list of actions that have been taken including, but not limited to:

(A) notification of:
(i) appropriate local government officials; and
(ii) the TCEQ regional office;
(B) containment of the spill;
(C) increased monitoring of water supply systems; and
(D) initiation or completion of cleanup activities.

(c) If the wastewater spill meets the conditions of §319.302(b)(2) and/or (b)(3) of this title then the notice must also contain the following precautionary statements:

(1) Persons using private drinking water supply wells located within 1/2-mile of the spill site or within the potentially affected area should use only water that has been distilled or boiled at a rolling boil for at least one minute for all personal uses including drinking, cooking, bathing, and tooth brushing. Individuals with private water wells should have their well water tested and disinfected, if necessary, prior to discontinuing distillation or boiling.
(2) Persons who purchase water from a public water supply may contact their water supply distributor to determine if the water is safe for personal use.
(3) The public should avoid contact with waste material, soil, or water in the area potentially affected by the spill.
(4) *If the public comes into contact with waste material, soil, or water potentially affected by the spill, they should bathe and wash clothes thoroughly as soon as possible.*

Figure 6 presents the TCEQ Notification Template for use in providing the required notification should the overflow meet the requirements for notifying City officials and media. The following summarizes the normal protocol when City officials and media must be notified of an overflow:

1. The Director, Operations Manager or Manager Water Quality will prepare a City of Tyler Media Release Letter with attached TCEQ Notification Letter Form TCEQ-20627 (See Figure 6) and contact the Environmental Compliance Engineer 903-531-1085 and brief them on the content and details of the event. A copy of the proposed notification letter will be sent to the City Communications Department that will coordinate the notification efforts and contact the appropriate local City officials and media outlets.

   This notification is done as soon as possible, but not later than 24 hours after becoming aware of a major overflow.

2. Immediately (no more than 48 hours) after distributing the public notice, the Operations Manager or Manager Water Quality shall submit a copy of the notification to TCEQ Region 5 by faxing notice to 903-525-0384.

3. After hours and weekend sewer overflows are reported to the Golden Road Water Treatment Plant at 903-597-6541. Sewer overflows that occur on weekends will be called in to the TCEQ and will be submitted on the following Monday.
   a. Calls received by the Service Center from the media dealing with SSOs are always referred to the Communications Department.
   b. The Director or designee is authorized to be interviewed by the media as the designated spokesperson.

Figure 6
TCEQ Public Notification Template

Texas Commission on Environmental Quality

Public Notification Form for Wastewater Discharges

Information about the Discharge

An unauthorized discharge or spill of wastewater has occurred from:

Wastewater Treatment Facility: _____ Collection System: ___

Facility Name:

Person to contact for information:

Location of spill(s):

Estimated date and time of spill(s):

Estimated volume of spill(s):

Type of Spill:

Description of the area potentially affected, including down gradient and lateral distance from spill(s) site:

Suspected cause of spill(s):

.

List of Actions Taken Including but, not Limited to:

Notification of

Appropriate local government officials: _____

TCEQ Regional Office: _____

Figure 6 - Continued
TCEQ Public Notification Template

Containment of spill:

Increased monitoring of water supply systems:

Initiation of cleanup activities:

Precautionary Statements:

1. Persons using private drinking water supply wells located within ½ mile of the spill site or within the potentially affected area should use only water that has been distilled or boiled at a rolling boil for at least one minute for all personal uses including drinking, cooking, bathing, and tooth brushing. Individuals with private water wells should have their well water tested and disinfected, if necessary, prior to discontinuing distillation or boiling.
2. Persons who purchase water from a public water supply may contact their water supply distributor to determine if the water is safe for personal use.
3. The public should avoid contact with waste material, soil, or water in the area potentially affected by the spill.
4. If the public comes into contact with waste material, soil, or water potentially affected by the spill, they should bathe and wash clothes thoroughly as soon as possible.

4.5 MEDIA REQUESTS

The City of Tyler is committed to maintaining an open and informative dialogue with members of the media as well as the general public. In order to avoid confusion and provide the most factual information regarding utility issues, as well as protect our customers' right to privacy, the City Communication Department should be notified of any media (newspaper, trade publication, radio, etc.) contact.

Cooperation with reporters is essential in order to provide them with the needed information in a timely manner. They are the means of transmitting correct and factual information from the City of Tyler to the general public. If an employee is approached in the field or at work by a member of the media concerning an incident involving the utility (whether it is an accident involving a City of Tyler employee, a major or extended interruption of service, or an issue considered to be controversial in nature) that employee should advise the reporter that their contact should be the City's Communication Department. Offer them the appropriate phone number or obtain their name and phone number for the Communications Department so that a return call may be made. The employee should also advise their immediate supervisor or manager that an inquiry has been made by the media so the supervisor or manager may forward details of the incident to the Communications Department. The Communications Department will determine if the inquiry should be redirected.

Managers, supervisors or crew leaders can serve as the contact in the field for questions regarding routine projects that may be taking place near or on a customer's property, such as repair work or outage response. If a customer approaches a field employee with questions regarding a routine project, they should politely direct the customer to the manager, supervisor or crew leader. If that person is not on site at the time, the employee should offer to take the customer's name and phone number and have the manager, supervisor or crew leader contact them as soon as possible to answer any questions or concerns.

4.6 REQUESTS FOR CONSTRUCTION SITE AND FACILITY TOURS

Safety of the general public and security of City of Tyler facilities should be of utmost priority for all employees. For this reason, construction site and facility tours for members of the general public should be cleared through the office of the Director. That person will be in charge of seeking approval of a facility tour from the respective member of the Department. No one from the general public or the media is permitted to enter non-public areas of the City of Tyler facilities without first seeking permission from the Director. Employees are within their right to ask unauthorized persons to leave the premises immediately.

5.0 DISTRIBUTION AND MAINTENANCE OF SSORP

The SSORP reflects the procedures established for responding to reports of possible sewer overflows and confirmed overflows from the wastewater collection system, treatment plants and lift station system so as to:

- Minimize the adverse effects of sewer overflows on public health, water quality and beneficial uses of the receiving waters.
- Minimize the sewer overflow volume which enters surface waters.

Updates of the SSORP shall be made to reflect all changes in City and regulatory policies and procedures as may be required to achieve its objectives.

5.1 REVIEW AND UPDATE OF SSORP

The SSORP shall be reviewed every two years in association with the CMOM Plan and amended as appropriate by the Operations Manager or Manager Water Quality. The City shall:

- Periodically review the SSORP and update the manual as needed
- Conduct annual training on the use of the SSORP with appropriate personnel.
- Review and update, as needed, the various contact person lists included in the SSORP.

5.2 REVIEW OF PROCEDURES AND PREPAREDNESS

Training for preparedness and responsiveness associated with sewer and lift station overflows will be provided as required to the supervisory staff. This training provides basic standard operating procedures and reporting requirements. The SSO training of city staff will focus on;

- Defining the goals and purpose of the SSORP;
- Review of Overflow Response Procedures;
- Monitoring/Sampling of Surface Waters;
- Public Advisory Procedure;
- Regulatory Notification Procedure;
- Media Notification Procedures; and,
- SSORP updates and revisions.
- SSO/spill quantification and use of Appendix 4
- Caution in the use of disinfectants

The purpose of the training program is to provide personnel with the proper training, skills, and equipment to complete job requirements safely and in compliance with regulatory requirements. The department provides safety training to all staff, including office personnel. TCEQ maintains electronic training records for those City employees with PDH annual training requirements for operator certification.

APPENDIX 1

NOTICE OF WASTEWATER OVERFLOW FORMS

Note: The City of Tyler currently notifies the TCEQ Regional office by telephone within 24 hours of a confirmed sanitary sewer overflow. The 5 day report, using TCEQ form 501, is transmitted by FAX to the Regional TCEQ Office and a copy is mailed to TCEQ in Austin.

The TCEQ Form 501 is also used for TCEQ defined spills and marked as "Monthly" and is used to complete the monthly TCEQ Form 20756 (Monthly Spill Reporting Form) to summarize TCEQ defined spills. This summary report is sent to the TCEQ Regional Office via FAX and a copy mailed to TCEQ in Austin monthly.

TCEQ Region 5, Tyler
TCEQ Regional Office
Attn: Lisa Fisher
2916 Teague Drive
Tyler, TX 75701-3734
Tel: 903-535-5137
Fax: 903-525-0384

TCEQ Compliance Monitoring Team (MC224)
Enforcement Division
P.O. Box 13087
Austin, TX 78711-3087

SSO Notification	
Origination Date: 09/01/2017	**Policy Number:** Wastewater-016
Revision: New	**Approved:**

Sanitary Overflow Notification Procedures

Notification of a sanitary overflow from a manhole, lift station or a significant discharge from a property lateral will follow the steps outlined below:

1. Service Center dispatches personnel to the scene of the possible overflow (manhole, cleanout, etc.)

2. Personnel arrives onsite and confirms overflow/spill and begins mitigation efforts.

3. Personnel will contact the appropriate Supervisor immediately. The Supervisor will then notify the Operations Manager for collection system overflows or the Water Quality Manager for lift station overflow. The Manager will notify TCEQ (if required). Notification should include location, amount of overflow and steps being taken for mitigation or as much information as possible at the time of notification.

4. Supervisor will travel to overflow site to determine the severity of the overflow, gather information. If a fish kill is verified, immediately notify TCEQ, TPWD, Operations Manager, Water Quality Manager and NetHealth with any updated information about the overflow. Post appropriate signage if necessary to control access. Upon this notification of TCEQ and TPWD, ask each whether or not there will be a site visit from any of their representatives. If either indicates that a site visit will occur, ask for contact information, an estimated time of arrival and document the information provided from each.

5. After overflow condition is mitigated, clean up area to extent possible. Communicate with TCEQ and/or TPWD representative to establish a time to clear away all dead fish (identifying species and size) from affected area. Clear away all solids from overflow area. Use de-chlorination equipment and flush hydrant to flush clean water over area affected by overflow. Spray disinfectant and deodorizer on affected area after cleanup completed.

   If overflow is determined to have been caused by a blockage created from non- flushables such as paper towels, disposable mops, etc. advise the Supervisor. The Supervisor will then notify the offending property owner/management that non-flushables are to be disposed of properly (not through the sanitary sewer system).

6. As soon as is practical, and as safety and light permits, the creek adjacent to the overflow or the creek where the overflow runs into will be walked and inspected. This inspection will be for water quality conditions and to ensure fish kill has been thoroughly mitigated.

7. Manager or his designee must notify by phone or fax (within 24 hours): TCEQ Regional Office, phone 903-535-5137 (leave message if after hours) Fax 903-525-0384, TPWD Emergency Response Spill Reporting hotline (800)832-8224 and 24 hour communication Center at 512-389-4848 or at the number(s) listed below. Notification must include location, volume, content of discharge, time the discharge was stopped and what was done to mitigate the discharge.

a. If volume reaches 100,000 gallons, immediately notify City Communications Department, at (903) 531-1272, Director of Utilities and/or Director Public Works (903) 531-1234.

b. Within 48 hours after notifying the public, the Superintendent or his designee must report to the regional office that public notice has been given.

c. SSO meeting the requirements for public notification occurring outside of normal business hours, then the Superintendent or his designee should also notify the TCEQ Emergency Response Hotline (1-800-832-8224)

8. Complete written report of Unauthorized Discharge per using TCEQ Form 501 within 5 days

a. Send original hard copy via form letter per attachment #32 to:
TCEQ Region 5, Tyler
TCEQ Regional Office
Attn: Lisa Fisher
2916 Teague Drive
Tyler, TX 75701-3734
Tel: 903-535-5137
Fax: 903-525-0384

b. Send copy via form letter per attachment to:
TCEQ Water Compliance Monitoring Team
Enforcement Division
P. O. Box 13087
Austin, Texas 78711-3087

c. Send copy via form letter per attachment to:
Greg Conley, Pollution Biologist
TPWD Kills and Spills Team
11810 FM 848
Tyler, Texas 75707
Office (903) 566-2518
Cell (903) 520-3821
Fax (903) 566-2357
greg.conley@tpwd.state.tx.us

d. Copy the following on above letters:
Environmental Compliance Engineer
City Manager

Tyler Water Utilities Wastewater Collection
Field Reporting Form
903-531-1285

Work Order No.:_____

1. Notification of possible wastewater blockage/release received by: ☐ Phone Call ☐ Email ☐ In Person
2. Notification received: Date: _____ Time: _____ AM / PM
3. Name of person making report:
   _____
   Phone # or email: _____
4. Location:
   Address, intersection or other location information:
   _____
   a. Crew dispatched at:
   Date: _____ Time: _____ AM / PM
   b. Arrived onsite:
   Date: _____ Time: _____ AM / PM
5. Did release of wastewater occur? ☐ Yes ☐ No
6. Is release a result of issue with public sewer system?
   ☐ Yes - Asset ID: _____ ☐ No = Private
   a. ☐ Pipe c. ☐ Lift Station
   b. ☐ Manhole d. ☐ WWTP
   e. ☐ Cleanout ☐ Other_____
7. Date/Time release cleared:
   Date: _____Time: _____ AM / PM

   Estimated duration of release: _____hr. _____min.
   Estimated flow rate: _____ GPM
   Estimated volume of release: _____ gallons
   Estimation Method: ☐ TCEQ
   ☐Other:_____
8. Was any amount of the release contained/ recovered?
   ☐ Yes _____gallons ☐ No

Method of recovery: a. ☐ Pumped back into collection system
b. ☐ Cleaned with vacuum truck
c. ☐ Other _____

Cleanup actions taken: ☐ Area disinfected ☐ Area flushed

9. Corrective Action Taken:_____

10. Potential field cause(s) of release (check all that apply):
    a. ☐ Fats, Oils, Grease g.☐ Flooding
    b. ☐ Roots h.☐ Excess Infiltration/Inflow
    c. ☐ Debris i. ☐ Contractor Damage
    d. ☐ Breaks Due to Erosion j. ☐ Vandalism
    e. ☐ Breaks, Other Causes k.☐ Undetermined
    f. ☐ Equipment malfunction l. ☐ Other: _____
11. Follow-up actions recommended:
    ☐ cable ☐ wash ☐ wash and treat ☐ root removal
    ☐ replace sewer tap
    ☐ other: _____

12. Route for wastewater released :
    ☐ Building Backup
    ☐contained before storm drain
    ☐ entered storm-drain
    ☐ entered dry streambed
    ☐ entered flowing or standing water in creek

    Name of receiving waters: _____
13. Was fish kill observed? ☐ No
    ☐ Yes – Report to Operations Manager Est. No. Killed: _____
    TWU Employee Name: _____Date: _____

To Be Completed by Supervisor

A. A Classification of Wastewater Release:
   1. ☐ TPDES non-compliance due to:
      a. ☐ unauthorized discharge
      b. ☐ failure to properly operate and maintain system
      Specify:_____
   2. ☐ Spill requiring report under TWC 26.039.
      ☐ 24 hour report ☐ Monthly report
   3. ☐ SSO as defined by Consent Decree
B. Was upstream/downstream sampling conducted?
   ☐ No ☐ Yes – See Sampling Results
C. Potential danger to human health and safety or the environment:
   ☐ No ☐ Yes – Describe: _____
D. Discharge route: _____
   Watershed for:

   ☐Wastewater Treatment Plant – South Side
   TPDES Permit 10653-02/TX004798

   ☐Wastewater Treatment Plant – West Side
   TPDES Permit 10653-002/TX0047988

E. Date scheduled for CCTV: _____(within 5 days)
   Date completed: _____Video #: _____Score: _____
F. Action taken to prevent reoccurrence :
   ☐ repair manhole/ invert
   ☐ repair sewer main
   ☐ schedule line to replaced or slip lined
   ☐ place on High Frequency Cleaning list: ☐ No
   ☐ Yes - ☐ 12 mo. ☐ 6 mo. ☐ 3 mo.
   ☐ schedule follow-up CCTV inspection: ☐ No
   ☐ Yes - ☐ 1 year ☐ 2 years ☐ 3 years
   ☐ call lift station technician
   ☐ other_____
G. Supervisor review:

Name: _____ Date: _____

City Point of Contact:
Kevin R. Olson/Operations Manager
TCEQ Region 5: Lisa Fisher 903-535-5137 FAX 903-525-0384
EPA Region 6: Phone 214-665-6595; FAX 214-665-2168

Water Quality Noncompliance Notification

See back of Form for Guidance for Completion

☐ Unauthorized Discharge ☐ Reportable Effluent Violation ☐ Monthly Spill Report ☐ Other

General Information

Entity Name: **Telephone No: (903) 531-1285**

☒ Permittee ☐ Subscriber ***Permit Number:** ☐ TCEQ 10653-02 TX0047988 Southside Plant
☐ TCEQ 10653-01 TX0047996 Westside Plant

TCEQ Region: 5-Tyler **County: Smith**

Noncompliance Summary

Description of Noncompliance (include location, discharge route, and estimated volume of unauthorized discharge):

Cause of Noncompliance:

Duration: **Start Date and Time:** **End Date and Time:**
Or Date Expected to be Corrected:

Potential Danger to Human Health and Safety or the Environment:

Actions Taken

Monitoring Data: Data should be attached or submitted to TCEQ when available.

☐ Yes ☐ No Field Measurements
☐ Yes ☐ No Laboratory Samples
☐ Yes ☐ No Fish Kill If yes, estimated number killed:

Actions Taken to Mitigate Adverse Effects:

Actions Taken to Correct the Problem and Prevent Recurrence:

Information Reported by (Name/Title):

Verification Information

Information Reported By (Name/Title): _____

Date/Time Reported via Phone: _____ **To Whom: Lisa Fisher 903-535-5137**

Date Faxed (903-525-0384) to TCEQ Region 5: _____**Date Mailed to TCEQ MC224:**_____

Note: If this form is being used for a 5-day written report, a copy of the form should be sent to the TCEQ Region Office, and the original to: TCEQ, Compliance Monitoring Team (MC224), Enforcement Division, P.O. Box 13087, Austin, TX 78711-3087.

*** If the noncompliance is an unauthorized discharge from a wastewater collection system, use the permit number of the treatment plant to which the collection system is tied. If you are uncertain of this permit number, you may call the TCEQ Regional Office for assistance.**

Guidance - Water Quality Noncompliance Notification Form

When reporting an unauthorized discharge or sanitary sewer overflow (SSO), it is important to include all information that is requested on the notification form. If you have questions about the form, do not hesitate to call your TCEQ Regional Office and ask to speak to a wastewater investigator. All information should comply with reporting requirements noted in Texas Water Code Section 26.039, 30 Texas Administrative Code (TAC) Section 305.125(9), and, if applicable, 30 TAC Section 319.302(b).

This form may be used as the 24-hour notification to the Regional Office and may also be used as the 5-day written report. If the event was reported within 24 hours via phone, or an incomplete form was submitted as part of the 24-hour reporting requirement, you must fax or mail a completed, signed copy within 5 days to the Water Section Manager at your TCEQ Regional Office. The original, signed copy should be mailed to the address located at the bottom of the form.

Unauthorized Discharge - An unauthorized discharge is any discharge of wastewater into or adjacent to waters in the state at a location not permitted as an outfall. An SSO is any overflow, regardless of volume, from a sewer collection system (i.e., lift stations, manholes, force mains, cleanouts, service lines). An SSO is considered to be an **"unauthorized discharge."**

General Information

"Entity name" is your permitted name (owner name for subscriber systems). Designate with an "X" or "✓" to identify whether you are a permittee or subscriber.

Permit Number - Include your TCEQ WQ permit number (i.e., WQ0012345001). If you are a **subscriber,** use the permit number of the treatment plant to which the collection system is tied. If the WQ permit is unknown, please call the TCEQ Regional Office for assistance.

Noncompliance Summary

Description of Noncompliance:

- Location & collection system structure (i.e., Manhole at 650 Main St.)
- Route of discharge – Follow the discharge from its origin to where it was contained or entered a receiving waterway. If the receiving waterway is unnamed, provide the name of the nearest named adjoining waterway. (Examples: soaked into ground; manhole → nearby storm ditch → unnamed tributary of Kings Creek)
- Estimated amount of the discharge (includes any recovered amount)

Cause of Noncompliance: Why did this incident occur? Was it caused by grease, blockage, infiltration or inflow, equipment failure, structural failure, power outage, vandalism, human error, contractor, unknown?

Duration: Include dates and times.

Potential Danger to Human Health & Safety or the Environment: Any danger to the aforementioned should be promptly discussed with the TCEQ Regional Office. Additional notifications may be necessary.

Actions Taken

Monitoring Data: Designate with an "X" or "✓."

Actions taken to Mitigate Adverse Effects: Ask yourself, "How did we keep this from becoming an environmental or health problem?" Include information such as:

- amount recovered from the total estimated amount stated under the description above
- method used to recover the wastewater
- treatments used for disinfection or deodorizing
- activities to lessen impact to property, a waterway, or public health

Actions taken to correct the problem and prevent recurrence: Ask yourself, "How did we address the direct cause of the overflow, and was there anything else we did to prevent this noncompliance from occurring again?" Include actions such as:

- jetting the main
- educating residents about proper grease disposal
- adding the location to your preventative maintenance list
- repairing equipment, circuits, or replacing lines, etc.

Verification Information

Information Reported By: Include both your name and title. Please sign and date the form.

Accidental Discharge or Spill Monthly Summary Form

See back of form for guidance for completion

General Information:

Permittee: ☒ Subscriber: ☐

Regulated Entity Name: City of Tyler 903-531-1285 EPA ID No: Click here to enter text.

Regulated Entity No: Click here to enter text. TCEQ Region: Region 5 - Tyler

Permit No: ☐ TCEQ 10653-02 TX0047988 Southside Plant County: Smith

☐ TCEQ 10653-01 TX0047996 Westside Plant

Start Date Start Time	End Date End Time	Volume (gallons)	Location	Cause	Steps taken to reduce, eliminate, and prevent recurrence	Description/Content	Standard Method for Volume Calculation

Information Reported by (Name/Title) Kevin Olson/Operations Manager Signature:_____

Date Reported_____ FAX to 903-525-0384 Attn: Lisa Fisher Mailed to Austin: ___/___/_____

Note: A copy of this form should be sent to your TCEQ Regional Office no later than the 20th day of the following month and the original to the TCEQ Compliance Monitoring Team (MC224), Enforcement Division, P.O. Box 13087, Austin, TX 78711-3087

*If the accidental spill or discharge occurs at a Subscriber system (collection system only), use the RN associated to the collection system. If you are uncertain of your RN, you may call the TCEQ Regional Office for assistance.

When reporting an accidental or unauthorized discharge or spill, it is important to include all information that is requested on the notification form. If you have questions about the form, do not hesitate to call your TCEQ Regional Office and ask to speak to a wastewater investigator. All information should comply with reporting requirements noted in Texas Water Code Section 26.039, 30 Texas Administrative Code (TAC) Section 305.132, and, if applicable, 30 TAC Section 327.32.

This form may be used in lieu of 24-hour notification to the Regional Office when the accidental or unauthorized discharge or spill meets the requirements in 30 TAC 305.132 and 30 TAC 327.32. You must fax or mail a completed, signed copy within 20 days of the following month to the Water Section Manager at your TCEQ Regional Office. The original, signed copy should be mailed to the address located at the bottom of the form.

General Information

Entity name - permitted name or owner name for subscriber systems.

Permit Number – Your TCEQ WQ permit number (i.e., WQ0012345001). If you are a subscriber, use the RN to which the collection system is associated. If the RN is unknown, please call the TCEQ Regional Office for assistance.

Noncompliance Summary

Volume – volume must be estimated by the one of the four methods outlined in 30 TAC

Location – include address or latitude and longitude coordinates

Cause –

Potential field cause(s) of release:

- Fats, Oils, Grease
- Flooding
- Roots
- Excess Infiltration/Inflow
- Debris
- Contractor Damage
- Breaks Due to Erosion
- Vandalism
- Breaks, Other Causes
- Undetermined
- Equipment malfunction
- Other: _____

Steps taken reduce, eliminate or prevent recurrence – List all steps taken to ensure no further reoccurrences

Description/content – a description of the events that lead to the spill including the contents of the spill and actions taken to clean

Standard Method – name the method you used to estimate the volume

APPENDIX 2

LIFT STATION POWER OUTAGE PLAN/ SSO SOP

The Lift Station Power Outage Response Plan provides specific details on procedures associated with each lift station outage. The Lift Station plan is used as guidance in minimizing the impact of power outages or other lift station failures.

Lift Station Response Plan

Introduction

The City of Tyler (City) recognizes the importance of the regular and proper operation of its wastewater lift stations to properly convey wastewater for the protection of the environment and to safeguard public health and safety. Historically, a lift station failure is a very rare occurrence, however, a failure of a lift station may result in customer service being disrupted and may result in a Sanitary Sewer Overflow (SSO) if it takes an extended period of time to return the lift station to service. A failure may result from a power outage, mechanical failure, lift station control failure, pump blockage, vandalism, severe storm damage, and so on. For these reasons the City has developed this Lift Station Response Plan (LSRP) to document lift station monitoring and response procedures to address such events and to minimize the impact on customers and the environment.

This LSRP provides a summary of the staffing and equipment available to continue the proper operation and maintenance of the City's lift stations. Additionally, it includes the specific details of the activities and procedures that personnel follow during an event that does not fall within the normal operation and maintenance of a lift station.

Organizational Hierarchy and Responsibilities

The Water Quality Manager is ultimately responsible for the lift station response plan elements within TWU.

Specifically for lift stations, the Water Quality Manager oversees the dedicated crews responsible for operation and maintenance of the lift stations including the response to failures. City crews routinely visit each lift station on a daily basis. The Plant Mechanics are responsible for troubleshooting any identified failure and performing the remedial measures necessary to resolve the failure event. Additional staff is engaged on an as-needed basis as determined by the staff on site.

Alarms and Response Procedures

For every lift station, the City monitors the following four (4) events:

- Main Power Failure
- Control Power Failure
- High Water Level In Wetwell

When any of these events are detected, a signal is transmitted to notify staff of a potential failure. When an alarm is received and verified, crews are dispatched to resolve the issue. The SSO Overflow Response Plan Manual details procedures used to address those situations where an SSO occurs as a result of a lift station failure. Upon receipt of an alarm, the plant mechanic will proceed to the lift station and each crew will initiate troubleshooting procedures (Table 1, Attachment A) to identify if the failure is electrical, mechanical or blockage in origin.

For an observed lift station failure, the following actions will be taken:

1. If Power is Available:
    a. Check electrical meter is turning to confirm power at station
    b. Check electrical panel to ensure main switch is engaged and system is in auto mode of operation
    c. Confirm problem still exists if operated in manual mode
    d. Confirm circuit breakers have not tripped
    e. Confirm pumps are operating
    f. Check wet well to ensure level is moving
    g. Observe pump check valve to determine if it is opening normally
    h. Check if each individual pump is operating or if none of the pumps are operating
2. If Power is Not Available:
    a. Start backup generator power system per manufacturer's procedures or initiate delivery of portable pumps.
    b. Review Power Outage Plan for specific lift station and review retention time before SSO is likely
    c. Obtain supplemental crews (electrical and mechanical) if needed
    d. Initiate delivery of appropriate backup portable generator, portable pumps, or vacuum/vactor vehicles based on specific response plan for the specific lift station

In the event of a force main leak or failure, the following actions will be taken:

1. The leaking force main will be isolated or bypassed if the retention time does not offer enough time to make repairs to the pipeline.
2. City personnel or outside contractor (depending on the damage, location, depth of pipeline, etc.) will complete repairs to the force main.
3. Where alternate force mains are available, valves will be adjusted to bypass the failed force main or divert as much flow from the failed force main as possible.
4. Containment of any SSO and cleanup will follow the procedures in the SSO Response Plan Manual.

In the event of multiple, simultaneous alarms, staff prioritize the lift stations based on likely time to overflow and dispatches crews accordingly. If necessary, additional crews are engaged and dispatched to resolve the issues.

Response Equipment List and Location

Various equipment is available to the staff to respond to lift station alarms. The specific equipment to be used to resolve an event will depend on the cause and existing lift station configuration. Equipment and other options available for lift station outages include, but is not limited to:

1. On-site backup generators
2. Portable backup generators having installed power transfer switches
3. Portable pumps and quick connect fittings

4. Vacuum/Vactor vehicles to pump and truck wastewater during outage
5. Engagement of local Equipment Vendors and Service Providers
6. Support from adjacent jurisdictions via Mutual Aid Agreements

Portable equipment is stored at the Water Service Center or available from local suppliers. The equipment that City staff will utilize depends on the nature of the outage and the lift station configuration. The requisite time for crews to implement alternative flow control measures or restore lift station service before the outage results in an SSO varies from lift station to lift station and is dependent upon one or more factors including, but not limited to, incoming flow volumes, storage volume within the system, upstream diversion(s) and control(s), and flow by-pass capabilities. Crews are instructed to monitor the flow at the location where flow is most likely to escape the system based on elevations and hydraulic grade lines. By observing flow elevations at the designated point, response crews can adjust their response as necessary to prevent an SSO.

Training and Safety

Appropriate staff will participate in regularly scheduled training sessions to assist response crews in awareness of their responsibilities in executing their duties in a safe and effective manner. These training sessions will be organized based on the latest SSORP and LSRP, as well as other pertinent reference materials. Training sessions will also incorporate hands-on field demonstrations to ensure the preparedness of all response personnel for anticipated situations. Field demonstrations will be performed to test equipment, response time, training effectiveness, and manpower capabilities.

Training and event participation will be documented and maintained by the City. City staff is encouraged to receive training through various industry associations and to participate in City-provided lift station and collection system training.

LSRP Availability and Updates

The City will routinely review, evaluate and update the effectiveness of this LSRP as appropriate. The LSRP will be amended as necessary to reflect changes in facilities or changes in operations or maintenance procedures that may materially affect the potential for SSOs related to the lift stations. As policies change and response procedures are refined, the LSRP will be reviewed and modified to reflect all necessary changes. The City may also review and recommend modifications as appropriate after any SSO occurrence.

The City will maintain the master copy of this LSRP and amendments at the City's operations yard and, upon request, be made available to the public for review. Copies will be distributed to appropriate staff, City Departments and regulatory agencies as necessary. Copies, or portions of this document as appropriate, will be kept in response vehicles and at designated lift stations.

ATTACHMENT A

LIFT STATION TROUBLESHOOTING GUIDE

Table 1 Troubleshooting Pump Stations

The following chart provides some typical problems associated with pumping stations and possible solutions.

Troubleshooting Guide
Raw Sewage Pump Stations

Indications/ Observations	Probable Cause	Check or Monitor	Solutions
1. Black and odorous septic wastewater.	1a. Improper operation of lift station. 1b. Flat grades in collection system.	1a. Inspect lift station. 1b. Check velocity in collecting lines.	1a. Repair lift station. 1b. Flushing program to maintain correct velocities.
2. Intermittent flow or surging.	2a. Improper wet well sensor adjustment. 2b. Hydraulic capacity of station is exceeded. 2c. Illegal connections to the system.	2a. Check sensor adjustment. 2b. Check designed capacity. 2c. Check sanitary sewer system to determine the source.	2a. Adjust level sensors. 2b. Install surge tank. 2c. Remove and prevent illegal connections.
3. Intermittent flow or surging during heavy rainfall.	3a. Flooded streets and water entering through manholes. 3b. Broken lines.	3a. Check seals on manholes. 3b. Inspect for broken lines.	3a. Seal manholes and repair cracks in manhole structures. 3b. Repair broken lines.
4. Pump not running.	4a. Defective control circuit. 4b. Defective motor.	4a. Use a meter to check switching circuits. 4b. Check motor operation.	4a. Replace defective part. 4b. Replace motor
5. Pump not running, circuit breaker will not reset.	5a. Clogged pump or closed valve.	5a. Inspect pump for obstruction.	5a. Remove obstruction.
6. Pump is running, but reduced discharge.	6a. Pump air-bound. 6b. Clogged impeller. 6c. Wearing rings.	6a. Air bleed pipe. 6b. Inspect for obstructions. 6c. Check clearance.	6a. Remove obstruction. 6b. Remove obstruction. 6c. Replace worn rings.
7. Clogged pump or pump suction line.	7a. Grease accumulations.	7a. Check grease accumulation on walls of wet well.	7a. Frequent cleaning of wet well or removal of grease by dewatering the well, and scraping the bottom.
8. Rising power consumption per gallon.	8a. Clogged pump. 8b. Misaligned belt drives.	8a. Total daily pumpage and maximum minimum flow rates. 8b. Check alignment.	8a. Remove obstruction in pump. 8b. Realign belt drive.
9. Improper liquid levels.	9a. Coating on liquid high probes. 9b. Hang-ups in float level detectors. 9c. Leaks in bladders. 9d. Fouling in bubbler controls.	9a. Check probe. 9b. Float detector. 9c. Check bladder. 9d. Check Bubbler.	9a. Clean probe. 9b. Remove obstruction, release float. 9c. Repair or replace bladder. 9d. Clean bubbler.
10. Excessive wear or damage to pumps.	10a. Sand accumulations in wet well. 10b. Grease accumulations in the wet well.	10a. Inspect for eroding action, corrosion, and solids build up. 10b. Inspect wet well walls.	10a. Remove sand from wet well. 10b. Clean wet well. (see 4a. Solution)

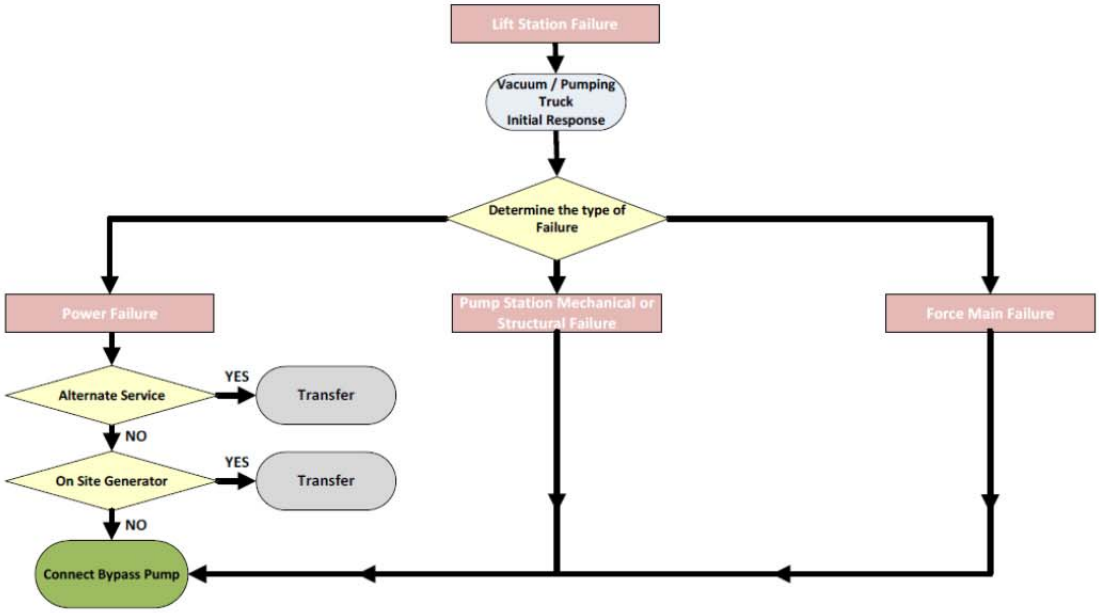
Table 1 Troubleshooting Guide Continued

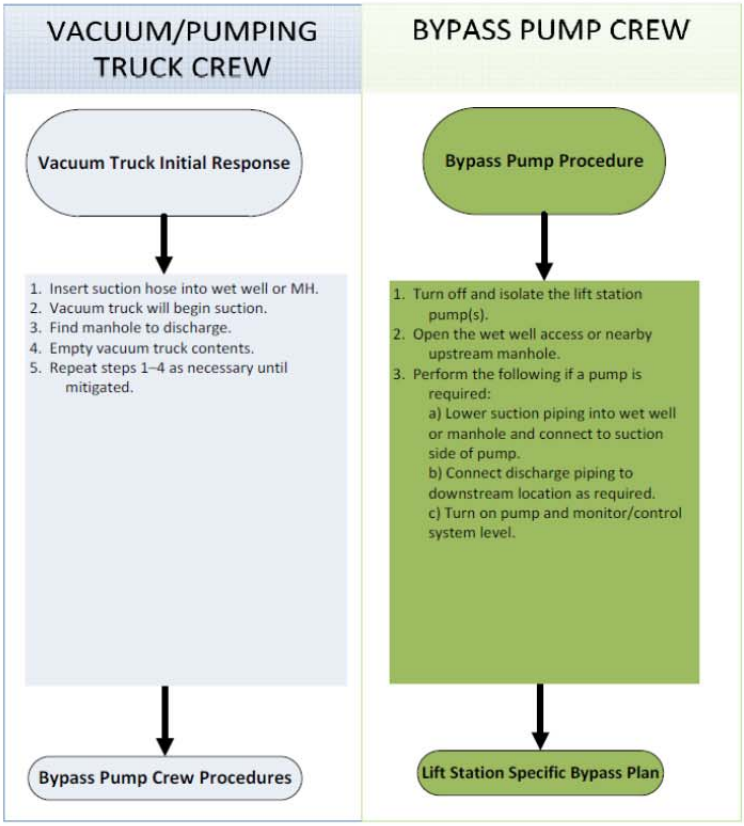
Pump Stations		
Cause	**Diagnostic Tools**	**Actions to Prevent Future Occurrences**
Primary power failure	Engineering evaluation support Contact Power Company	Arrange "2nd source power from Power Company" or quick connect for portable generator or portable pumps
Standby power failure	Engineering evaluation support Check pump station status	Make repair; periodic load bank testing; exercise equipment weekly; increase preventive maintenance (PM)
Pump/drive failure	Engineering evaluation support Check pump station status	Make repair; increase preventive maintenance; keep portable pumping available nearby; consider unit replacement or rehab
Force main failure	Engineering evaluation support Inspect right-of-way/easement	Make point repair; inspect interior main walls upstream and downstream of repair; consider replacement of line; assess need for corrosion control.
Equipment controls/switch gear failure		Make repair; increase preventive maintenance
Hydraulic capacity limit	Engineering evaluation support Temporary flow monitoring	Perform pump test; check test curves against design criteria and actual flows; temporarily escalate wastewater minimization practices in tributary area in interim until capital improvements are made; supply portable pump to augment capacity
Vandalism	Check pump station status	Coordinate with police for increased patrolling of area; make less accessible with fencing; fortify vault and door security; alarm and enhance outdoor lighting

ATTACHMENT B

LIFT STATION RESPONSE PLAN PROCESS

Standard Operating Procedure for Lift Station Failure





VACUUM/PUMPING TRUCK DATA	
City Truck Capacity	2,400 gal
Commercial Truck Capacity	5,000 – 6,000 gal

APPENDIX 3

EMERGENCY CONTACT INFORMATION

Emergency Telephone Numbers

Emergency Phone Numbers			Primary Number	Secondary Number
Managing Director, Utilities and Public Works			TBD	
Director of Utilities			TBD	
Utilities Engineer	Lisa Crossman	lcrossman@tylertexas.com	903-531-1239	903-920-8066
Environmental Compliance Engineer	Kate Dietz	kdietz@tylertexas.com	903-531-1085	
Operations Manager	Kevin Olson	kolson@tylertexas.com	903-531-1285	
Manager, Water Quality	Mike Norris	mnorris@tylertexas.com	903-939-8278	
Senior Utility Specialist	Pam Lee	plee@tylertexas.com	903-531-1238	
After Hours Emergency	Golden Road Water Treatment Plant		903-597-6541	
Water Line Break, Sewer Stoppage –Service Center			903-531-1285	
Environmental Health Department (NetHealth)			903-535-0037	
City Manager	Edward Broussard		903-531-1250	
Communications Director	Julie Goodgame	jgoodgame@tylertexas.com	903-531-1272	903-245-5377
City Engineer	Carter Delleney	cdelleney@tylertexas.com	903-531-1134	903-258-3690
Stormwater	Robin Smart	rsmart@tylertexas.com	903-531-1393	903-520-3657
Traffic	Peter Eng	peng@tylertexas.com	903-531-1204	
Risk Management	Sara McCracken	smccracken@tylertexas.com	903-531-1149	
Utility Locates	Service Center		903-531-1285	
Power Company:	Oncor Electric Delivery		911	888-313-4747
Gas Company:	CenterPoint Energy		911	800-259-5540
Police Department:			911	903- 531-1000
State Hwy Patrol:			903-939-6000	
Federal Bureau of Investigation:			903-592-4301	
Fire Department/ Ambulance Service:			911	
Texas Emergency Management Agency:			(512) 424-2208	(512) 424-2208

TCEQ Region 5
Telephone: Lisa Fisher

TEL: 903-535-5137
FAX: 903-525-0384

TCEQ Region 5, Tyler
TCEQ Regional Office
Attn: Lisa Fisher
2916 Teague Drive
Tyler, TX 75701-3734
Tel: 903-535-5137
Fax: 903-525-0384

TCEQ Compliance Monitoring Team (MC224)
Enforcement Division
P.O. Box 13087
Austin, TX 78711-3087

Parks & Wildlife: 24 Hour Communication Center 512-389-4848
Tyler District Office: Greg Conley 903-566-2518

Region 6 EPA: **24 Hour Number: 214-665-6595**

United States Environmental Protection Agency
Region VI, 1455 Ross Avenue
Dallas, Texas 75201
Attn: Water Enforcer

City Departments

Category	Location	Telephone
Airport	700 Skyway Blvd., Suite 201	(903) 531-2343
Animal Services	4218 Chandler Hwy	(903) 535-0045
Building Services	423 W. Ferguson St.	(903) 531-1151
City Clerk	212 N. Bonner	(903) 531-1106
City Manager's Office	212 N. Bonner Ave.	(903) 531-1250
City University	212 N. Border Ave.	(903) 595-7172
Code Enforcement	P.O. Box 2039	(903)531-1312
Communications	212 N. Bonner Ave.	(903) 531-1272
Development Services	423 W Ferguson St.	(903)531-1171
Engineering Services	423 W Ferguson	(903)531-1126
Finance Department	304 N Border Ave.	903-531-1138
Fire Department	1718 W. Houston	(903) 535-0005
GIS	511 W Locust St	(903) 531-1241
Historic Preservation	423 W. Ferguson	(903) 531-1175
Human Resources	212 N Bonner	(903)531-1100
Information Technology	212 N. Bonner	(903) 531-1119
Lean Six Sigma/ City University/ Performance Excellence	212 N. Border Ave.	903-595-7172
Legal	212 N. Bonner	903-531-1161
Liberty Hall	103 E. Erwin St.	(903) 595-7274
Library	201 S. College Ave.	(903) 593-7323
Main Street	110 W. Erwin	(903) 593-6905
Municipal Court	813 N. Broadway	(903)531-1266
Neighborhood Services	900 West Gentry Parkway	903-531-1303
Parks & Recreation	2000 W. Front St.	903-531-1370
Planning	423 W. Ferguson	(903)531-1175
Police Department	711 W. Ferguson	(903) 531-1090
Purchasing	511 W. Locust	903-531-1232
Risk Management	212 N Bonner	(903)531-1104
Solid Waste	414 N. Bois D'Arc Ave.	(903)531-1388
Stormwater Management Program	511 W. Locust Street	903-531-1085
Streets Department	3305 Frankston Hwy	(903)531-1393
Traffic Engineering	423 W. Ferguson	(903)531-1201
Tyler Area Metropolitan Planning Organization	423 W. Ferguson	903-531-1175
Tyler Transit	210 East Oakwood	903-533-8057
Tyler TV 3	212 N. Bonner	(903) 595-7172
Tyler Water Utilities	511 West Locust	903-531-1238
Vehicle Services	410 W. Oakwood	(903)531-1321
Volunteer Services	212 N. Bonner Ave.	(903) 531-1100
Water Production and Water Quality	14792 CR 192	903-939-2724

APPENDIX 4
SITE DISINFECTION AND SSO QUANTIFICATION

Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 327	SPILL PREVENTION AND CONTROL
RULE §327.32	Reporting Requirements for Certain Accidental Discharges or Spills of Treated or Untreated Wastewater at Wastewater Treatment Facilities or Collection Systems

---

(a) The following words and terms, when used in this section, shall have the following meanings, unless the context clearly indicates otherwise.

(1) Collection system--Pipes, conduits, lift stations, force mains, and all other constructions, devices, and appurtenant appliances used to transport domestic wastewater to a wastewater treatment facility.

(2) History of noncompliance--History of non-reporting or reoccurrences of accidental discharges or spills of treated or untreated wastewater.

(3) Local government--An incorporated city, a county, a river authority, or a water district or authority acting under Article III, Section 52, or Article XVI, Section 59 of the Texas Constitution.

(4) Wastewater treatment facility--All contiguous land and fixtures, structures, and appurtenances used for storing, processing, and treating wastewater. A wastewater treatment facility does not include the collection system located outside of the fenced area around a wastewater treatment facility.

(b) Except as provided by subsection (c) of this section, all accidental discharges or spills of treated or untreated wastewater shall be reported within 24 hours of the occurrence. A written submission shall be provided to the executive director within five days of the occurrence. The written submission shall contain a description of the accidental discharge or spill and its cause; the potential danger to human health or safety, or the environment; the duration of the accidental discharge or spill, including exact dates and times; if the cause of the accidental discharge or spill has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence, and to mitigate its adverse effects.

(c) The responsible person of a wastewater treatment facility or collection system that is owned or operated by a local government may report accidental discharges or spills of treated or untreated wastewater that do not endanger human health or safety or the environment to the executive director as a monthly summary if each individual accidental discharge or spill:

(1) has a volume of 1,000 gallons or less;

(2) is not associated with another simultaneous accidental discharge or spill of treated or untreated wastewater;

(3) is controlled or removed before the accidental discharge or spill enters water in the state or adversely affects a public or private source of drinking water; and

(4) is not otherwise subject to local regulatory control and reporting requirements.

(d) The responsible person shall submit a monthly summary by the 20th day of the month for each accidental discharge or spill that occurred during the previous month. The summary must

include, at a minimum, the:

(1) location, volume and content of the accidental discharge or spill;
(2) description of the accidental discharge or spill;
(3) cause of the accidental discharge or spill;
(4) dates and times of the accidental discharge or spill; and
(5) steps taken to reduce, eliminate, and prevent recurrence of the accidental discharge or spill.

(e) The responsible person must use one of the following methods for determining the volume of the discharge or spill.

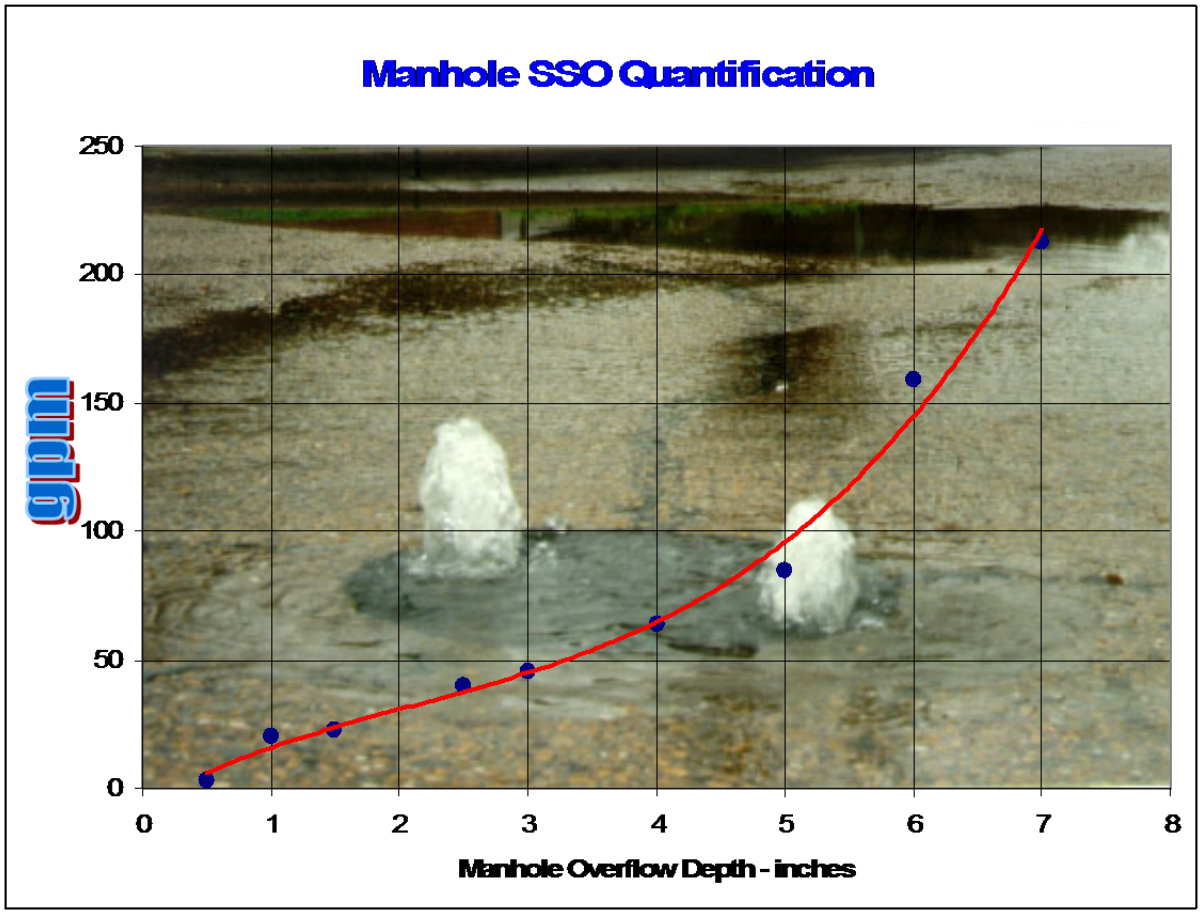
(1) Visual estimate. If the accidental discharge or spill is less than 55 gallons, using a standard five-gallon bucket for reference, estimate the number of buckets that the discharge or spill would fill then multiply by five to obtain the number of gallons discharged or spilled. If the accidental discharge or spill is larger than 55 gallons, using a standard 55 gallon barrel for reference, estimate the number of barrels that the discharge or spill would fill and then multiply by 55 to obtain the number of gallons discharged or spilled.
(2) Measured volume. Identify the length, width, and depth of the contained accidental discharge or spill in feet and calculate the volume by multiplying length by width by depth by 7.5 (the conversion factor from cubic feet to gallons).
(3) Duration and flow rate. Identify separate estimates for the duration and the flow rate of the accidental discharge or spill. The estimated volume is calculated by multiplying the duration (hours or days) by the flow rate (gallons/hour or gallons/day).
(4) Other methods. The responsible person may use other volumetric calculation methodologies rather than those listed in paragraphs (1) - (3) of this subsection, so long as such methodologies include procedures to identify a duration, flow rate, depth, affected area, and total quantity of each spill (including, as appropriate, reference to estimation tools such as barrels, for example), and such methodology is consistent with standard and accepted industry practices. Such alternative methodologies must be identified in the responsible person's monthly report.

(f) The responsible person must keep records of all accidental discharges or spills of treated or untreated wastewater reported under this section. The records must remain on-site for three years and be made immediately available to commission staff upon request.

(g) The executive director may require more frequent reporting based on the responsible person's history of noncompliance.

Source Note: The provisions of this §327.32 adopted to be effective June 2, 2016, 41 TexReg 3914

Estimating
Sanitary Sewer Overflow Volume
and HTH Disinfection Requirement



Volume of SSO = length x width x depth x 7.48 = gallons

Spill area = 20 feet by 30 feet = 600 sq.ft.

Depth of spill = 3 inches = 0.25 feet

Volume = 20 x 30 x 0.25 x 7.48 =1,122 gallons

Disinfection with HTH = 12 ounces per 100 square feet

Area = 600 sq.ft.

HTH = 600/100 x 12 ounces = 6 x 12 = 72 ounces of HTH (or 4.5 lbs)

CAUTION: EXCESSIVE USE OF HTH CHLORINE CAN CAUSE FISH KILL OR OTHER NEGATIVE IMPACTS TO THE ENVIRONMENT.

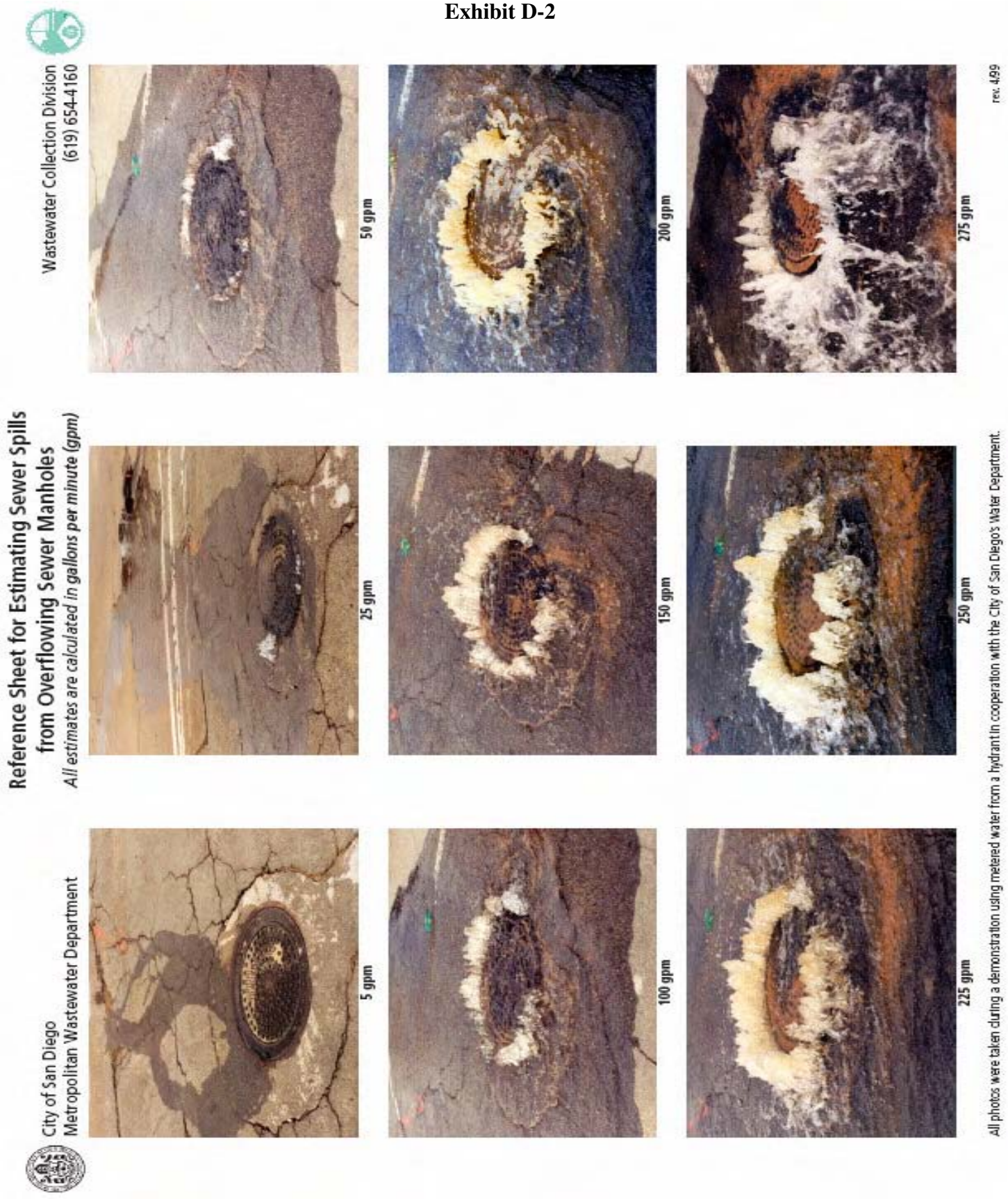
Spill Documentation and Spill Volume Calculation Guidance
Source: City of San Diego

SANITARY SEWER FLOW RATES FOR SPILL DETERMINATIONS

Depth of Flow (inches)	Pipe Size								
	6	8	10	12	15	18	21	24	30
1	15	20	25	30	35	40	45	50	100
2	50	60	70	80	85	95	105	125	145
3	90	110	125	135	150	175	185	210	230
4	125	160	180	200	235	260	285	320	350
5	155	190	240	280	315	360	380	445	470
6	180	260	310	355	415	455	500	555	630
7		290	370	425	495	570	620	695	770
8		320	430	500	600	680	760	815	1010
9			465	575	690	800	890	965	1260
10			490	625	775	905	1005	1120	1360
11				685	870	1020	1135	1275	1490
12				715	935	1130	1260	1410	1630
13					1020	1240	1415	1580	1870
14					1070	1345	1520	1690	2110
15					1105	1425	1650	1850	2220
16						1495	1760	1990	2560
17						1550	1880	2110	2730
18						1595	1980	2285	2940
19							2050	2410	3100
20							2115	2530	3330
21							2160	2630	3510
22								2700	3780
23								2765	3900
24								2820	4040
									4130
									4200
									4250
									4320
									4370
									4400

Gallons per Minute @ V=2.0 feet per second (ft/sec) and n=0.013; Adjust accordingly for flat or steep sloped sewers.

Exhibit D-2


Wastewater Collection Division
(619) 654-4160
Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes
All estimates are calculated in gallons per minute (gpm)
City of San Diego
Metropolitan Wastewater Department
5 gpm
25 gpm
50 gpm
100 gpm
150 gpm
200 gpm
225 gpm
250 gpm
275 gpm
rev. 4/99
All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

D.2.2.B Volume of SSO at Manhole

Length x Width x Depth x 7.48 = gallons
Spill area = 20 feet by 30 feet = 600 sq. ft.
Depths of spill = 3 inches = 0.25 feet
Volume = 20 x 30 x 0.25 x 7.48 = 1,122 gallons

D.2.3 WET WEATHER OVERFLOW CALCULATION:

The following can be used to help in estimating the rate of loss of flow out of manholes. As this is an estimate, judgment by the observing person and/or estimator must always be used.

All calculations are based on an estimate of the size of the opening involved, the velocity of flow through the opening, and the duration of time the overflow occurred. In most all occurrences, the opening size and velocity will change over an event from low to high back to low. Judgment on an average condition must thus be attempted to reach a realistic rate of loss.

D.2.3.A. Loss through vent holes

1. Size of opening:
   Assume holes at 1- inch diameter

   Area = (number of holes) (π) ($D^2/4$) ($1ft^2/144$)
   Area = (number of holes) (3.14) (1/4) (1/144)

   Area = (number of holes) ($0.0055ft^2$/hole)

2. Velocity Plume Guide

   Velocity through holes, based on Velocity Head = ($Velocity^2/2g$)

Plume height	Velocity
1-inch	2.0 ft/sec
2-inch	3.3 ft/sec
3-inch	4.0 ft/sec
4-inch	4.6 ft/sec
5-inch	5.2 ft/sec
6-inch	5.7 ft/sec

3. Time = convert to minutes

Volume (Gal.) = (Area) (Velocity) (Time) (448 gpm/cfs)

Example: Top with six hole, flow through holes makes a one-inch high plume, last for 4 hours, 15 minutes

Volume = (6 holes x 0.0055 ft²/hole) (2ft/sec) (255 min) (448 gpm/cfs)
Volume = (0.033) (2) (255) (448) = 7540 gallons

D.2.3.B. Loss around edge of non-vented cover

1. Size of opening:

As the weight of manhole lid will generally hold it in place until internal pressures exceed 0.4 pounds/sq. in., loss occurs through imperfections, grit, etc. between the lid and manhole frame. Observations are generally a vertical ring of water from side gap between the lid and frame of approximately ¼ inch width.

Area = (π) (D) (¼ inch) (1/12 in/ft)
= (3.14) (2ft) (1/4) (1/12)

Area = 0.131 ft²

2. Velocity through gap
(see vertical plume guide above, D.3.A.2.)

3. Time – convert to minutes

Example: Manhole with 4-inch plume around edge for 2 hours, 15 minutes

Volume (Gal.) = (Area) (Velocity) (Time) (448 gpm/cfs)
= (0.131 ft²) (4.6 ft/sec) (135) (448)
= 36,445 gallons

D.2.3.C. Loss from tilted cover

1. Size of opening:

Some estimate has to be made in the field concerning how much gap exists in order to do this calculation. For the following amounts of lift of one side, the areas are as follows:

A = (π) (D) (in of lift) (1/12 ft/in) (1/2)
A = (3.14) (2ft) (in. of lift) (1/12) (1/2)
A = 0.262 (in. of lift)

Lift (inches)	Area (ft²)
1	0.262
2	0.524
3	0.786
4	1.048

2. Velocity through opening

This must be estimated from visual observation. A low rate would be 2/ft/sec, moderate rate at 4 to 5 ft/sec, high rates up to 7 ft/sec. Over 7 ft/sec, the lid will

probably blow off the manhole. The gap (lift) will generally increase with higher velocity as well.

3. Time – convert to minutes

Volume (Gal.) = (Area) (Velocity) (Time) (448 gpm/cfs)

Example: Field observation of 2-inch gap and velocity of 4 ft/sec for a period of 3 hours, 30 minutes.

Volume (Gal.) = (0.524 ft^2) (4ft/sec) (210min) (448)
= 197,192 gallons

D.2.3.D. Loss from Manhole without a lid in place

If no cover exists, an estimate of the average height the water column (plume) extends above the top of the manhole frame must be made. Use the height to velocity estimate from (A) above to estimate the velocity. Be sure to adjust the height estimate downward for the affects of debris around the edge of the rim which will cause the height to be incorrectly high.

Area = (π) ($D^2/4$) = (3.14) ($2^2/4$) = 3.14 ft^2

Velocity – from field observation of water column height

Time - convert to minutes

Volume (Gal.) = (Area) (Velocity) (Time) (448 gpm/cfs)

Example: A manhole without a lid was observed to have an overflow with a 3 – inch high column of water for a period of 6 hours, 10 minutes

Volume (Gal.) = (3.14) (4.0 ft /sec) (370) (448)
Volume = 2,081,946 gallons

D.2.3.E. Other

1. Generally approach of estimating a cross sectional area where the flow is leaving and a velocity of flow can be used to determine a rate. This can be applied to any situation.

2. Several observations over an event to estimate the area and velocity are better than a single observation. The overflow examples above assume a constant rate over the period which will estimate volumes too high. As an example, if an hour at the beginning and end of each event is assumed for the flow to build up from zero to maximum and back to zero, a calculation could be done as follows:

Example: A manhole with a cover tilted open 2 inched with an estimated velocity of 4 ft/sec at its worst rate of loss for two hours and about 1-inch tilt with a velocity of 2 ft/sec observed at two other occasion over a 7 hour total event.

Worst case: 2 hours, 2 inched tilt, 4 ft/sec
Other times: 1 inch tilt, 2 ft/sec, time unknown
Total overflow time: 7 hours

Divide total of 7 hours into several periods

1st hour: Start to 1-inch tilt, 2 ft/sec

Volume (Gal.) = (Area) (Velocity) (Time) (448) x 50%
= (0.262) (2) (60) (448) (0.50)
= 7,043 gallons

7th hour: 1-inch tilt, 2 ft/ sec down to end
Same as above situation
Volume = 7,043 gallons

5 remaining hours:

2 hours at 2-inch tilt, 4 ft/sec
3 hours at 1-inch tilt, 2 ft. sec

Volume = (0.524) (4 ft/sec) (120 min) (448)
= 112,681 gallons

Volume = (0.262) (2 ft/sec) (180 min) (448)
= 42,255 gallons

Event Total = 7,043 + 7,043 + 112,681 + 42,255 = 169,022 gallons

APPENDIX 5

EXAMPLE NOTIFICATION LETTERS

Texas Commission on Environmental Quality

Public Notification Form for Wastewater Discharges

Information about the Discharge

An unauthorized discharge or spill of wastewater has occurred from:

Wastewater Treatment Facility: _____ Collection System: ___

Facility Name:

Person to contact for information:

Location of spill(s):

Estimated date and time of spill(s):

Estimated volume of spill(s):

Type of Spill:

Description of the area potentially affected, including down gradient and lateral distance from spill(s) site:

Suspected cause of spill(s):

.

List of Actions Taken Including but, not Limited to:

Notification of

Appropriate local government officials: _____

TCEQ Regional Office: _____

Containment of spill:

Increased monitoring of water supply systems:

Initiation of cleanup activities:

Precautionary Statements:

1. Persons using private drinking water supply wells located within ½ mile of the spill site or within the potentially affected area should use only water that has been distilled or boiled at a rolling boil for at least one minute for all personal uses including drinking, cooking, bathing, and tooth brushing. Individuals with private water wells should have their well water tested and disinfected, if necessary, prior to discontinuing distillation or boiling.
2. Persons who purchase water from a public water supply may contact their water supply distributor to determine if the water is safe for personal use.
3. The public should avoid contact with waste material, soil, or water in the area potentially affected by the spill.
4. If the public comes into contact with waste material, soil, or water potentially affected by the spill, they should bathe and wash clothes thoroughly as soon as possible.

Dear Resident,

We are very sorry you have recently been inconvenienced by a wastewater back-up in your home. If you would like to file a claim against the city for the damages, please contact the Senior Utility Specialist at 903-531-1238.

In order to file a claim with the City of Tyler, you must complete the official claims form Form 4-22. This form requires an original notarized signature. You may print the form, complete it and return it in person to the Senior Utility Specialist located at Tyler Water Utilities, 511 West Locust, Tyler, TX, 75702.

The City of Tyler reviews all property damage claims. Claims for damages are investigated and decided based on the laws that govern municipalities in the State of Texas. Under these laws, a property owner may recover property damages if negligent operation or use of a motor vehicle or motor driver equipment caused the damages. There are very limited grounds for a citizen to recover property losses resulting from the performance or non-performance of wastewater services.

If you have experienced damages to your property from wastewater overflows and you have a homeowner's insurance policy, you should contact your agent immediately for further assistance. The City of Tyler does not endorse any cleaning companies; however, you may search the internet or yellow pages for firms that can provide or assist in cleanup. Search under categories such as: cleaning, water damage emergency services, cleaning remediation and water damage restoration.

If you would like to discuss general issues about your wastewater service, please feel free to call Tyler Water Utilities at 903-531-1238 during regular business hours, Monday thru Friday. We continue in our efforts to improve the quality of service provided to our customers. Wastewater personnel are available to respond to service interruptions seven days a week. The City of Tyler regrets any inconvenience this may have caused.

Sincerely,
Tyler Water Utilities

SAMPLE

CLAIMS NOTICE

City of Tyler Charter, Section 79 provides that notice must be in writing, duly verified (notarized) of the death, injury or destruction and shall be filed within thirty (30) days after same has been sustained.

NAME OF CLAIMANT _____

ADDRESS _____

PHONE (DAY) _____ **(EVENING)** _____

DATE OF INCIDENT _____ **TIME** _____ **A.M.** _____ **P.M.**

LOCATION OF INCIDENT _____

DESCRIBE DAMAGE TO PROPERTY (INCLUDE AGE AND VALUE WHEN NEW) _____

_____

CURRENT LOCATION OF DAMAGED PROPERTY _____

_____

DESCRIBE ANY INJURIES SUSTAINED: _____

_____

NAME: _____ **PHONE**: _____

ADDRESS: _____

DESCRIPTION: _____

_____

_____

DESCRIBE HOW INCIDENT OCCURRED (GIVE FULL DETAILS; ATTACH ADDITONAL PAGES, IF NECESSARY.) _____

_____

_____

_____

_____

_____

AMOUNT CLAIMED (ATTACH ESTIMATES OF REPAIRS) _____

DO YOU CARRY INSURANCE FOR THIS LOSS? Yes _____ **No**_____

IF YES, WHAT COMPANY? _____

TYPE: ____ **HOMEOWNERS** ____ **STANDARD FIRE** ____ **AUTO** ____ **OTHER**

POLICY No.: _____ **AGENT:** _____

HAVE YOU MADE A CLAIM AGAINST YOUR INSURANCE COMPANY? Yes __ **No** ____

DESCRIBE ANY EFFORTS BY YOU TO PREVENT THE INCIDENT OR TO MINIMIZE THE DAMAGES:

_____

_____

_____

WITNESSES

NAME: _____ **PHONE (DAY)** _____

ADDRESS:_____ **PHONE (EVENING)** _____

NAME: _____ **PHONE (DAY)** _____

ADDRESS:_____ **PHONE (EVENING)** _____

IF CLAIM INVOLVED ALLEGED DEFECT IN CITY STREET, EQUIPMENT, OR OTHER PROPERTY, COMPLETE THE FOLLOWING:

DESCRIBE DEFECT: _____

_____

_____

NOTIFICATION TO CITY PRIOR TO INCIDENT:

DATE _____ **TIME** _____ ___ **A.M.** __ **P.M.** **EMPLOYEE NOTIFIED** _____

NOTIFICATION TO CITY AFTER INCIDENT:

DATE _____ **TIME** _____ ___ **A.M.** ___ **P.M.** **EMPLOYEE NOTIFIED** _____

IF CLAIM INVOLVED A VEHICLE COLLISION, COMPLTE THE FOLLOWING:

WAS A PEACE OFFICER'S ACCIDENT REPORT MADE? Yes _____No_____

CLAIMANT:

VEHICLE YEAR MODEL: _____COLOR: _____

MAKE & MODEL: _____

VEHICLE I.D. NO.: _____LICENSE PLATE:_____

DRIVER'S NAME: _____PHONE: _____

ADDRESS: _____

_____

_____

OWNER'S NAME: _____ PHONE: _____

ADDRESS: _____

CITY:

VEHICLE YEAR MODEL:_____ PHONE:_____

MAKE & MODEL: _____

DRIVER'S NAME: _____

I HEREBY DECLARE THAT THE FACTS STATED IN THIS NOTICE ARE TRUE.

CLAIMANT'S SIGNATURE: _____

SUBSCRIBED AND SWORN TO BEFORE ME this the ____ day of _____, _____.

_____

Notary Public State of Texas

APPENDIX 6
TRAINING

Various utility associations (American Water Works Association, Rural Water Association, National Association of Sewer Service Companies (NASSCO), Water Environment Association of Texas, Texas A&M Extension (TEEX), Water Environment Federation, etc.) have considerable training materials available to supplement the on-the-job training. Field supervisors and managers provide site training and oversight.

Tyler Water Utilities
Wastewater Collection
Training Matrix

			Repair/Construction					Admin/Office/Supervisor						Preventative Maintenance			
	OUTSIDE VENDOR TRAINING *	Hours	Crew Leader	Semi Skilled laborer	Laborer	Truck Driver	Equipment Operator	Operations Manager	Superintendent - PM	Superintendent - Construction	Senior Clerk	Senior Secretary	GIS Data Analyst	Utilities Maintenance Repair	Laborer	Utilities Maintenance Repair - CCTV	Semi-Skilled Laborer
1	Basic Wastewater Operations	20	R	R	R	R	R	R	R	R	E	E	E	R	R	R	R
2	Wastewater Collection	20	R	R	R	R	R	R	R	R	E	E	E	R	R	R	R
3	Water Utilities Safety	20	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
4	Water Utilities Calculations	20	E	E	E	E	E	E	E	E	NA	NA	NA	E	E	E	E
5	Pumps & Motor Maintenance	20	R	E	E	E	R	R	R	R	NA	NA	NA	R	E	R	E
6	Wastewater Treatment	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	Wastewater Laboratory	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	Wastewater Technology	40	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	CCTV - PACP Training	20	NA	NA	NA	NA	NA	E	R	R	NA	NA	R	NA	NA	R	NA
10	Applied Confined Space Safety	8	E	E	E	E	E	E	E	E	E	E	NA	E	E	E	E
	CITY OF TYLER IN-HOUSE TRAINING																
	Sewer Overflows																
11	SSO Reporting Procedures		R	NA	NA	NA	E	R	R	R	R	R	NA	R	E	R	E
	Work Orders/Asset Collection																
12	Initial OneSolution		R	E	E	E	R	R	R	R	R	R	R	R	E	R	E
13	OneSolution Asset Management		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
14	GIS/GPS Data Collection		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
	Vactor																
15	Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
16	Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
17	Operator - Cleaning/Nozzle Setup		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
18	Decan/Cleaning Procedures		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
	Sewer Rodder																
19	Rodder - Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
20	Rodder - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
21	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	Water Jet Rig																
22	Jetter - Initial Setup/Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
23	Jetter - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
24	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	CCTV																
25	CCTV - CUE's Rover & Wincam		E	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
26	Camera Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
27	PACP Recertification - 3 years		NA	E	E	E	E	R	E	E	NA	NA	NA	NA	NA	R	NA

Notes:

* Outside Vendor Training provided by TEEX and other outside vendors

Legend:

R = Required by COT
E = Elective
N/A = Not Applicable

Rev Date: 5/21/15

APPENDIX 7
REFERENCE REGULATIONS AND CODE

- Tilte 30 Texas Adm. Code, Chapter 327 Spill Prevention 2-3
- Subchapter A, Chapter 319 Monitoring and Reporting System 4-21
- TCEQ Subchapter C, Public Notification of Spills 22-27
- Texas Water Code Title 2 Sections 26.001 and 26.039 (Spills) 28-33

  Sec.26.001 DEFINITIONS
  Sec.26.039 ACCIDENTAL DISCHARGES AND SPILLS.

Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 327	SPILL PREVENTION AND CONTROL
RULE §327.32	Reporting Requirements for Certain Accidental Discharges or Spills of Treated or Untreated Wastewater at Wastewater Treatment Facilities or Collection Systems

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(a) The following words and terms, when used in this section, shall have the following meanings, unless the context clearly indicates otherwise.

(1) Collection system--Pipes, conduits, lift stations, force mains, and all other constructions, devices, and appurtenant appliances used to transport domestic wastewater to a wastewater treatment facility.

(2) History of noncompliance--History of non-reporting or reoccurrences of accidental discharges or spills of treated or untreated wastewater.

(3) Local government--An incorporated city, a county, a river authority, or a water district or authority acting under Article III, Section 52, or Article XVI, Section 59 of the Texas Constitution.

(4) Wastewater treatment facility--All contiguous land and fixtures, structures, and appurtenances used for storing, processing, and treating wastewater. A wastewater treatment facility does not include the collection system located outside of the fenced area around a wastewater treatment facility.

(b) Except as provided by subsection (c) of this section, all accidental discharges or spills of treated or untreated wastewater shall be reported within 24 hours of the occurrence. A written submission shall be provided to the executive director within five days of the occurrence. The written submission shall contain a description of the accidental discharge or spill and its cause; the potential danger to human health or safety, or the environment; the duration of the accidental discharge or spill, including exact dates and times; if the cause of the accidental discharge or spill has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence, and to mitigate its adverse effects.

(c) The responsible person of a wastewater treatment facility or collection system that is owned or operated by a local government may report accidental discharges or spills of treated or untreated wastewater that do not endanger human health or safety or the environment to the executive director as a monthly summary if each individual accidental discharge or spill:

(1) has a volume of 1,000 gallons or less;

(2) is not associated with another simultaneous accidental discharge or spill of treated or untreated wastewater;

(3) is controlled or removed before the accidental discharge or spill enters water in the state or adversely affects a public or private source of drinking water; and

(4) is not otherwise subject to local regulatory control and reporting requirements.

(d) The responsible person shall submit a monthly summary by the 20th day of the month for each accidental discharge or spill that occurred during the previous month. The summary must

include, at a minimum, the:

(1) location, volume and content of the accidental discharge or spill;
(2) description of the accidental discharge or spill;
(3) cause of the accidental discharge or spill;
(4) dates and times of the accidental discharge or spill; and
(5) steps taken to reduce, eliminate, and prevent recurrence of the accidental discharge or spill.

(e) The responsible person must use one of the following methods for determining the volume of the discharge or spill.

(1) Visual estimate. If the accidental discharge or spill is less than 55 gallons, using a standard five-gallon bucket for reference, estimate the number of buckets that the discharge or spill would fill then multiply by five to obtain the number of gallons discharged or spilled. If the accidental discharge or spill is larger than 55 gallons, using a standard 55 gallon barrel for reference, estimate the number of barrels that the discharge or spill would fill and then multiply by 55 to obtain the number of gallons discharged or spilled.
(2) Measured volume. Identify the length, width, and depth of the contained accidental discharge or spill in feet and calculate the volume by multiplying length by width by depth by 7.5 (the conversion factor from cubic feet to gallons).
(3) Duration and flow rate. Identify separate estimates for the duration and the flow rate of the accidental discharge or spill. The estimated volume is calculated by multiplying the duration (hours or days) by the flow rate (gallons/hour or gallons/day).
(4) Other methods. The responsible person may use other volumetric calculation methodologies rather than those listed in paragraphs (1) - (3) of this subsection, so long as such methodologies include procedures to identify a duration, flow rate, depth, affected area, and total quantity of each spill (including, as appropriate, reference to estimation tools such as barrels, for example), and such methodology is consistent with standard and accepted industry practices. Such alternative methodologies must be identified in the responsible person's monthly report.

(f) The responsible person must keep records of all accidental discharges or spills of treated or untreated wastewater reported under this section. The records must remain on-site for three years and be made immediately available to commission staff upon request.

(g) The executive director may require more frequent reporting based on the responsible person's history of noncompliance.

Source Note: The provisions of this §327.32 adopted to be effective June 2, 2016, 41 TexReg 3914

TCEQ Subchapter A:
Monitoring and Reporting System

SUBCHAPTER A: MONITORING AND REPORTING SYSTEM
§§319.1 - 319.9, 319.11, 391.12
Effective November 26, 2009

§319.1. Monitoring and Reporting Requirements.

All holders of waste discharge permits are required to periodically report the status of their compliance with the terms and conditions of their permits and with other relevant statutes in a manner approved by the executive director. The report shall contain results of flow measurements and results of analyses of samples taken, or the equivalent information determined by methods approved by the executive director. The status of all requirements of the permit shall be reported. The report may contain such other information concerning the discharges covered by the permit as the executive director may reasonably prescribe in order to establish a system for monitoring the quantity and quality of waste discharged into or adjacent to any water in the state and for monitoring the quality of any water in the state.

Effective July 27, 1988

§319.2. Exclusions.

Unless otherwise specified in the permit or otherwise ordered by the commission, land disposal or evaporation facilities shall be excluded from the reporting procedure. The commission may exempt other permittees from reporting requirements on a case-by-case basis provided that the permitted facility shall not directly or indirectly affect the quality of water in the state. Such exclusion shall be set forth in the permit. An exclusion from the reporting procedure, however, does not relieve a permittee from monitoring and record keeping requirements.

Effective July 27, 1988

§319.3. Prior Permit Reporting Requirements.

The holders of permits issued prior to December 19, 1969, which require or establish a specific reporting procedure, shall continue to report in accordance with that procedure until receipt of reporting forms developed by the executive director or until otherwise notified by the executive director.

Effective July 27, 1988

§319.4. Parameters To Be Monitored.

Each permittee will be required to monitor, on a regular basis, each parameter included in its permit which is also included on its commission "Monthly Effluent Report" form. Each permittee may also be required to monitor any other parameter(s) the executive director may reasonably deem necessary to adequately monitor the quality or quantity of any discharge. If the analysis of additional parameters is required, the permittee shall be provided written notification prior to the initiation of the requirement.

Effective July 27, 1988

§319.5. Required Sampling Location and Frequency of Analysis or Measurement.

(a) Required samples and measurements shall be taken of the effluent from the sampling point described in the permit. Should the permit not specify a sampling point, samples shall be collected immediately following the last treatment unit. These procedures shall be followed unless an alternate sampling and/or measuring point is approved in advance in writing by the executive director or his designee.

(b) Samples shall be taken and measurements shall be made at the minimum frequencies specified in the permit for each parameter. If a permit does not specify a sampling frequency, the permittee shall follow the frequencies set forth in Tables 1 and 2 in §319.9 of this title (relating to Self-Monitoring and Quality Assurance Schedules), basing the frequency of analysis on the currently applicable permitted average daily flow. Table 1 shall be applicable to treated domestic sewage effluent while Table 2 shall be applicable to all other wastewater effluents. If a parameter included in a permit is not listed in the applicable table, the permittee will be instructed by the executive director in writing as to what frequency of analysis shall be followed.

(c) The permit may specify different sampling and/or measurement frequencies than specified in Table 1 or Table 2 of §319.9 of this title (relating to Self-Monitoring and Quality Assurance Schedules) on a case-by-case basis, and in such cases the permit controls.

(d) For land disposal or evaporation facilities, the monitoring requirements shall be specified in the permit. The permittee shall monitor flow to a land treatment site on a daily basis and an evaporation system on a weekly basis when utilized. The specific plot or site used for land treatment shall be specified in the permit by name or description.

(e) The monitoring requirements set out in this subchapter are minimum requirements unless the permit specifies a lesser frequency. Additional measurements, samples, analyses, and recordation are encouraged in order to facilitate more effective management and control of facility operations. If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified in §319.11 of this title (relating to Sampling and Laboratory Testing Methods), at a minimum, the results of such monitoring that indicate permit noncompliance shall be included in the calculation and reporting of the value submitted on the required monthly effluent report. The permittee may report results of such monitoring that indicate permit compliance. Increased frequency of sampling shall be indicated on the report.

(f) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

Effective October 8, 1990

§319.6. Quality Assurance.

The permittee shall assure the quality of all measurements through the use of blanks, standards, duplicate analyses, and spikes. At a minimum, the quality assurance requirements specified in Table 3 in §319.9 of this title (relating to Self-Monitoring and Quality Assurance Schedules) shall be utilized.

Effective July 27, 1988

§319.7. Documentation of Monitoring Activities.

(a) For each measurement or sample taken pursuant to the monitoring requirements of this chapter, the permittee shall maintain records of the following information:

(1) the exact place, date, and time of sample collection or measurement;

(2) the dates the analyses were performed;

(3) the identity of person(s) who collected the samples or made the measurements and the identity of person(s) and laboratory who performed the analyses;

(4) the results of all required analyses or measurements; and

(5) the technique or method of analysis including the results of adequate verifications of analytical precision and/or accuracy verified by means of the recommended guidelines in the Environmental Protection Agency manual entitled "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," which are to be determined on the day the analyses are performed. The permittee shall meet the quality control requirements specified in Table 3.

(b) The permittee shall be subject to routine inspection of its compliance with subsection (a) of this section.

(c) All records and information resulting from the required monitoring activities, including but not limited to, all records concerning measurements and analyses performed and concerning calibration and maintenance of flow measurement and other instrumentation, shall be retained for a minimum of three years, or for a longer period if requested by the executive director or his designee.

(d) Unless otherwise specified in the permit, a monthly effluent report must be submitted each month by the 20th day of the following month for each discharge which is described in the permit whether or not a discharge is made for that month.

(e) Knowingly making any false statement on any report may result in the imposition of criminal and/or civil penalties as provided by state law.

Effective July 27, 1988

§319.8. Required Signatures for Effluent Reports.

Each effluent report shall contain two signatures. One signature must be that of the superintendent of the wastewater treatment facility or other person occupying a similar position associated with the operation of the treatment facility. The other signature shall be one from the following.

(1) If submitted by a public entity, a state or federal agency, or a corporation, the report should be signed by a principal executive officer, ranking elected official, commanding officer, or other employee duly authorized by the principal executive officer.

(2) If submitted by a partnership, the report should be signed by a general partner.

(3) If submitted by a sole proprietor, the report should be signed by the proprietor.

Effective July 27, 1988

§319.9. Self-Monitoring and Quality Assurance Schedules.

(a) The following table sets forth the self-monitoring schedules applicable to treated domestic sewage effluent.

Table 1
FREQUENCY OF MEASUREMENT

Design Capacity MGD	Flow	BOD5	Total Suspended Solids	Chlorine Residual	pH	Collecting of Samples and Taking Measurements
0 to less than 0.10	One instantaneous measurement each working day but not less than five measurements per week (b) (c)	One each week	One each week	One each working day but not less than five measurements per week (c)	One each month	The laboratory tests shall be made on a grab sample collected at peak loading periods, and flow measurements shall be taken concurrently with such grab samples. (d)
0.10 to less than 0.50	One instantaneous measurement each working day but not less than five measurements per week (b) (c)	One each week	One each week	One each working day but not less than five measurements per week (c)	One each month	The laboratory tests shall be made on a grab sample collected at peak loading periods, and flow measurements shall be taken concurrently with such grab samples. (d)
0.50 to	The daily flow	One each	One each	One each day of	Two	The laboratory test

less than 1.00	measured by a totalizing meter	week	week	the week	each month	excepting the pH and chlorine residual test which are performed on grab samples or insitu shall be made on a composite sample proportioned according to flow, made up of three portions collected no closer together than 2 hours and with the first sample collected no earlier than 10:00 a.m.
1.00 to less than 5.00	The daily flow measured by a totalizing meter	Two each week	Two each week	One each day of the week	One each week	The laboratory test excepting the pH and chlorine residual test which are performed on grab sample or insitu shall be made on a composite sample proportioned according to flow, made up of six portions collected no closer together than 2 hours and with the first sample collected no earlier than 10:00 a.m.
5.00 to less than 10.00	The daily flow measured by a totalizing meter	One each weekday (a)	One each weekday (a)	One each day of the week	One each week-day	The laboratory test excepting the pH and chlorine residual test which are performed on grab samples or insitu shall be made on (a) 24-hour composite samples proportioned according to flow collected no closer together than 2 hours in 12 individual portions.
10.00 or	The daily flow	One each	One each	One each day of	One	The laboratory test

greater	measured by a totalizing meter	day of the week	day of the week	the week	each day of the week	excepting the pH and the chlorine residual test which are performed on grab samples or insitu shall be made on 24-hour composite samples proportioned according to flow collected no closer together than 2 hours in 12 individual portions.

(b) The following table sets forth the bacteria self-monitoring schedules applicable to treated domestic sewage effluent that is discharged to water in the state.

Table 2
FREQUENCY OF BACTERIA MEASUREMENT

Minimum Required Frequency[1, 2, 3, 4]			
Flow (mgd)	**Chlorine Systems**	**Ultraviolet Systems**	**Natural Systems**
>10	5/week	Daily	Daily
>5-10	3/week	Daily	5/week
>1—5	1/week	Daily	3/week
>0.5—1.0	2/month	Daily	1/week
0.1—0.5	1/month	5/week	2/month
<0.1	1/quarter	5/week	1/month

(1) Sampling must be spaced across the time period at approximately equal intervals, with the exceptions of the five times per week sampling schedule. Five samples per week must be taken one on each of five days during a seven day period.

(2) A permittee that has at least twelve months of uninterrupted compliance with its bacteria limit may notify the commission of its compliance and request a less frequent measurement schedule.

(a) If the commission finds that a less frequent measurement schedule is protective of human health and the environment, the permittee will be given a less frequent measurement schedule. Daily will drop to 5/week, 5/week to 3/week, 3/week to 1/week, 1/week to 2/month, 2/month to 1/month, 1/month to 1/quarter, 1/quarter to 1/6 months.

(b) A violation of the bacteria limit by a facility that has been granted a less frequent measurement schedule will require the permittee to return to the standard frequency schedule.

(c) A permittee that has had a violation while on a less frequent measurement schedule may not apply for another reduction in measurement frequency for at least 24 months from the last violation.

(3) A chemical system other than chlorine will be required to comply with the ultraviolet frequency schedule.

(4) The executive director may establish a more frequent measurement schedule if necessary to protect human health or the environment.

(c) The following table sets forth the self-monitoring schedules applicable to nondomestic wastewater effluent.

Table 3
Frequency of Measurement
Volume of MGD

Parameter	**0 to less than 0.05**	**0.05 to less than 0.50**	**0.50 to less than 2.00**	**2.00 to less than 10.00**	**10.00 or greater**
Flow	One instantaneous measurement per operating day except on sample days when 3 instantaneous measurements made concurrently with the collection of sample portions are required.	One instantaneous measurement per operating shift - on sample days concurrent with the collection of a sample portion.	One instantaneous measurement per operating shift - on sample days concurrent with the collection of a sample portion or the reading from a totalizing flow meter.	Six instantaneous measurements per day spaced at equal intervals during the operating period or the reading from a totalizing flow meter.	Instantaneous measurements made each operating hour or the reading from a totalizing flow meter.
pH (a)	1 per day	1 per day	1 per day	1 per day	1 per day
Temperature (b)	1 per day	3 per day	3 per day	6 per day	12 per day
BOD	1 per week	2 per week	2 per week	3 per week	1 per day

COD	1 per week	2 per week	2 per week	3 per week	1 per day
TOC	1 per week	2 per week	2 per week	3 per week	1 per day
Oil & Grease (c)	1 per week	2 per week	2 per week	3 per week	1 per day
Ammonia Nitrogen	1 per week	2 per week	2 per week	3 per week	1 per day
Arsenic	1 per week	2 per week	2 per week	3 per week	1 per day
Barium	1 per week	2 per week	2 per week	3 per week	1 per day
Boron	1 per week	2 per week	2 per week	3 per week	1 per day
Cadmium	1 per week	2 per week	2 per week	3 per week	1 per day
Chromium	1 per week	2 per week	2 per week	3 per week	1 per day
Copper	1 per week	2 per week	2 per week	3 per week	1 per day
Lead	1 per week	2 per week	2 per week	3 per week	1 per day
Manganese	1 per week	2 per week	2 per week	3 per week	1 per day
Mercury	1 per week	2 per week	2 per week	3 per week	1 per day
Nickel	1 per week	2 per week	2 per week	3 per week	1 per day
Selenium	1 per week	2 per week	2 per week	3 per week	1 per day
Silver	1 per week	2 per week	2 per week	3 per week	1 per day
Zinc	1 per week	2 per week	2 per week	3 per week	1 per day
TSS	1 per week	2 per week	2 per week	3 per week	1 per day
TDS	1 per week	2 per week	2 per week	3 per week	1 per day
Chloride	1 per week	2 per week	2 per week	3 per week	1 per day
Sulphate	1 per week	2 per week	2 per week	3 per week	1 per day
Nitrate Nitrogen	1 per week	2 per week	2 per week	3 per week	1 per day
Sulfide (c)	1 per week	2 per week	2 per week	3 per week	1 per day
Phenol (c)	1 per week	2 per week	2 per week	3 per week	1 per day
Collection	Samples shall be	Samples shall	Samples shall	Samples shall be	Samples shall

of Samples	composite samples made up of three portions, sized proportional to flow, collected to no closer together than one hour and over a span of time not exceeding 24 hours.	be composite samples made up of three portions, sized proportional to flow, one portion being collected during each operating shift or otherwise suitably distributed throughout the operating day.	be composite samples made up of three portions, sized proportional to flow, one portion being collected during each operating shift or otherwise suitably distributed throughout the operating day.	composite samples made up of six portions, sized proportional to flow, collected concurrently with the instantaneous flow measurements made during a 24 hour time span.	be 24 hour composite samples collected in 12 or more individual portions, sized proportional to flow, equally spaced throughout the operating day.

(a) The required laboratory tests shall be made on grab samples and analyzed immediately after collection or analyzed in situ at the permit sampling point.
(b) The temperature shall be measured in situ on the water at the permit sampling point.
(c) The required laboratory tests shall be made on grab samples.

(d)The following table sets forth the quality assurance requirements for wastewater analyses.

Table 4

REQUIRED QUALITY CONTROL ANALYSES

Parameter	**Blank**	**Standard**	**Duplicate**	**Spike**
Bacterial	A		B	
Alkalinity		A	B	
Ammonia Nitrogen	A	A	B	B
BOD	A	A	B	
BOD-carbonaceous	A	A	B	

COD	A	A	B	B
Chloride	A	A	B	B
Chlorine-Total or Free		D		
Cyanide-Total or Amenable to Chlorination	A	A	B	B
Fluoride	A	A	B	B
pH		C		
Kjeldahl Nitrogen	A	A	B	B
Metals (all)	A	A	B	B
Nitrate Nitrogen	A	A	B	B
Nitrite Nitrogen	A	A	B	B
Oil & Grease	A	D		
Orthophosphate	A	A	B	B
Oxygen (dissolved)		A	B	
Phenols	A	A	B	
Phosphorus-Total	A	A	B	B
Specific Conductance	A	A		
Sulfate	A	A	B	B

Sulfide	A	A	B	
Sulfite	A	A	B	
TOC	A	A	B	B
TSS	A		B	
TDS	A	A	B	
Organics by GC or GC/MS or other approved methods	A	A	E	E

Where:

A - Wherever specified, at least one blank and one standard shall be performed each day that samples are analyzed.

B - Wherever specified, duplicate and spike analyses shall be performed on a 10% basis each day that samples are analyzed. If one to 10 samples are analyzed on a particular day, then one duplicate and one spike analyses shall be performed.

C - For pH analysis, the meter shall be calibrated each day that samples are analyzed using a minimum of two standards which bracket the pH value(s) of the sample(s).

D - For the oil and grease analysis and chlorine-total or free analysis, standards shall be analyzed on a 10% basis. If one to 10 samples are analyzed on a particular day, then one standard shall be analyzed. Duplicates may be analyzed in lieu of standards for the oil and grease analysis and chlorine-total or free analysis.

E - For GC and GC/MS analyses, duplicate and spike analyses shall be performed on a 5% basis. If one to 20 samples are analyzed in a month, then one duplicate and one spike analyses per month shall be performed.

Adopted November 4, 2009 Effective November 26, 2009

§319.11. Sampling and Laboratory Testing Methods.

(a) All sample collection shall be conducted according to recommendations found in the latest edition of *Standard Methods for the Examination of Water and Wastewater* (prepared and published jointly by the American Public Health Association, the American Waterworks Association, and the Water

Pollution Control Federation), or the Environmental Protection Agency manual entitled *Methods for Chemical Analysis of Water and Wastes* (1979), or the Environmental Protection Agency manual entitled *Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents* (1973).

(b) Sample containers, holding times, and preservation methods shall meet requirements specified in 40 Code of Federal Regulations (CFR) Part 136.

(c) Effluents shall be analyzed according to test methods specified in 40 CFR Part 136 or more recent editions of *Standard Methods for the Examination of Water and Wastewater* than those cited in Part 136.

(d) Flow measurements, equipment, installation, and procedures shall conform to those prescribed in the Water Measurement Manual, United States Department of the Interior Bureau of Reclamation, Washington, D.C., or methods that are equivalent as approved by the executive director.

(e) Laboratories shall routinely use and document intralaboratory quality control practices as recommended in the latest edition of the Environmental Protection Agency manual entitled *Handbook for Analytical Quality Control in Water and Wastewater Laboratories*. These practices will include the use of internal quality control check samples.

(f) The sampling and laboratory facilities, data, and records of quality control are subject to periodic inspection by commission personnel. Should the procedures specified in this section not be suitable to any particular situation, nonstandard sampling and testing techniques may be employed in accordance with the procedures outlined in §319.12 of this title (relating to Alternate Sampling and Laboratory Testing Methods).

Adopted July 24, 2002 Effective August 15, 2002

§319.12. Alternate Sampling and Laboratory Testing Methods.

(a) Should a permittee determine that the required standard sampling and testing techniques are not suited to its particular situation, the permittee shall make a written request for authorization to use alternate test procedures.

(1) Applications for alternate testing procedures will be made to the executive director.

(2) Items that shall be included with an application for alternate testing procedures are:

(A) name and address of the firm making the discharge;

(B) Texas Water Commission permit number;

(C) list of parameters for which alternate procedures are being requested;

(D) copy of the method of the alternate procedures; and

(E) the justification for the alternate test procedures.

(3) Additional information such as the comparability of data may also be requested by the executive director or his designee.

(b) In no instance shall a permittee use procedures not included in the references cited in §319.11 of this title (relating to Alternate Sampling and Laboratory Testing Methods) until written approval to do so has been received from the executive director or his or her designee. For Texas pollutant discharge elimination system (TPDES) permits a permittee shall only use procedures included in the references cited in §319.11 of this title unless other test procedures have been specified in the permit.

Effective October 8, 1990

SUBCHAPTER B : HAZARDOUS METALS
§§319.21-319.29

§319.21. Definitions.

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise:

(1) **Average quality** - the arithmetic average (weighted by flow value) of all the daily determinations of concentrations made during a calendar month. Daily determinations of concentrations made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during the calendar day.

(2) **Daily composite quality** - the concentration of a sample consisting of a minimum of three grab samples of effluent collected at regular intervals over a normal operating day and combined proportional to flow, or a sample continuously collected proportional to flow over a normal operating day.

(3) **Grab sample quality** - the concentration of an individual sample of effluent collected in less than 15 minutes.

(4) **Hazardous metal** - includes each of the following metals in its elemental state and any of its compounds expressed as that metal: arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc.

(5) **Inland waters** - all surface waters in the state other than "tidal waters" defined below.

(6) **Tidal waters** - those waters of the Gulf of Mexico within the jurisdiction of the State of Texas, bays and estuaries thereto, and those portions of the river systems which are subject to the ebb and flow of the tides, and to the intrusion of marine waters.

§319.22. Quality Levels - Inland Waters.

The allowable concentrations of each of the hazardous metals, stated in terms of milligrams per liter (mg/l), for discharge to inland waters are as follows:

	Not to Exceed		
Metal	Average	Daily Composite	Grab Sample
Arsenic	0.1	0.2	0.3
Barium	1.0	2.0	4.0
Cadmium	0.05	0.1	0.2
Chromium	0.5	1.0	5.0
Copper	0.5	1.0	2.0
Lead	0.5	1.0	1.5
Manganese	1.0	2.0	3.0
Mercury	0.005	0.005	0.01
Nickel	1.0	2.0	3.0
Selenium	0.05	0.1	0.2
Silver	0.05	0.1	0.2
Zinc	1.0	2.0	6.0

§319.23. Quality Levels - Tidal Waters.

The allowable concentrations of each of the hazardous metals, stated in terms of milligrams per liter (mg/l), for discharge of tidal waters are as follows:

	Not to Exceed		
Metal	Average	Daily Composite	Grab Sample
Arsenic	0.1	0.2	0.3
Barium	1.0	2.0	4.0
Cadmium	0.1	0.2	0.3
Chromium	0.5	1.0	5.0
Copper	0.5	1.0	2.0
Lead	0.5	1.0	1.5
Manganese	1.0	2.0	3.0
Mercury	0.005	0.005	0.01
Nickel	1.0	2.0	3.0
Selenium	0.1	0.2	0.3
Silver	0.05	0.1	0.2
Zinc	1.0	2.0	6.0

§319.24. Dilution Prohibited.

The attainment of the specified levels simply by dilution, in the absence of any treatment (that is, by use of extraneous or other wastewater intermixed to dilute a particular discharge) is specifically prohibited. The mercury level in the effluent stream from the facility in which a waste containing mercury originates shall be measured after treatment and before any extraneous water or wastewater from any other sources has been added.

§319.25. Sampling and Analysis.

Test procedures for the analyses of hazardous metals shall comply with any procedures specified in the regulations of the commission and shall conform to regulations published pursuant to §304(g) of the Federal Water Pollution Control Act Amendments of 1972. In the event a question arises concerning sampling and analysis, the executive director shall authorize or approve the method or methods of sampling and analysis to be used in measuring or calculating the quantity of a hazardous metal in an effluent.

§319.26. Toxic Pollutant.

The commission may require more stringent quality levels than those specified in §319.22 of this title (relating to Quality Levels - Inland Waters) and §319.23 of this title (relating to Quality Levels - Tidal Waters) where necessary to insure protection of water in the state. The commission may authorize

less stringent quality levels than those set forth in §319.22 of this title (relating to Quality Levels - Inland Waters) and §319.23 of this title (relating to Quality Levels - Tidal Waters) only where the applicant demonstrates that there will be no significant adverse impact on water quality and that the less stringent quality levels are necessary based on considerations consistent with the provisions of the Texas Water Code.

§319.27. Groundwater Protection.

Although this subchapter is directed towards discharges into surface waters in the state, it is the intention of the commission to apply the terms of this subchapter where practicable and necessary, in order to protect the quality of groundwater resources in the state.

§319.28. Waste Discharge Amendment.

Every waste discharge permit which does not currently specify effluent limitations for any of the hazardous metals covered by this subchapter is hereby amended to incorporate the terms of this subchapter. In all waste discharge permits which the commission may issue, renew or amend, the quality levels specified in this subchapter shall apply where the commission does not establish specific effluent limitations regarding a particular hazardous metal.

§319.29. Limitations in Waste Discharge Permits Controlling.

Where waste discharge permits specify effluent limitations for any of the hazardous metals covered by this subchapter, the limitations contained in the permit shall be controlling.

Date Effective: October 8, 1990

TCEQ Subchapter C:
Public Notice of Spills or Accidental Discharges from Wastewater Facilities Owned or Operated by Local Governments

SUBCHAPTER C: PUBLIC NOTICE OF SPILLS OR ACCIDENTAL DISCHARGES FROM WASTEWATER FACILITIES OWNED OR OPERATED BY LOCAL GOVERNMENTS
§§319.301 - 319.303
Effective March 31, 2011

§319.301. Definitions.

The following definitions apply to this subchapter.

(1) Alluvial well - A well completed in sedimentary deposits resulting from modern rivers.

(2) Appropriate local government officials -

(A) The county judge of a county in which a spill occurs requiring notification under §319.302 of this title (relating to Notification Requirements).

(B) The county judge of a county within 1/2-mile of a spill requiring notification under §319.302 of this title.

(C) The mayor and city manager of a city whose drinking water supply intake is within 1/2-mile of a spill requiring notification under §319.302 of this title.

(D) The director of a water district or authority, acting under the Texas Constitution, Article III, §52, or Article XVI, §59, whose drinking water supply intake is within 1/2-mile of a spill requiring notification under §319.302 of this title.

(3) **Drinking water** - All water:

(A) distributed by any agency or individual, public or private, for the purpose of human consumption;

(B) which may be used in the preparation of foods or beverages;

(C) which may be used for the cleaning of any utensil or article used in the course of preparation or consumption of food or beverages for human beings;

(D) supplied for human consumption; or

(E) used by any institution catering to the public.

(4) **Facility** - A wastewater treatment plant, collection facility, pumping station, or sewer pipeline owned or operated by a local government.

(5) **Groundwater recharge area** - An area where there is direct and rapid communication of flow from the surface downward to the drinking-water aquifer.

(6) **Karst** - A type of topography that is formed over limestone, dolomite, or gypsum by dissolving or solution, and that is characterized by closed depressions or sinkholes, caves, and underground drainage.

(7) **Local government** - An incorporated city, a county, a river authority, or a water district or authority acting under the Texas Constitution, Article III, §52 or Article XVI, §59.

(8) **Local media** - The daily newspapers and the radio and television media serving the counties and cities served by a facility or the aquifer area in which a spill or accidental discharge occurs, as well as these news organizations in the nearest metropolitan area.

(9) **Private source of drinking water** - A drinking water supply that is not a public source of drinking water.

(10) **Public source of drinking water** - A public water system which provides the public piped water for human consumption, which includes all uses described under the definition of drinking water in paragraph (3) of this section. Such a system must have a potential for at least 15 service connections or serve at least 25 individuals at least 60 days out of the year.

(11) **Responsible individual** - The individual designated by the owner of a facility to give the notices required by §319.302 of this title.

(12) **Spill** - An act or omission through which waste or other substances:

(A) are inadvertently discharged into water in the state; or

(B) will enter water in the state, unless controlled or removed.

(13) **Water in the state** - Groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state.

Adopted November 17, 1999 Effective December 30, 1999

§319.302. Notification Requirements.

(a) The owner of a facility must designate a responsible individual to comply with this subchapter.

(b) In addition to the noncompliance notification to the commission required by §305.125(9) of this title (relating to Standard Permit Conditions) and any notification required under Chapter 327 of this title (relating to Spill Prevention and Control), the owner of a facility, through its responsible individual, must notify appropriate local government officials and the local media (see §319.301 of this title (relating to Definitions)) whenever one of the following types of spills occurs from the facility:

(1) a spill, regardless of volume, that the facility owner knows or has reason to know, will adversely affect a public or private source of drinking water;

(2) a spill with a volume of 50,000 gallons or more where one or more of the following conditions also exists:

(A) the spill occurs within 1/2-mile of a public or private source of drinking water;

(B) the spill occurs within 1/2-mile of a private drinking water well which is located within 1/2-mile of a public water supply well;

(C) the spill occurs within 1/2-mile up-gradient of a surface water intake of a public or private source of drinking water;

(D) the spill occurs in an active groundwater recharge area;

(E) the spill occurs up-gradient and within 1/2-mile of a karst terrain or shallow alluvial well that is a source of drinking water;

(3) a spill of 100,000 gallons or more.

(c) The responsible individual must issue the notice as quickly as possible, but not later than 24 hours after the facility becomes aware of the spill. The notice may be hand-delivered, sent by facsimile, e-mail, or by phone with follow-up written notice. The contents of the notice must comply with §319.303 of this title (relating to Notice to Local Officials and Local Media.)

(d) Within 48 hours of providing notice to appropriate local government officials and local media, the responsible individual must provide to the commission regional office in whose region the spill occurred a copy of the notice, the date notice was provided to local officials and local media, and a list of notice recipients.

Adopted March 9, 2011 Effect March 31, 2011

§319.303. Notice to Local Officials and Local Media.

(a) Persons responsible for a wastewater spill must ensure notice complies with subsections (b) and (c) of this section. Responsible persons may contact the commission to obtain a template which may be used in the event of a wastewater spill.

(b) For all wastewater spills as referenced in §319.302(b) of this title (relating to Notification Requirements) the notice must contain the following:

(1) one of the following statements:

(A) a spill from a wastewater treatment facility has occurred; or

(B) a spill from a collection facility has occurred;

(2) the facility name;

(3) person to contact for further information;

(4) the location of the spill;

(5) the estimated date and time of the spill;

(6) the estimated volume of the spill (number of gallons);

(7) the type of the spill (domestic, industrial, etc.);

(8) a description of the area potentially affected, including a down-gradient and lateral distance from the spill site;

(9) the suspected cause of the spill; and

(10) a list of actions that have been taken including, but not limited to:

(A) notification of:

(i) appropriate local government officials; and

(ii) the TCEQ regional office;

(B) containment of the spill;

(C) increased monitoring of water supply systems; and

(D) initiation or completion of clean up activities.

(c) If the wastewater spill meets the conditions of §319.302(b)(2) and/or (b)(3) of this title then the notice must also contain the following precautionary statements:

(1) Persons using private drinking water supply wells located within 1/2-mile of the spill site or within the potentially affected area should use only water that has been distilled or boiled at a rolling boil for at least one minute for all personal uses including drinking, cooking, bathing, and tooth brushing. Individuals with private water wells should have their well water tested and disinfected, if necessary, prior to discontinuing distillation or boiling.

(2) Persons who purchase water from a public water supply may contact their water supply distributor to determine if the water is safe for personal use.

(3) The public should avoid contact with waste material, soil, or water in the area potentially affected by the spill.

(4) If the public comes into contact with waste material, soil, or water potentially affected by the spill, they should bathe and wash clothes thoroughly as soon as possible.

Adopted March 9, 2011 Effective March 31, 2011

TEXAS WATER CODE TITLE 2
WATER ADMINISTRATION SUBTITLE D
WATER QUALITY CONTROL CHAPTER 26
WATER QUALITY CONTROL SUBCHAPTER A
ADMINISTRATIVE PROVISIONS

SEC.26.001
DEFINITIONS

SEC.26.039
ACCIDENTAL DISCHARGES AND SPILLS.

WATER CODE

TITLE 2. WATER ADMINISTRATION

SUBTITLE D. WATER QUALITY CONTROL

CHAPTER 26. WATER QUALITY CONTROL

SUBCHAPTER A. ADMINISTRATIVE PROVISIONS

Sec. 26.001. DEFINITIONS. As used in this chapter:

(1) "Board" means the Texas Water Development Board.

(2) "Commission" means the Texas Natural Resource Conservation Commission.

(3) "Executive administrator" means the executive administrator of the Texas Water Development Board.

(4) "Executive director" means the executive director of the Texas Natural Resource Conservation Commission.

(5) "Water" or "water in the state" means groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico, inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state.

(6) "Waste" means sewage, industrial waste, municipal waste, recreational waste, agricultural waste, or other waste, as defined in this section.

(7) "Sewage" means waterborne human waste and waste from domestic activities, such as washing, bathing, and food preparation.

(8) "Municipal waste" means waterborne liquid, gaseous, or solid substances that result from any discharge from a publicly owned sewer system, treatment facility, or disposal system.

(9) "Recreational waste" means waterborne liquid, gaseous, or solid substances that emanate from any public or private park, beach, or recreational area.

(10) "Agricultural waste" means waterborne liquid, gaseous, or solid substances that arise from the agricultural industry and agricultural activities, including without limitation agricultural animal feeding pens and lots, structures for housing and feeding agricultural animals, and processing facilities for agricultural products. The term:

(A) includes:

(i) tail water or runoff water from irrigation associated with an animal feeding operation or concentrated animal feeding operation that is located in a major sole source impairment zone, as defined by Section 26.502; or

(ii) rainwater runoff from the confinement area of an animal feeding operation or concentrated animal feeding operation that is located in a major sole source impairment zone, as defined by Section 26.502; and

(B) does not include tail water or runoff water from irrigation or rainwater runoff from other cultivated or uncultivated range land, pasture land, and farmland or rainwater runoff from an area of land located in a major sole source impairment zone, as defined by Section 26.502, that is not owned or controlled by an operator of an animal feeding operation or concentrated animal feeding operation on which agricultural waste is applied.

(11) "Industrial waste" means waterborne liquid, gaseous, or solid substances that result from any process of industry, manufacturing, trade, or business.

(12) "Other waste" means garbage, refuse, decayed wood, sawdust, shavings, bark, sand, lime, cinders, ashes, offal, oil, tar, dyestuffs, acids, chemicals, salt water, or any other substance, other than sewage, industrial waste, municipal waste, recreational waste, or agricultural waste.

(13) "Pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, filter backwash, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into any water in the state. The term:

(A) includes:

(i) tail water or runoff water from irrigation associated with an animal feeding operation or concentrated animal feeding operation that is located in a major sole source impairment zone as defined by Section 26.502; or

(ii) rainwater runoff from the confinement area of an animal feeding operation or concentrated animal feeding operation that is located in a major sole source impairment zone, as defined by Section 26.502; and

(B) does not include tail water or runoff water from irrigation or rainwater runoff from other cultivated or uncultivated rangeland, pastureland, and farmland or rainwater runoff from an area of land located in a major sole source impairment zone, as defined by Section 26.502, that is not owned or controlled by an operator of an animal feeding operation or concentrated animal feeding operation on which agricultural waste is applied.

(14) "Pollution" means the alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

(15) "Sewer system" means pipelines, conduits, storm sewers, canals, pumping stations, force mains, and all other constructions, devices, and appurtenant appliances used to transport waste.

(16) "Treatment facility" means any plant, disposal field, lagoon, incinerator, area devoted to sanitary landfills, or other facility installed for the purpose of treating, neutralizing, or stabilizing waste.

(17) "Disposal system" means any system for disposing of waste, including sewer systems and treatment facilities.

(18) "Local government" means an incorporated city, a county, a river authority, or a water district or authority acting under Article III, Section 52, or Article XVI, Section 59 of the Texas Constitution.

(19) "Permit" means an order issued by the commission in accordance with the procedures prescribed in this chapter establishing the treatment which shall be given to wastes being discharged into or adjacent to any water in the state to preserve and enhance the quality of the water and specifying the conditions under which the discharge may be made.

(20) "To discharge" includes to deposit, conduct, drain, emit, throw, run, allow to seep, or otherwise release or dispose of, or to allow, permit, or suffer any of these acts or omissions.

(21) "Point source" means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants or wastes are or may be discharged into or adjacent to any water in the state.

(22) "Identified state supplement to an NPDES permit" means any part of a permit on which the commission has entered a written designation to indicate that the commission has adopted that part solely in order to carry out the commission's duties under state statutes and not in pursuance of administration undertaken to carry out a permit program under approval by the Administrator of the United States Environmental Protection Agency.

(23) "NPDES" means the National Pollutant Discharge Elimination System under which the Administrator of the United States Environmental Protection Agency can delegate permitting authority to the State of Texas in accordance with Section 402(b) of the Federal Water Pollution Control Act.

(24) "Treatment works" means any devices and systems used in the storage, treatment, recycling, and reclamation of waste to implement this chapter or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including:

(A) intercepting sewers, outfall sewers, pumping, power, and other equipment and their appurtenances;

(B) extensions, improvements, remodeling, additions, and alterations of the items in Paragraph (A) of this subdivision;

(C) elements essential to provide a reliable recycled supply such as standby treatment units and clear-well facilities;

(D) any works, including sites and acquisition of the land that will be a part of or used in connection with the treatment process or is used for ultimate disposal of residues resulting from such treatment;

(E) any plant, disposal field, lagoon, canal, incinerator, area devoted to sanitary landfills, or other facilities installed for the purpose of treating, neutralizing, or stabilizing waste; and

(F) facilities to provide for the collection, control, and disposal of waste heat.

(25) "Person" means an individual, association, partnership, corporation, municipality, state or federal agency, or an agent or employee thereof.

(26) "Affected county" is a county to which Subchapter B, Chapter 232, Local Government Code, applies.

Amended by Acts 1977, 65th Leg., p. 1640, ch. 644, Sec. 1. Renumbered from Sec. 21.003 and amended by Acts 1977, 65th Leg., p. 2207, ch. 870, Sec. 1, eff. Sept. 1, 1977. Amended by Acts 1981, 67th Leg., p. 985, ch. 367, Sec. 43, eff. June 10, 1981; Acts 1985, 69th Leg., ch. 795, Sec. 1.064, eff. Sept. 1, 1985; Acts 1987, 70th Leg., ch. 977, Sec. 19, eff. June 19, 1987; Acts 1989, 71st Leg., ch. 642, Sec. 1, eff. Aug. 28, 1989; Acts 1991, 72nd Leg., 1st C.S., ch. 3, Sec. 1.068, eff. Aug. 12, 1991; Acts 1995, 74th Leg., ch. 979, Sec. 24, eff. June 16, 1995; Acts 1999, 76th Leg., ch. 404, Sec. 43, eff. Sept. 1, 1999; Acts 2001, 77th Leg., ch. 965, Sec. 12.01, eff. Sept. 1, 2001.

WATER CODE

TITLE 2. WATER ADMINISTRATION

SUBTITLE D. WATER QUALITY CONTROL

CHAPTER 26. WATER QUALITY CONTROL

SUBCHAPTER A. ADMINISTRATIVE PROVISIONS

Sec. 26.039. ACCIDENTAL DISCHARGES AND SPILLS. (a) As used in this section:

(1) "Accidental discharge" means an act or omission through which waste or other substances are inadvertently discharged into water in the state.

(2) "Spill" means an act or omission through which waste or other substances are deposited where, unless controlled or removed, they will drain, seep, run, or otherwise enter water in the state.

(3) "Other substances" means substances which may be useful or valuable and therefore are not ordinarily considered to be waste, but which will cause pollution if discharged into water in the state.

(b) Whenever an accidental discharge or spill occurs at or from any activity or facility which causes or may cause pollution, the individual operating, in charge of, or responsible for the activity or facility shall notify the commission as soon as possible and not later than 24 hours after the occurrence. The individual's notice to the commission must include the location, volume, and content of the discharge or spill.

(c) Activities which are inherently or potentially capable of causing or resulting in the spillage or accidental discharge of waste or other substances and which pose serious or significant threats of pollution are subject to reasonable rules establishing safety and preventive measures which the commission may adopt or issue. The safety and preventive measures which may be required shall be commensurate with the potential harm which could result from the escape of the waste or other substances.

(d) The provisions of this section are cumulative of the other provisions in this chapter relating to waste discharges, and nothing in this section exempts any person from complying with or being subject to any other provision of this chapter.

(e) If an accidental discharge or spill described by Subsection (b) from a wastewater treatment or collection facility owned or operated by a local government may adversely affect a public or private source of drinking water, the individual shall also notify appropriate local government officials and local media.

(f) The commission by rule shall specify the conditions under which an individual must comply with Subsection (e) and prescribe procedures for giving the required notice. The rules must also state the content of the notice and the manner of giving notice. In formulating the rules, the commission shall consider:

(1) the nature and extent of the discharge or spill;

(2) the potential effect of the discharge or spill; and

(3) regional information about the susceptibility of a particular drinking water source to a specific type of pollution.

Amended by Acts 1977, 65th Leg., p. 2207, ch. 870, Sec. 1, eff. Sept. 1, 1977; Acts 1985, 69th Leg., ch. 795, Sec. 1.085, eff. Sept. 1, 1985; Acts 1999, 76th Leg., ch. 208, Sec. 1, eff. Sept. 1, 1999.

APPENDIX E
Tyler Water Utilities
Wastewater Collection
Existing High Frequency Cleaning Program

Tyler Water Utilities has an existing high frequency cleaning program, by which sewer segments may be placed on a 12-month, 6-month or 3-month cleaning cycle, following review by the Wastewater Collection System Superintendent. This existing program is subject to change as Tyler develops its Revised High Frequency Cleaning Program, pursuant to the terms of Section V.A.5 (CMOM Program - Revised High Frequency Cleaning Program) of the Consent Decree. Under the existing program, if a sewer segment experiences more than one SSO within a 12-month period, it is placed on a 12-month cleaning frequency cycle. The method of cleaning is based on the nature of the primary problem: 1) "cabling" the line to remove roots, 2) "washing and treating" the line to remove grease, or 3) "cabling and washing" the line to remove both roots and grease. Also under the existing program, if the segment continues to experience SSOs, it may be moved to the 6-month cleaning cycle. If SSOs persist in the pipe segment, it may then be moved to the 3-month cleaning cycle.

After each SSO, a CCTV inspection is scheduled for the Sewer Segment in question to determine if any other follow-up actions are required or a change of cleaning frequency is warranted. Sewer Segments may be moved to a lower frequency cleaning cycle or removed from the existing high frequency cleaning program following rehabilitation, repair or replacement of the pipe segment.

A list of pipe segments included in the 3-month, 6-month and 12-month cleaning cycles of the existing high frequency cleaning program, current as of the Date of Lodging of the Consent Decree, is attached.

Tyler Water Utilities
Hot Spot Cleaning List

3 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
1	9/8/2012	2719 Ada	grease	1500	cable, wash & treat
2	1/3/2013	S. Broadway & Loop 323	Grease	800	Wash & Treat
3	8/22/2013	1015 W. Gentry	Grease	500	Wash & Treat
				2800 Feet	
				0.5 Miles	
			4 times a year	**2.1 Miles**	

6 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
1	1/15/2011	121 E. Front	grease & debris	100	PM wash
2	2/15/2011	4427 & 4431 Dundee	grease	450	PM Wash
3	4/13/2011	2025 WSW Loop 323	grease	2275	wash & Treat
4	4/29/2011	6805 South Place	roots & grease	500	cable & wash
5	2/15/2012	1101 S. Fleishel	grease	1700	wash & treat
6	2/20/2012	1300 S. Beckham	grease	2700	wash & treat
7	3/11/2012	Plume & Troup	grease	8000	PM wash & Treat
8	3/13/2012	3314 Troup Hwy	grease	3000	Pm wash & treat
9	3/13/2012	3333 Troup Hwy	grease	2400	PM wash & Treat
10	4/5/2012	5502 S. Broadway	grease	2900	wash & Treat
11	4/25/2012	Bois D Arc & Wilson	grease	1600	PM wash & Treat
12	4/26/2012	425 E. Cedar	grease	400	PM wash & Treat
13	6/14/2012	Cain & Old Noonday	grease	1000	PM wash
14	6/20/2012	1725 Loop 323 WSW	grease	225	wash & treat
15	6/21/2012	Anthony & DC Drive	grease	1200	wash & treat
16	7/12/2012	2613 E. 5th	grease	200	wash & treat
17	7/15/2012	502 W. Houston	grease	200	wash & treat
18	7/19/2012	1500 WSW Loop 323	grease	1750	wash & treat
19	7/21/2012	105 Tournament	grease	300	wash & treat
20	8/4/2012	6724 S. Broadway	grease	800	wash & treat
21	8/7/2012	2805 Garden Valley	grease	525	wash & treat
22	8/13/2012	S.E. corner of Palace & Gentry	grease	975	wash & Treat
23	9/4/2012	427 S. Oakland	grease	375	wash & treat
24	9/4/2012	Ada & Manilee	grease	900	wash & treat
25	9/4/2012	3320 S. Broadway	grease	900	wash & treat
26	9/8/2012	2719 Ada	grease	0	moved to 3 Month
27	9/19/2012	5315 S. Broadway	grease	2250	wash & Treat
28	9/27/2012	D.E. of Depreist	roots	900	cable
29	10/11/2012	behind 2221 McMurrey	grease	1200	wash & treat
30	10/15/2012	800 Neches	grease	525	wash & treat
31	10/22/2012	100 S. Peach	grease	375	wash & treat
32	11/9/2012	5th * S. Broadway	grease	450	wash & treat
33	11/30/2012	D.E. of Pabst south of Bow	roots	800	cable & wash
34	12/21/2012	3214 Hardwood	roots	325	cable
35	12/21/2012	Elm & Glenwood	roots & grease	100	cable, wash & treat
36	12/22/2013	2611 W. Gentry	grease	1250	cable, wash & treat
37	12/30/2012	4622 Leisure Lane	grease	800	wash & treat
38	1/3/2013	S. Broadway & Loop 323	grease	0	Moved to 3 Month
39	1/3/2013	Donnybrook & Loop 323	grease	1850	wash & treat
40	1/23/2013	100 Rice Rd	grease	500	wash & treat

41	3/6/2013	1105 E. Gentry	grease	200	wash & Treat
42	5/16/2013	804 W. 26th	grease & roots	1100	cable & wash
43	4/9/2013	1820 N. Gaston	roots & debris	625	cable & wash
44	6/24/2014	719 Baxter	grease	2400	wash & Treat
45	9/15/2014	Locust & Townsend	grease & roots	600	cable & wash
46	12/1/2014	6435 Old Jacksonville	grease	750	wash & Treat
47	1/16/2015	2214 W.S.W. Loop323	grease	1700	wash & treat
48	2/28/2013	Magnolia & Lake	grease & debris	800	cable & wash
49	1/15/16	845 Crosby	grease	1075	cable & wash

55150 Feet
10.4 Miles
2 Times a year **20.9 Miles**

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
1	2/14/2011	601 Harvard	Grease	450	wash
2	3/1/2011	1204 S. Wall	Roots	500	cable
3	1/6/2012	2022 N. Wolford	grease	150	wash
4	1/7/2012	520 & 614 Elmridge	Grease	900	wash
5	1/29/2012	4812 Downing	Grease & debris	1800	wash
6	2/21/2012	Caldwell Zoo	Root/debris	1650	cable/wash
7	3/1/2012	1538 N. Hill	Roots/grease	500	cable/wash
8	3/1/2012	Specialty & Old Troup	Debris	1350	pm wash
9	3/3/2012	305 E. Fourth	roots	300	cable
10	3/5/2012	3205 Tulsa	grease	700	Pm wash & treat
11	3/5/2012	1703 N. Broadway	grease	75	Pm wash & treat
12	3/6/2012	1100 Blk Magnolia	roots & debris	1000	cable & wash
13	3/6/2012	4222 Southpark Dr	Roots	1250	cable
14	3/8/2012	725 Pam	Debris	1500	cable
15	3/8/2012	2011 Sterling	Roots	1000	cable
16	3/8/2012	Independence & Broadway	grease	1950	PM wash & treat
17	3/15/2012	3916 Jan	grease	2375	wash
18	3/18/2012	218 E. Locust	Debris	400	pm wash
19	3/18/2012	713 Jeffery	roots	1400	cable
20	3/21/2012	2222 SSE Loop 323	grease	400	wash
21	3/22/2012	319 S. Beckham	roots & grease	225	cable & treat
22	3/22/2012	Fifth & Fleishel	Grease/debris	550	pm wash
23	3/22/2012	800 w. 27TH	grease & debris	300	pm wash
24	3/26/2012	300 Blk of Oakland	Debris	800	pm wash
25	3/26/2012	1733 Richards	roots	400	cable
26	3/26/2012	Pam & Joy	Roots/grease	1225	cable/wash
27	3/28/2012	3110 Towne Park	grease	1350	PM wash
28	3/30/2012	916 Academy	grease	425	PM wash & treat
29	3/31/2012	1306 Hawthorne	roots	1050	cable & wash
30	4/1/2012	Oliver & Rosevelt	roots	1900	PM cable
31	4/2/2012	1725 S. Sneed	Grease/debris	375	wash/cable
32	4/2/2012	2027 Lee St	Grease	800	wash
33	4/3/2012	1417 Santa Rosa	roots	1800	PM cable
34	4/4/2012	1126 Buena Vista	roots	1950	PM cable
35	4/9/2012	601 Golden rd	grease	150	Pm wash
36	4/9/2012	1729 Arnold	grease	400	PM wash
37	4/10/2012	710 S. Porter	roots & grease	2200	PM wash & cable
38	4/10/2012	D.E. of Ferdell	roots	350	cable
39	4/11/2012	5314 Athens	Grease	1200	wash & treat

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
40	4/13/2012	Angeline & Alice	roots	950	cable
41	4/15/2012	behind 1100 W. Claude	Roots	550	cable
42	4/15/2012	1800 Blk of Bradshaw	roots	750	cable & wash
43	4/17/2012	3904 W. Gentry	grease	500	wash & treat
44	4/22/2012	D.E. of Pabst-sout of Bow	roots & debris	0	Moved to 6 Month
45	4/22/2012	719 Pabst	grease	1500	PM wash
46	4/23/2012	3001 Buddie	grease	2250	PM wash
47	4/24/2012	819 N. Spring	grease	950	PM wash
48	4/30/2012	CR 427- Lake Park Dr	roots	3000	cable
49	5/1/2012	D.E. of Hayes	roots & grease	1200	cable & wash
50	5/4/2012	3409 Brookside	roots	1750	cable
51	5/7/2012	2402 Bellwood	grease	1600	PM wash
52	5/8/2012	2nd MH east of Palace & North of Gentry	Roots/grease	525	cable & wash
53	5/9/2012	4013 Appletree	grease	4000	wash & treat
54	5/14/2012	401 Sunnyside	grease	1000	PM wash
55	5/20/2012	504 S. Beckham	Grease/debris	250	pm wash
56	5/20/2012	1107 Wilmington	grease	1400	Pm wash
57	5/22/2012	518 S. Parkdale	roots	800	cable
58	5/22/2012	624 David	grease	1225	PM wash
59	5/24/2012	310 N. Beverly	grease	350	Pm wash
60	5/24/2012	Beverly south of Locust	grease	400	PM wash
61	5/25/2012	610 S. College	grease	700	PM wash
62	5/30/2012	Elm & Palmer	grease	300	PM wash
63	5/30/2012	Wildwood & Front	grease	1350	PM wash
64	5/31/2012	400 Old Grande	Roots/grease	700	pm wash/cable
65	6/8/2012	1705 N. Broadway	grease	900	PM wash
66	6/11/2012	1808 E. Lawrence	roots & grease	750	PM cable & wash
67	6/26/2012	625 S. Augusta	roots & grease	1200	cable & wash
68	6/29/2012	3009 Meadowlark	roots & grease	800	cable
69	7/3/2012	3324 NNE Loop 323	grease	800	PM wash
70	7/4/2012	8414 Cambridge	grease	800	wash & treat
71	7/10/2012	409 N. Border	grease	450	PM wash
72	7/10/2012	2310 E. Erwin	grease	3000	wash & treat
73	7/10/2012	2604 E. Erwin	grease	750	wash & treat
74	7/20/2012	804 W. 26th St	grease	1000	PM wash
75	7/25/2012	Highland &5th St well #9	roots	800	Cable
76	7/28/2012	1211 S. College	roots & grease	300	PM cable
77	8/3/2012	4702 Troup Hwy	grease	600	PM wash
78	8/7/2012	Behind 2700 N. Grand	grease	900	wash & treat
79	8/10/2012	2401 Mimosa	roots	1125	cable
80	8/10/2012	Queen & Spring	grease	600	PM wash
81	8/13/2012	SE corner of Palace & Gentry	GREASE	0	Moved to 6 Month
82	8/16/2012	3323 Garden Valley	Grease/roots	350	cable & Wash
83	8/23/2012	2519 N. Confederate	grease	1225	wash & treat
84	8/30/2012	3220 Walton rd	Roots	1750	cable
85	9/4/2012	2900 Baldwin	roots	1225	cable
86	9/4/2012	D.E. of Neches	grease	375	wash & treat
87	9/8/2012	302 Dayton	roots	900	cable & wash
88	9/11/2012	4598 Old Troup	grease	1200	wash & treat
89	9/11/2012	Shaw & Broadway	Grease	1575	wash
90	9/15/2012	1540 S. Academy	grease	1250	wash & treat

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
91	9/19/2012	Behind 2301 Debby	Roots	2700	cable
92	9/19/2012	Old Omen & 5th	Roots	500	cable
93	9/20/2012	Lyons S. of Front	roots	600	cable & wash
94	9/24/2012	3885 Brighton Creek	roots	750	cable
95	9/27/2012	3720 Mineola Hwy	grease	1500	wash
96	9/28/2012	Glenwood & Grove	roots	2000	cable & wash
97	10/4/2012	727 S. Englewood	grease	900	PM wash
98	10/8/2012	3621 McDonald Rd	grease	100	wash & treat
99	10/9/2012	3214 Old Jacksonville	grease	100	wash & treat
100	10/18/2012	4400 Paluxy	grease	1225	wash & treat
101	10/18/2012	5750 Eaglesnest	roots	1225	cable
102	10/18/2012	Cecil & County Rd	roots	600	cable
103	10/20/2012	Hill & park	grease	300	PM wash
104	10/22/2012	3800 Lexington	roots	375	cable & wash
105	10/27/2012	3200 Garden Valley & charlotte	roots	950	cable & wash
106	10/28/2012	6101 Wilderness	roots	1500	cable
107	10/29/2012	2406 Pinkerton	roots	250	cable & wash
108	10/30/2012	5908 Plantation	debris	675	cable & wash
109	11/1/2012	Belmead & Shelley	grease	300	PM wash
110	11/3/2012	306 & 311 Rosedale	roots	300	cable & wash
111	11/5/2012	Ford & fannin	grease	700	Pm wash
112	11/7/2012	106 E. 2nd	grease	350	wash & treat
113	11/7/2012	1021 W. Shaw	roots	1125	cable & wash
114	11/14/2012	114 Tournament	roots	625	cable & wash
115	11/17/2012	716 N. Confederate	roots	875	cable & wash
116	11/18/2012	519 Victory	roots	800	PM cable
117	11/21/2012	3129 Vineyard	roots	1000	cable
118	11/23/2012	2314 & 2316 Aberdeen	roots & grease	300	cable & wash
119	11/26/2012	Tenneha & Barrett	grease	250	wash & treat
120	11/29/2012	439 S. Hill	roots	450	cable & wash
121	11/29/2012	D. E. of Clublake	roots	1500	cable & wash
122	11/30/2012	2100 Bandera	roots	600	cable & wash
123	11/30/2012	Camp & Caryle	roots	225	cable & wash treat
124	11/30/2012	D.E. of Pabst south of Bow	roots	800	cable & wash
125	12/2/2012	408 N. Parkdale	grease/roots	700	cable/wash
126	12/4/2012	2707 Willard	grease	600	PM wash
127	12/9/2012	5315 S. Broadway	Grease	0	wash & treat
128	12/10/2012	820 NNW Loop 323	roots	300	cable & wash
129	12/10/2012	1538 N. Hill	roots	800	cable & wash
130	12/11/2012	Sybil & Southpark	roots	1300	cable & wash
131	12/11/2012	Whiteoak & Holyoak	roots	750	cable
132	12/17/2012	329 Brookwood	roots	150	cable & wash
133	12/21/2012	3214 Harwood	roots	325	cable & wash
134	12/21/2012	4021 New Copeland Rd	roots	600	cable & wash
135	12/24/2012	601 N. Broadway	grease & debris	1000	cable &(wash & treat)
136	12/29/2012	818 Dobbs	roots	200	cable
137	12/31/2012	1402 S. Sneed	roots	525	cable & wash
138	12/31/2012	1700 Sampson	Grease & roots	600	cable & wash
139	1/5/2013	217 Heritage Circle	roots	250	Cable
140	1/7/2013	704 S. Fleishel	grease	800	wash & treat
141	1/7/2013	2016 Crestwood	roots	450	Cable

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
142	1/9/2013	1614 S. College	grease	1100	cable & wash
143	1/10/2013	7302 Princedale	grease & debris	600	pm wash
144	1/12/2013	3600 Bain	roots & grease	600	cable & wash
145	1/14/2013	106 E. Elm	grease	300	wash & treat
146	1/14/2013	1527 Haynie	roots	450	cable
147	1/17/2013	10th & Sunnybrook	grease	200	PM wash
148	1/17/2013	1005 S. Tipton	roots & grease	1400	cable & wash
149	1/21/2013	815 Sheperd	roots & grease	750	cable & treat
150	1/21/2013	1016 Amherst	roots & grease	800	cable & treat
151	1/21/2013	2703 Old Bullard	roots & grease	600	cable & wash
152	1/21/2013	810 S. Porter	roots & grease	1600	PM wash & cable
153	1/22/2013	D.E. of Nancy	roots & grease	1000	cable & wash
154	1/23/2013	801 & 817 Pam	roots & grease	550	cable & wash
155	1/24/2013	2503 New Copeland	roots & grease	625	cable & wash
156	1/25/2013	400 W. Cochran	grease	300	PM wash
157	1/25/2013	3105 Carter	roots & grease	625	cable & wash
158	1/26/2013	2447 Sunnybrook	roots & grease	100	cable & wash
159	1/28/2013	1420 N. Fannin	roots & grease	400	cable & wash
160	1/30/2013	2419 N. Englewood	roots & grease	900	cable & wash
161	1/31/2013	3424 Cope St	grease	800	wash
162	2/1/2013	442 Morgan	roots & grease	1200	cable & wash
163	2/4/2013	519 Hunters Court	dirt	150	PM wash
164	2/4/2013	5427 Quailcreek	roots & grease	950	cable & wash
165	2/10/2013	Hollystar & Morning Star	roots & grease	400	cable, wash & treat
166	2/13/2013	8393 Garrett	grease	300	cable, wash & treat
167	2/13/2013	3623 Wynnwood	roots & debris	550	cable, wash
168	2/13/2013	114 Amherst	roots & grease	525	cable & wash
169	2/14/2013	2523 Fleetwood	grease & debris	400	pm wash
170	2/14/2013	133 N. Forest	roots & grease	525	cable & wash
171	2/15/2013	Lake Placid & Old J Ville	grease	325	pm wash
172	2/15/2013	305 W. Charnwood	roots & grease	300	cable & wash
173	2/15/2013	517 Harpole	grease & debris	450	pm wash
174	2/20/2013	2419 E. 5th	roots & grease	450	cable & wash
175	2/20/2013	5050 Shiloh	debris	825	pm wash
176	2/21/2013	643 S. Baxter	root	350	cable & wash
177	2/23/2013	1007 W. Bow	roots & debris	400	cable & wash
178	2/23/2013	2812 N. Glass	roots & debris	1000	cable & wash
179	2/27/2013	2111 Glenbrook	roots & debris	250	cable & wash
180	2/27/2013	1208 Neches	grease & debris	500	pm wash
181	2/28/2013	Magnolia & Lake	debris	800	cable & Wash
182	3/3/2013	1823 Old Omen	roots & grease	400	cable & wash
183	3/5/2013	1018 E. Elm	roots	300	cable & wash
184	3/5/2013	711 W. 3rd	roots & grease	325	cable & wash
185	3/7/2013	Locust & Beverly	Debris	100	pm wash
186	3/7/2013	1007 W.N.W.Loop323	roots & debris	300	cable
187	3/9/2013	1705 Gish Ln	roots	450	cable
188	3/15/2013	Edwards & Locust	roots & debris	250	cable & wash
189	3/18/2013	711 Spring Creek	roots	450	cable & wash
190	3/19/2013	3721 Arlington	roots	250	cable & wash
191	3/20/2013	Joel & Robert E. Lee	Debris	300	pm wash
192	3/21/2013	2515 W. Shaw	grease	850	cable & wash

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#	Date added to Schedule	Location	Problem	Footage	Task
193	3/24/2013	226 E. Dodge	grease & debris	200	cable & wash
194	3/25/2013	2022 Belvedere	roots	850	pm cable
195	3/26/2013	3300 Curtis	roots	400	cable & wash
196	3/27/2013	1400 Hawthorne	grease & roots	800	cable & wash
197	3/30/2013	2809 Bellwood	grease & debris	1050	cable & wash
198	4/1/2013	1415 Hawthorne	roots	250	pm cable
199	4/4/2013	Spring & Locust	Debris	350	pm wash
200	4/5/2013	1121 S. Baxter	grease	800	wash & treat
201	4/7/2013	Stratford & Hubbard	roots	500	cable & wash
202	4/8/2013	800 W. Queen	grease & roots	350	cable & wash
203	4/9/2013	Clinic & Dawson	Debris	650	pm wash
204	4/9/2013	1820 N. Gaston	roots & debris	650	cable & wash
205	4/11/2013	Stanford & Crestview	roots & debris	350	cable & wash
206	4/12/2013	2937 Keenan	roots & debris	400	cable & wash
207	4/15/2013	1222 Buena Vista	roots	500	cable & wash
208	4/15/2013	34th & Grand	grease & debris	500	pm wash
209	4/17/2013	Locust & Frank	grease	150	wash & treat
210	4/22/2013	3217 Rolling Hill	grease & roots	1400	cable & wash
211	4/26/2013	830 S. Fannin	roots	325	pm cable
212	4/29/2013	3424 Cope St	grease & roots	950	cable & wash
213	5/4/2013	7132 Gatewood	grease & roots	800	cable & wash
214	5/7/2013	Broadway & Alpine	grease & roots	1150	cable & wash
215	5/8/2013	900 blk Boyd	grease & roots	250	cable & wash
216	5/10/2013	Shelley & Broadway	grease & debris	750	wash & treat
217	5/4/2013	6600 S. Broadway	grease	1750	wash & treat
218	5/15/2013	1820 Don	grease & other	450	pm wash
219	5/16/2013	1219 Kenilworth	grease & roots	400	cable & wash
220	5/16/2013	804 W. 26th St	grease & roots	1100	cable & wash
221	5/28/2013	922 W. 5th	roots & grease	1000	cable & wash
222	3/18/2013	13443 CR 206 behind Goodyear plant	roots & debris	3000	cable & wash
223	4/26/2013	Rose Stadium south to north side	debris	600	pm wash
224	6/15/2013	1718 Sampson	debris	650	pm wash
225	6/19/2013	Bellaire & Garden Valley	roots	1000	pm cable
226	5/30/2013	Pinkerton & Danica	grease	300	pm wash
227	5/29/2013	420 N. Bois d' arc	roots	525	pm cable
228	7/2/2013	Willow Brook Country Club	roots & debris	250	pm cable
229	6/2/2013	3520 New Copeland	roots	750	pm cable
230	6/11/2013	1600 Rice rd	roots & debris	500	pm cable
231	6/20/2013	Donnybrook & Rieck	grease & rags	250	pm wash
232	6/26/2013	1125 Pinedale Pl	debris	1200	cable & wash
233	7/15/2013	1st & Chilton	roots	200	pm cable
234	7/20/2013	2010 Sybil Ln	debris & gravel	650	pm wash
235	7/17/2013	Bow & Bois d' arc	grease	550	pm wash
236	7/22/2013	2314 Robertson Ave	roots	450	pm cable
237	7/23/2013	2400 N. Confederate	roots	600	cable & wash
238	7/24/2013	D.E. of Shenandoah	roots	250	cable & wash
239	7/26/2013	701 W.S.W. Loop 323	grease	950	wash & treat
240	7/28/2013	3200 Cameron	roots & debris	300	cable & wash
241	8/2/2013	801 Trinity	grease & debris	900	pm wash
242	8/5/2013	5916 Rhones Quarter	roots	850	pm cable
243	8/8/2013	Paul & Grand	roots	350	pm cable

12 Month Schedule

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244	8/23/2013	709 Duckenfield	roots	650	pm cable
245	8/27/2013	3215 Old Jacksonville	roots & grease	100	cable & wash
246	8/26/2013	719 Oakland	roots	100	pm cable
247	8/26/2013	1505 E. Erwin	grease	375	pm wash
248	9/5/2013	700 Olympic Plaza	roots	1000	pm cable
249	9/17/2013	Dawson & Beckham	Debris	450	cable
250	9/20/2013	2714 Tenneha	roots & grease	350	cable & wash
251	9/21/2013	1204 S. Wall	roots & debris	500	cable & wash
252	10/2/2013	3963 Chapel Woods	debris	300	cable
253	10/2/2013	310 Carriage	roots & debris	500	cable & wash
254	10/5/2013	2204 Airline	rags	400	cable & wash
255	10/6/2013	400 blk Chimney Rock	rags & debris	300	pm wash
256	10/9/2013	5th & Sneed	debris	150	pm wash
257	10/15/2013	3408 Shady Trail	roots & debris	400	cable & wash
258	10/16/2013	802 E. Locust	debris	450	cable & wash
259	10/17/2013	1300 blk Summitt	roots & grease	500	cable & wash
260	10/18/2013	615 E. 3rd	roots & debris	200	cable & wash
261	10/24/2013	800 Woodhall Ct	grease & debris	600	cable & wash
262	10/31/2013	1939 Devine	grease	450	pm wash
263	10/31/2013	3230 Berryhill	roots	450	pm cable
264	11/12/2013	8145 Kevin	roots	1200	cable & wash
265	11/21/2013	2347 Alta Mira	roots & debris	400	cable & wash
266	11/27/2013	3005 N. Whitten	grease	700	cable & wash
267	12/16/2013	2802 Greenwood	roots & grease	950	cable & wash
268	12/15/2013	2928 Dinah	roots	300	cable & wash
269	12/21/2013	515 Hampton Hills	roots	550	pm cable
270	12/21/2013	1634 S. Vine	mud	250	pm cable
271	12/29/2013	2602 Shenandoah	grease	325	cable & wash
272	12/31/2013	508 Bandera	roots	500	pm cable
273	12/31/2013	Sunnybrook & 10th	roots	200	pm cable
274	1/3/2014	Peach & Mockingbird	roots & grease	400	cable & wash
275	1/14/2014	3415 Keaton	roots	900	cable & wash
276	2/1/2014	1502 Woodlands	roots	450	cable & wash
277	2/2/2014	907 S. Lyons	grease & roots	450	cable & wash
278	1/27/2014	215 E. Line	grease & debris	150	cable & wash
279	2/7/2014	3400 Varsity	grease & debris	400	cable & wash
280	1/31/2014	1200 Blk E. Front	roots	450	pm cable
281	2/16/2014	1733 E. Richards	roots	400	pm cable
282	2/2/2014	1820 Hankerson	roots & grease	500	cable & wash
283	2/14/2014	2810 W. Erwin	roots	600	pm cable
284	1/25/2014	2504 W. Oakwood	roots	200	pm cable
285	1/27/2014	4430 Hwy 31 W	grease & debris	650	cable & wash
286	2/15/2014	400 Thigpen	roots & grease	600	cable & wash
287	2/17/2014	Bellwood & Lyons	roots & grease	300	cable & wash
288	2/17/2014	8219 Purdue	roots	600	cable & wash
289	2/20/2014	Hurt & Connally	roots & debris	1500	cable & wash
290	2/24/2014	2875 Shiloh	grease & debris	1150	Pm Wash
291	2/25/2014	1208 S. Sneed	roots & debris	550	cable & wash
292	3/3/2014	1924 Clubview	roots & grease	750	cable & wash
293	3/5/2014	Lake Placid & Vine	grease & debris	250	cable & wash
294	2/27/2014	1600 Manorway	grease & debris	850	cable & wash

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295	3/7/2014	420 Top Hill	grease & roots	250	cable & wash
296	3/16/2014	Harvard & Oxford	grease	1550	cable & wash
297	3/18/2014	Barrett & Grand	grease & debris	150	pm wash
298	3/19/2014	621 Beth	roots	1100	cable & wash
299	3/19/2014	205 Chimney Rock	grease & roots	150	cable & wash
300	3/24/2014	628 N. Bois d arc	grease & roots	800	cable & wash
301	3/25/2014	Sunnybrook & Ellis	roots	150	pm cable
302	3/26/2014	6213 Huntington	roots & debris	500	cable & wash
303	3/18/2014	D.E. Pabst	roots & debris	300	cable & wash
304	4/3/2014	3326 Brookside	roots	750	cable & wash
305	4/4/2014	202 N. Parkdale	roots & debris	1000	cable & debris
306	4/7/2014	2324 S. Vine	roots	500	cable & wash
307	4/8/2014	5310 Indian Springs	grease & debris	300	cable & wash
308	4/8/2014	Fenton & Northridge	grease	300	cable & wash
309	4/9/2014	Courtney & Miller	grease & debris	125	wash & treat
310	4/9/2014	Winona & Gentry	roots	200	cable & wash
311	4/16/2014	2001 Montrose	grease	800	cable & wash
312	4/16/2014	1437 N. Fannin	grease, debris	300	cable & wash
313	4/21/2014	1412 W. Queen	roots	1000	cable & wash
314	4/23/2014	509 W. Douglas	grease & roots	150	cable & wash
315	4/24/2014	2032 Neeley	roots	500	cable & wash
316	4/24/2014	2430 Boldt	grease &roots	550	cable & wash
317	4/30/2014	3015 Cameron	roots	550	cable & wash
318	5/16/2014	2119 Clubview	roots & debris	400	cable & wash
319	5/19/2014	640 Beechwood	roots & debris	500	cable & wash
320	5/23/2014	Donnybrook & Dobbs	roots & debris	200	cable & wash
321	5/29/2014	3705 McMillian	roots & debris	1100	cable & wash
322	5/31/2014	2207 Jackie	roots & grease	350	cable & wash
323	6/2/2014	2200 blk of Golden rd	roots & debris	700	cable & wash
324	6/3/2014	2415 E. Erwin	roots & debris	2500	cable & wash
325	6/17/2014	2300 Buck	roots & debris	450	cable & wash
326	6/18/2014	846 Donnybrook	grease & debris	450	cable & wash
327	3/11/2014	Cain & Old Noonday	grease	1000	pm wash
328	6/27/2014	2505 Kensington	roots	300	cable
329	7/2/2014	319 Harpole	roots	350	cable & wash
330	7/11/2014	1601 Everglades	grease	300	wash
331	7/17/2014	3416 Old Noonday	roots	1200	cable & wash
332	8/25/2014	Lollar & Grand	roots & debris	350	cable & wash
333	9/8/2014	3114 Oak Bend	debris	300	cable & wash
334	9/9/2014	922 S. College	roots	550	cable & wash
335	9/11/2014	Parkdale S. of Front	roots	350	cable & wash
336	9/12/2014	1617 Milam	roots	600	cable & wash
337	9/16/2014	1212 Clinic	grease & debris	400	cable & wash
338	9/16/2014	3004 Tanglewood	roots	450	cable & wash
339	9/20/2014	2700 Pollard	roots	250	cable & wash
340	8/28/2014	4562 Van Hwy	roots	1150	cable & wash
341	9/23/2014	Paluxy & Loop 323	grease	300	wash & treat
342	10/2/2014	530 S.S.W. Loop 323	grease	1150	wash & treat
343	10/6/2014	2331 Devine	debris	100	cable & wash
344	10/21/2014	8310 Crooked Trail	debris	1000	cable & wash
345	10/31/2014	1037 Lyons	grease & debris	425	cable & wash

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
346	11/1/2014	3509 Woods Blvd	grease & debris	650	cable & wash
347	11/2/2014	100 Ridgecrest	roots & debris	900	cable & wash
348	11/6/2014	601 Valentine	roots & debris	300	cable & wash
349	11/7/2014	912 Grove	roots & debris	500	cable & wash
350	11/17/2014	802 Trinity	grease & debris	500	cable & wash
351	11/25/2014	Danica & Golden	grease & debris	350	wash
352	11/28/2014	409 Hollyoak	grease & debris	650	cable & wash
353	11/26/2014	4112 Birdwell	grease & roots	1000	cable & wash
354	12/1/2014	Crockett & Robertson	grease & debris	550	cable & wash
355	12/3/2014	Shelley & Silverwood	grease & roots	525	cable & wash
356	12/1/2014	Shaw & Bennett	grease & debris	475	cable & wash
357	12/6/2014	Timbercreek & Avenham	grease & debris	250	cable & wash
358	12/9/2014	2447 Sunnybrook	grease	325	cable & wash
359	12/15/2014	Bellemere & Wakefield	roots	925	cable &wash
360	12/15/2014	1206 Clyde	roots	550	cable & wash
361	12/16/2014	Parkdale & MLK	grease & roots	400	cable & wash
362	12/17/2014	1325 Graham	roots & debris	300	cable & wash
363	12/17/2014	217 Rix	roots & debris	300	cable & wash
364	12/22/2014	Libbie & Troup	grease	1200	wash & treat
365	12/26/2014	1501 Drexel	roots	900	cable & wash
364	12/29/2014	3529 Cameron	roots & debris	800	cable & wash
365	1/3/2015	1705 N. Glenwood	grease & debris	600	cable & wash
366	1/4/2015	2015 Rosewood	roots & debris	375	cable & wash
367	1/6/2015	2223 Rosemont	roots & debris	750	cable & wash
368	1/7/2015	Fleishel & Fifth	grease & debris	850	cable & wash
369	1/8/2015	Kensington & Kidd	grease	345	cable & wash
370	1/8/2015	1904 Lamplight	debris	100	cable & wash
371	1/11/2015	133 Donna	grease & debris	275	cable & wash
372	1/12/2015	7750 Morning Star	grease & debris	450	cable & wash
373	1/12/2015	6005 Wilshire	grease, debris, roots	375	cable & wash
374	1/20/2015	3019 Club Lake	grease & debris	650	cable & wash
375	1/20/2015	521 Princeton	grease, debris, roots	625	cable & wash
376	1/24/2015	905 S. Chilton	grease & debris	275	cable & wash
377	1/25/2015	2829 Old Henderson	grease	500	cable, wash, treat
378	1/27/2015	2137 Woodhaven	grease &roots	350	cable & wash
379	2/3/2015	649 S. Broadway	grease & debris	475	cable & wash
380	2/3/2015	1419 Marian	grease	160	cable & wash
381	2/2/2015	Robert E. Lee & Broadway	grease	500	cable & wash
382	2/5/2015	1206 N. Whitten	debris	250	cable & wash
383	2/12/2015	829 David	grease	850	cable & wash
384	2/13/2015	Erwin & Hill	grease & debris	425	cable & wash
385	2/14/2015	2213 Vernon	roots & debris	825	cable & wash
386	2/17/2015	1st & Vine	debris	400	cable & wash
387	2/26/2015	1222 Augusta	roots & grease	285	cable & wash
388	2/26/2015	De Charles & Dinah	grease & debris	745	cable & wash
389	2/26/2015	3205 Fry	grease, roots, debris	475	cable & wash
390	3/4/2015	3148 Rosemary	roots & debris	350	cable & wash
391	3/4/2015	918 Camellia	debris	375	cable & wash
392	3/6/2015	4500 Blk New Copeland	grease, roots ,debris	165	cable & wash
393	3/7/2015	4007 Old Chandler	grease & roots	775	cable & wash
394	3/7/2015	2913 Shaffer Ln	roots & grease	440	cable & wash

12 Month Schedule

#	Date added to Schedule	Location	Task	Footage	Problem
395	3/8/2015	1823 E.S.E. Loop 323	grease	375	wash & treat
396	3/8/2015	712 Leon	debris & grease	275	cable & wash
397	3/9/2015	604 Maxwell	grease, roots, debris	775	cable & wash
398	3/10/2015	2612 Eileen	grease, roots, debris	375	cable & wash
399	3/10/2015	Victory & Turtle Creek	grease, roots, debris	525	cable & wash
400	3/13/2015	2nd & Talley	debris	425	cable & wash
401	3/14/2015	1538 & 1600 N. Hill	grease & debris	500	cable & wash
402	3/19/2015	3006 Silver Creek	roots & debris	250	cable & wash
403	3/19/2015	Horace & Commerce	grease, roots, debris	650	cable & wash
404	3/20/2015	100 blk of Thigpen	grease	400	(wash & treat)
405	3/21/2015	1800 N. Glenwood	roots	400	cable & wash
406	3/27/2015	6101 Huntington	roots	450	cable & wash
407	4/1/2015	217 Heritage Circle	roots & debris	900	cable & wash
408	4/2/2015	1000 E.S.E Loop 323	debris	150	cable & wash
409	4/3/2015	1519 Austin	roots	400	cable & wash
410	4/7/2015	1900 Waunell	roots	300	cable & wash
411	4/9/2015	Clinic & Dawson	Debris	650	pm wash
412	4/9/2015	Wellington Place	grease, roots, debris	300	cable & wash
413	4/10/2015	516 Fair Ln	grease, roots, debris	550	cable & wash
414	4/11/2015	Adams & Erwin	debris	700	cable & wash
415	4/12/2015	4800 Gretna Green	sand & debris	350	cable & wash
416	4/27/2015	2015 Rose Rd.	grease, roots, debris	600	cable & wash
417	4/29/2015	8238 Baylor	roots	750	cable & wash
418	4/29/2015	1400 W. Gentry	grease	675	cable & wash
419	5/3/2015	2909 Medina	roots	550	cable & wash
420	5/4/2015	2328 Alta Mira	grease,roots,debris	300	cable & wash
421	5/7/2015	807 W. 24th	grease,roots,debris	150	cable & wash
422	5/7/2015	530 S.S.W. Loop 323	grease,roots,debris	400	cable & wash
423	5/12/2015	318 W. Dobbs	debris	300	cable & wash
424	5/20/2015	1725 Haynie	grease,roots,debris	600	cable & wash
425	5/21/2015	3223 Martha	roots	400	cable & wash
426	5/24/2015	921 E. 8th	sand	350	wash
427	5/24/2015	1121 N. Bois D Arc	root & debris	250	cable & wash
428	5/25/2015	1319 S. Donnybrook	roots	275	cable & wash
429	6/1/2015	124 Ronnette	grease & debris	500	cable & wash
430	7/2/2015	DE Wilder Trail	debris	500'	cable
431	8/2/2015	2820 Staley	grease & debris	1150'	cable & wash
432	8/5/2015	28th & Tenneha	grease & debris	300'	cable & wash
433	8/8/2015	200 E. Fuller	debris	450'	cable & wash
434	8/13/2015	29th & Confederate	grease,roots,debris	550'	cable & wash
435	8/19/2015	Behind 2701 W. Erwin	roots & debris	1100'	cable & wash
436	9/2/2015	2401 Devine	roots & debris	1050'	cable & wash
437	9/25/2015	1923 Woodlawn	grease & debris	650'	cable & wash
438	9/27/2015	410 Muller Garden	Debris	250'	cable & wash
439	10/7/2015	Earle E. of Patricia	grease,roots,debris	575'	cable & wash
440	10/16/2015	2609 S. Chilton	debris	200'	cable & wash
441	10/16/2015	2615 S. Chilton	roots & grease	575'	cable & wash
442	10/23/2015	3363 Cascade Blvd	Debris	450'	wash
443	10/24/2015	614 Richardson	Grease	500'	Cable & Wash
444	10/24/2015	5417 Briarcove	Grease	225'	cable & wash
445	10/25/2015	1200 Doctors Dr	Grease	375'	cable & wash
446	10/26/2015	415 Thigpen	Grease	150'	wash & treat

12 Month Schedule

#	Date added to Schedule	Location	Task	Footage	Problem
447	10/30/2015	1700 W. Claude	grease,roots,debris	1225'	cable & wash
448	11/4/2015	5412 Patton	grease & debris	900'	cable & wash
449	11/18/2015	Plaza & Northridge	grease & debris	325'	cable & wash
450	11/20/2015	740 Blackwell	grease	500'	cable & wash
451	11/20/2015	2211 W.S.W. Loop 323	grease	575'	cable & wash
452	12/3/2015	3023 Benbrook	grease,roots,debris	525'	cable & wash
453	12/28/2015	124 Ronnette	grease & debris	125'	cable & wash
454	12/28/2015	1709 Ronnette	roots & debris	200'	cable & wash
455	12/30/2016	904 W. Nutbush	debris	200'	cable & wash
456	1/4/2016	303 Oakland	roots & debris	375'	cable & wash
457	1/5/2016	Alpha & Mc Donald	debris	150'	cable & wash
458	1/5/2016	200 Barbee	Debris	550'	cable & wash
459	1/15/2016	522 S. Broadway	roots & debris	900'	cable & wash
460	1/20/2016	2632 New Copeland	roots & debris	125'	cable & wash
461	1/22/2016	3510 Woodhue	Grease & Roots	225'	cable & wash
462	1/25/2016	3327 Gail	debris	375'	cable & wash
463	1/27/2016	1228 Kennedy rd.	Grease & Roots	600'	cable & wash
464	1/29/2016	235 S. Saunders	Debris	150'	Cable
465	2/11/2016	515 E. Front	grease & debris	100'	cable & wash
466	2/15/2016	2716 Brentwood	Debris	850'	cable & wash
				284,615 Feet	
				53.9 Miles	

Appendix F
Capacity and Condition Assessment

1. **Gravity Sewer Line Condition Assessment and Remedial Measures Program**

2. **Manhole Condition Assessment and Remedial Measures Program**

3. **Hydraulic Model Update**

4. **Capacity Assessment and Remediation Program**

Appendix F-1

Gravity Sewer Line Condition Assessment and Remedial Measures Program

Gravity Sewer Line Condition Assessment and Remedial Measures Program

Mainline Sewer Inspection

Condition Assessment

Tyler shall CCTV all non-plastic pipes. For all other pipes, Tyler shall inspect using techniques such as:

- CCTV
- Pole camera
- Sewer Cleaning Findings
- Mechanical proofing
- Smoke testing
- Dye testing
- ScanJet
- Laser
- Sonar
- Other methods or technologies that are later approved by written agreement of the Parties pursuant to Section XX (Modification) of the Consent Decree)

Using a two-step process (PACP quick rating and Pipe Category priority ranking), Tyler shall review and prioritize all inspection data. Step 1 reviews shall be performed using PACP Quick Ratings with grade 5 and 4 defects evaluated first, followed by pipes with grade 3, 2, and 1 defect ratings. Step 2 analysis of inspection data shall consider the following factors:

- Frequency of SSOs
- Severity of structural defects
- Infiltration rate
- Historical O&M
- Access, environmental sensitive areas, surface restoration requirements,
- Criticality and public safety issues

Then, Tyler shall establish final condition ranking for each mainline as described on page 2:

Category A – Very Good Condition
Category B – Good Condition
Category C – Fair Condition
Category D – Poor Condition
Category E – Very Poor Condition

Condition Assessment Report

Remedial Measures Alternatives Analysis

Tyler shall establish most practical solution and timeframe for resolving structural and O&M defects that may include:

- Point Repair
- Pipe lining (HDPE, CIPP, etc.)
- Pipe replacement by open cut methods
- Pipe replacement by pipe bursting
- Other techniques or new technologies that are later approved by written agreement of the Parties pursuant to Section XX (Modification) of the Consent Decree
- Monitor or maintain in CMOM

Remedial Measures Plan

Tyler shall prioritize remedial measures and periodically evaluate priorities generally based on severity of defects, history of SSOs, maintenance history, age, material of construction, etc. The Plan will coordinate with the CIP as needed. All mainline sewers ranked D or E shall be remediated.

Condition Remedial Measures Report

Implement Remedial Measures Plan

Mainline Inspection Condition Rating Category

A = Very Good

Minor defects are mostly cosmetic in nature and do not impact system hydraulics nor contribute to significant infiltration/inflow. Non-displaced cracks or minor material degradation. No active infiltration. Likely outcome in remedial measures plan: Maintenance Analysis as part of CMOM Activities.

B = Good

No significant structural defects. Minor defects do not impact system hydraulics nor contribute to significant infiltration/inflow. No active infiltration. Minor defects may include less than 10% deformation, minor corrosion, slightly open non-displaced cracks. Likely outcome in remedial measures plan: Maintenance Analysis as part of CMOM Activities.

C = Fair

No significant structural defects although minor defects were noted during inspection. System hydraulics are good and no significant infiltration/inflow sources noted. Nominal defects may include less than 25% deformation from structural deterioration combined with displaced fractures, moderate corrosion with no reinforcement visible. Likely outcome in remedial measures plan: Ongoing Monitoring or Maintenance Analysis as Part of CMOM Activities.

D = Poor

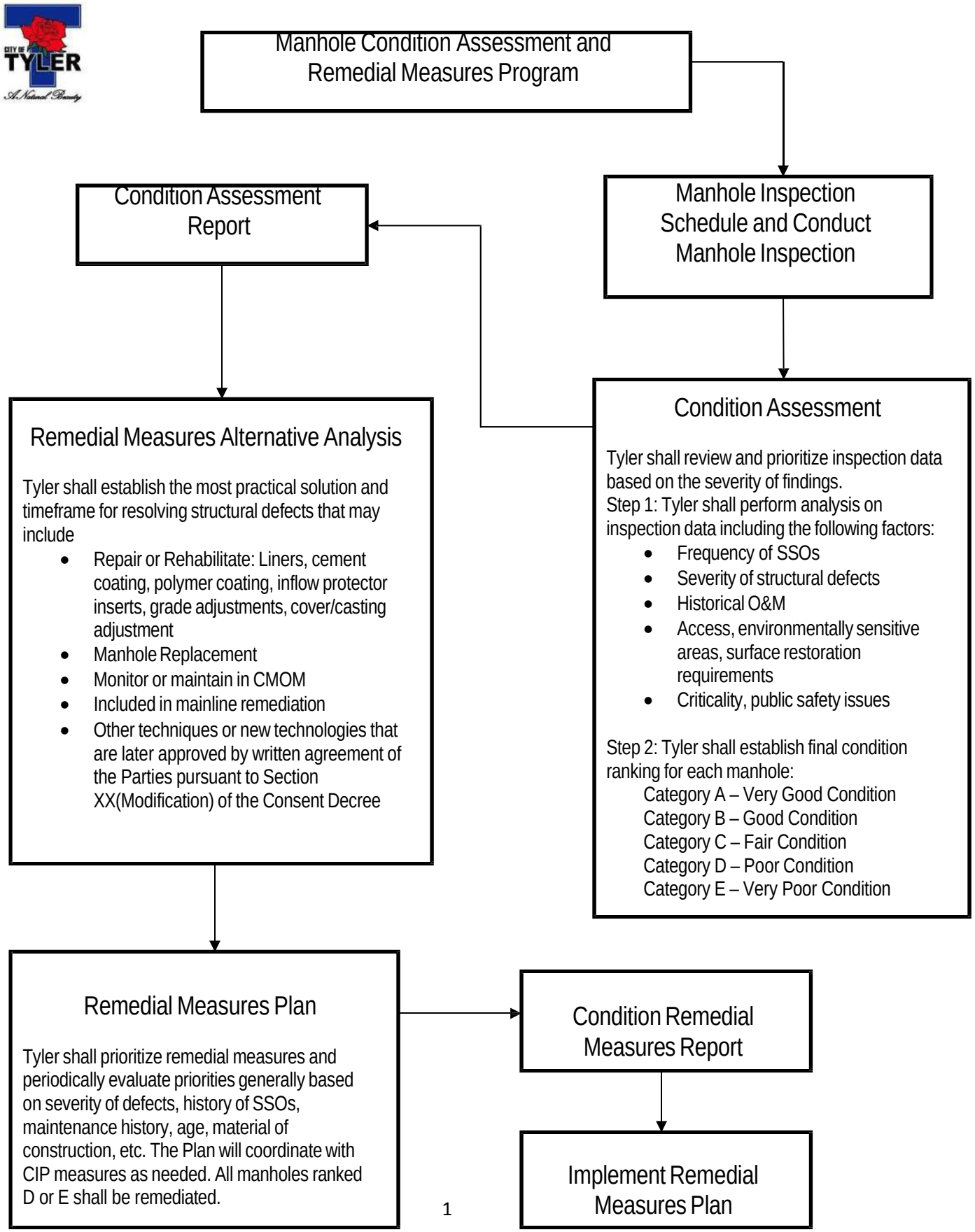
Moderate structural defects that may include missing pipe material, broken pipe, severe corrosion with exposed wall reinforcement, pipe deformation exceeding 25% from structural deterioration, voids, hinge cracks/fractures, etc. Likely outcome in remedial measures plan: Alternatives Analysis and Remediation.

E = Very Poor

Severe structural defects that may include potential for structural failure, severe root intrusion, broken/missing pipe material, and other defects that may impact system hydraulics or contribute to significant infiltration/inflow. Structural collapse or defects likely to cause SSO is imminent. Likely outcome in remedial measures plan: Alternatives Analysis and Remediation.

Appendix F-2

Manhole Condition Assessment and Remedial Measures Program



Manhole Inspection Condition Rating Category

A = Very Good

Minor defects are mostly cosmetic in nature and do not impact system hydraulics nor contribute to significant infiltration/inflow. No active infiltration.

B = Good

Manhole has no significant structural defects. Minor defects do not impact system hydraulics nor contribute to significant infiltration/inflow. No active infiltration. Minor defects may include slightly loose casting, minor corrosion of metal surfaces, minor deterioration of concrete mortar between bricks, minor cracks, etc.

C = Fair

Manhole has no significant structural defects although minor defects were noted during inspection. System hydraulics are good and no significant infiltration/inflow sources noted. Light infiltration/inflow may be present. Nominal defects may include loose casting, nominal corrosion of metal surfaces, deterioration of concrete mortar between bricks or concrete walls, minor evidence of infiltration/inflow at precast joint sections, etc.

D = Poor

Manhole has moderate structural defects that may include cracks, loose bricks, separated casting, moderate root intrusion, broken cover and defects that may impact system hydraulics due to structural issues or contribute to significant infiltration/inflow. Some visible staining due to infiltration/inflow may be present. Active infiltration may have been observed. Moderate to severe defects may include loose casting, moderate to severe corrosion of metal surfaces, deterioration of concrete mortar between bricks, moderate to severe deterioration of precast wall sections and precast joint defects, etc. Manhole inspection was completed and the manhole will be addressed in the remediation plan.

E = Very Poor

Manhole may have severe structural defects that may include potential for structural failure, missing bricks, separated/broken casting, severe root intrusion, broken/missing cover and defects that may impact system hydraulics or contribute to significant infiltration/inflow. Visible staining due to infiltration/inflow may be present. Active infiltration may have been observed. Severe defects may include separated/broken casting/cover, severe corrosion of metal surfaces, missing mortar between bricks, etc. Manhole inspection was completed and the manhole will be addressed in the remediation plan or immediate repair may be warranted based on condition.

X = Additional Investigation Needed

Manhole inspection was not performed and additional follow-up is required. Manholes in this category will require additional efforts to facilitate inspection. This category of manholes includes those where access was denied by homeowner, no access due to locked gate, no access due to dog, homeowner would not return calls to gain access, obstacles over manhole preventing inspection, where property owner refused digging in yard, surcharged manholes that will require mainline cleaning, etc.

Manhole Form

Date:_____ **Project:**_____ **Basin:**_____ **Map No.**_____ **Crew:**_____

MH No.:_____ **Address:**_____

DS Length:_____ **Asset Type:** M CO EOL PS T **Status:** Y CNL CNO B LG D N S H

Lid Type: S V B O _____ **No. Vent Holes:**_____ **Asset Mat'l.:** B C F SB SC O_____

Grade: X A B **Inch:**_____ **Inflow Dish:** Y N Condition: __Good __Defective **Inflow Potential:** N L M S

Area Photo:_____ Internal Photo:_____ **Surface Cover:**____ **Surf. Mat'l.:** P__Asphalt__Concrete U__ **Debris**:___in.

GPS: _____ _____ **MH Diameter:**_____Std.=48 inch

C.O. Diameter: _____inch

Defects:

Def#	Photo	Loc	Type	Rate	Roots	I/I

General Comments:

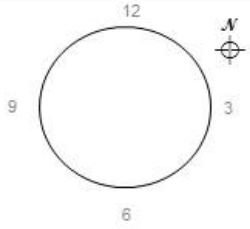
_____

_____

_____

_____

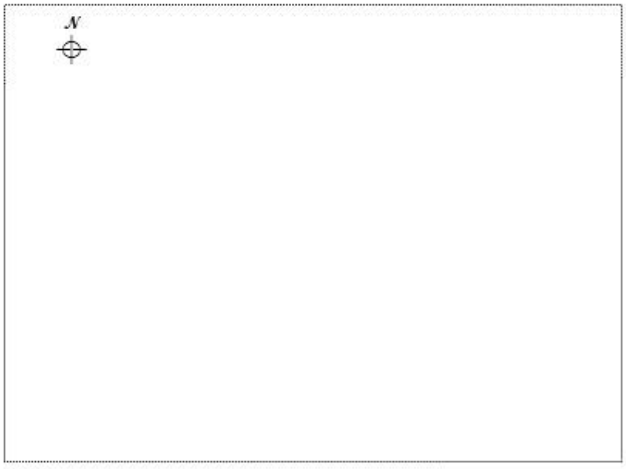
_____



Pipes:

Photo	In/Out	Size	Material	Clock	Depth	Drop	Surface Cov	Surface Mat'l	Debris	Connecting ID

Map Update



Definitions:
Asset Type: M=Manhole; CO=Cleanout; EOL= End of Line; PS=Pump Station; T=Tee Connection

Status: Y=Yes; CNL=Could Not Locate; CNO=Can Not Open; B=Buried; S=Surcharged; N=No Access; D=Dog; LG=Locked Gate; H=Homeowner

Lid Type: S=Solid; V=Vented; B=Bolted; OT=Other (specify/comment)

Asset Mat'l: B=Brick; C=Concrete; F=Fiberglass; SB=Sealed Brick; SC=Sealed Concrete; O=Other (specify/comment)

Grade: X=At grade; A=Above; B=Below

Defect Rate: Light, Moderate, Severe
Roots: Light, Moderate, Severe
I/I Potential: N=None; L=Light; M=Moderate; S=Severe

Surface Cover: ST=Street; GU=Gutter; AI=Alley; DW=Driveway; SW=Sidewalk; FD=Field; TW=Trees/Woods; PL=Parking Lot; SH=Road Shoulder; DD=Drainage Ditch; CR=Creek; WB=Within Building; YD=Yard; OT=Other

Surface Mat'l: P=Paved (designate Asphalt or Concrete); U=Unpaved

Defect Location: LD=Lid; FR=Frame; FS=Frame Seal; CH=Chimney; CO=Cone; WA=Wall; ST=Steps; BN=Bench; PS=Pipe Seal; IN=Invert; CAP=Cleanout Cap; COP=Cleanout Pipe

Defect Type: BPS=Bad Pipe Seal; BRK=Broken; CRK=Cracked; CCL=Collapsed; DET=Deteriorated; HOL=Hole; JNT=Joint; LOO=Loose; MBR=Missing Brick or Mortar; MIS=Missing

Category A

Category B

Category C

Category D

Category E

Category X

Digital Photographs

Digital photographs were taken during the inspection phases of the project. Figure 1 presents a summary of the types of photographs taken and the nomenclature used when naming the digital files. Information that can be gathered from the photographs includes right of way condition, surface cover, manhole grade, etc.

Figure 1
Project Photographs

1. Area Photo = Manhole ID,A, Photo No.
   Example: 060150190A0029.jpg
   Manhole: 060150190
   A=Area Photo
   Photo No.0029
   (Note: Photo taken in direction outgoing pipe showing mainline pipe easement)

2. Internal Photo = Manhole ID, I, Photo No.
   Example: 0800305801 0021.jpg
   Manhole: 080030580
   I=Internal Photo
   Photo No. 0021 (Note: North to top of photo.)

3. Manhole Defect Photo = Manhole ID, M, Photo No.
   Example: 8539M027.jpg
   Manhole 8539
   M= Manhole Defect
   Photo No. 027

4. Smoke Photo = Manhole ID, S, Photo No.
   Example: 8539S0014.jpg
   Manhole 8539
   S=Smoke Defect
   Photo No. 0014

5. Pipe Photo = Manhole ID, S, Photo No.
   Example: 9301P0054.jpg
   Manhole 9301
   P=Pipe Photo
   Photo No. 0054

APPENDIX F-3

HYDRAULIC MODEL UPDATE

This Appendix details the hydraulic model update required under this Consent Decree. Terms appearing in this Appendix retain the definitions assigned under the Consent Decree.

BACKGROUND

Tyler shall update its existing hydraulic wastewater system model in order to analyze WCTS conveyance capacities and identify Potential Capacity Constraints. Tyler shall use the updated hydraulic model to assess and predict Potential Capacity Constraints for the purpose of eliminating SSOs. Using the updated hydraulic model, Tyler shall:

1. Develop a current, ten and twenty year field calibrated hydraulic model (*i.e.* developed using ten and twenty year planning horizons) that will be used to determine wastewater infrastructure modifications/improvements to ensure adequate collection system conveyance capacity;
2. Develop a management tool to improve decision making ability;
3. Generate a prioritized list of potential capacity constraint projects; and,
4. Integrate the model with the wastewater GIS database.

The City shall use the most current version of SewerGEMS SanitaryV8i developed by Bentley Software, as of the Effective Date, for analysis of the City of Tyler's WCTS. SewerGEMS is a fully dynamic sanitary sewer modeling program. The City of Tyler shall analyze the WCTS using built-in hydraulic and hydrology tools.

The model update shall include the requirements below.

1. *Data Collection and Review*

The City shall collect and review data associated with the WCTS including but not limited to the data shown below, and shall incorporate such data, as appropriate, into the updated hydraulic model:

- WFA model database, maps and output files;
- Existing wastewater system base maps;
- GIS files – collection lines, manholes, lift stations, supporting attribute database, service area boundaries, Light Detection and Radar (LIDAR), street centerlines, parcels, land use, overflow reports, if available;
- City GIS asset numbering system description;
- Most recent available aerial photos;
- Record drawings for lift stations;
- Lift station pump curves & control elevations (including variable speed information if applicable);

- Record drawings of force mains and ARV locations;
- Lift station meter and/or run time data– 12 months;
- SCADA recorded data;
- Wastewater treatment plant flow records – daily, average and peak wet weather – 12 months;
- Records of historical work orders – 5 years;
- Monthly water billing and consumption data by service area – 12 months;
- Location of large water users, wastewater % return and point(s) of entry – 12 months;
- Past comprehensive master plans and reports; and,
- Other boundary conditions – location of inverted siphons, control gates, weirs, and flow equalization structures, if applicable.

1.1. Existing Data Evaluation & Validation

The City shall compile, evaluate and review all available data collected in the previous task, and identify gaps, deficiencies and/or abnormal data that may require further investigation.

The City shall evaluate the GIS data in order to:

- Verify that each pipe and manhole has a meaningful, unique identifier that will be used to relate the model and the GIS databases;
- Review and determine if the GIS data is broken into pipe segments appropriate for modeling and the type/level of GIS identifier data to be preserved in the model's pipe segments;
- Verify that each pipe has an appropriate and associated asset I.D. at each end;
- Verify the hydraulic model connectivity (map pipe connections with manholes and ensure flow directions are correctly depicted in the model); and,
- Identify large volume water users who do not contribute to the wastewater system.

1.2. Wastewater Flows

The City shall develop wastewater flow estimates in the model for existing and future design years, as defined in Section 1.2.5 of this Appendix. The City shall develop water consumption data and GIS shapefiles for the entire City consisting of the average daily water demands for each customer over the previous 12 months.

1.2.1. Existing Average Daily Flows Estimate

The City shall review and confirm service area boundaries, compare the water consumption data with the dry weather plant flows, and calculate the wastewater loading factor within each service area in order to identify the theoretical average percentage of water use transferred to the wastewater system for each customer. The City shall then calculate average wastewater flows for each customer and confirm this

average using the flow monitoring data collected in other tasks required under this Appendix.

In conducting this analysis, the City shall utilize latest available Texas State Data Center census and GIS parcel data to establish population within each service area. The City shall review planning reports to determine representative rates for population per household, estimate current population and density, and calculate the average wastewater flows per person within each service area.

1.2.2. Flow Patterns

The City shall create diurnal flow patterns in order to ensure an accurate wastewater model. The City shall create standard patterns for residential and commercial customers based on the flow monitoring results. Customer specific patterns may be created for large wastewater customers depending on their water use. In general, these patterns will have 1-hour time steps. This model shall distribute the daily loads based on these curves and route the corresponding flows through the WCTS. This provides a more accurate representation of the peak flows throughout the system, taking into account the time lag of peaks originating at the furthermost sections of the system and the natural attenuation that occurs.

1.2.3. Existing Wet Weather Peak Flows

The City shall analyze the peak treatment plant flows and determine the relationship with the results from the flow monitoring and rain gauge data collected over the monitoring period. After calculating the percentage of rainfall entering the collection system, the City shall calculate the wet weather flows for a 5 year – 24 hour storm event. The results of this calculation shall define the Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)) event projected flows.

1.2.4. Aerial Investigation

The City shall review digital aerial photography to identify and confirm the areas of new development. The City shall identify any additional areas of new development not included in the aerial photo.

1.2.5. Wastewater Flow Projections

The City shall apply prorated population growth projections (from Texas State Data Center) based on anticipated regions of future development for respective design years.

The City shall combine the industrial/commercial and population growth projections to develop wastewater production projections for each basin for the ten and twenty year planning horizons.

1.3. Wastewater Flow and Rainfall Monitoring

The City shall use dry and wet weather wastewater flows to calibrate the hydraulic model, establish Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)) projected flows for system analysis, and establish priority ranking of monitored areas with regards to infiltration/inflow. To obtain dry and wet weather wastewater flow data, the City shall install a minimum of twenty (20) continuous recording wastewater flow meters and eight (8) continuously recording rainfall gauges within the City of Tyler WCTS. The City shall develop a wastewater flow

monitoring program to collect data that the City shall use for hydraulic model calibration, establish magnitude of wet weather inflow and prioritize sub-basins for future testing and rehabilitation. The City shall perform meter pre-calibration, prepare mounting rings for various pipe sizes, set-up meter database and project information.

1.3.1. Conduct Field Inspections

The City shall field inspect proposed flow meter sites in order to verify wastewater flows, line sizes, debris levels, flow hydraulics, and access. The City shall prepare site inspection reports based on these field observations. Based on the results of the flow meter site inspections, the City shall finalize flow meter sites or establish new alternative sites. Where the proposed site has poor hydraulic characteristics, the City shall inspect the manholes upstream and/or downstream to determine if, by relocating the meter site, better flow hydraulics (that will result in a higher quality of collected data) can be achieved. Upon completion of the field inspections, the City shall install the flow meters. The City shall prepare tabular listings of meter site locations and a corresponding map displaying the final installed locations of wastewater flow meter and rainfall gauges.

1.3.2. Conduct Flow and Rainfall Monitoring for a Minimum of 60 Days

The City shall utilize the installed flow meters to establish wastewater flows during dry and wet weather conditions. Flow metering equipment shall be capable of recording flow under surcharged conditions and shall be synchronized to the same clock used for rain gauges. The duration of monitoring shall be a minimum of 60 days.

The City shall field calibrate each flow meter as part of installation. Calibration of each meter shall consist of an independent verification of the flow depth and velocity. The City shall log flow data at uniform time intervals not exceeding 15 minutes.

The City shall install continuously recording rainfall gauges in order to obtain each storm event intensity and duration across the study area. Each rainfall gauge shall be installed and calibrated to ensure proper operation and recording. Rainfall gauges shall be of the tipping bucket type and accurately record rainfall to 0.01 inches. Using the collection system maps in association with GIS, the City shall conduct a rainfall distribution analysis for each major storm event. For each metered sub-area, the volume of rainfall that fell over the surface shall be determined using GIS spatial analysis and compared to the discrete wet weather infiltration/inflow recorded by the flow meter. The volume of rainfall dependent infiltration/inflow shall be analyzed for selected storm events recorded during the monitoring period.

1.3.3. Data Collection from Flow Meters

The City shall undertake routine maintenance and service to confirm normal meter operation. The City shall generate peak, minimum and average flow depths and rates to assist in data analysis.

1.3.4. Confirmation of Adequate Wet Weather Data

The City shall undertake flow monitoring to obtain adequate hydraulic information for dry

and wet weather conditions. At least three (3) storm events of varying rainfall intensities but not less than 0.5" in 6 hours nor more than the Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)) are required to evaluate wet weather flows for hydraulic model calibration. The City shall review the dry and wet weather data, identify the number of storm events recorded and determine if adequate data has been obtained or if the metering period needs to be extended. Should adequate rainfall not occur within the 60 day minimum monitoring period, the City shall obtain the data required by Section 3 (Model Calibration) of this Appendix as expeditiously as possible. The City shall use wet weather flow data information to establish rainfall dependent infiltration/inflow (RDII). The City shall evaluate both cumulative and discrete flows.

1.3.5. Flow Data Analysis

The City shall analyze and develop tabular and graphical summaries of the gathered flow metering and rainfall data. Comparisons with any historical flow meter data from previous I/I Analyses and Sewer System Evaluation Surveys shall be summarized and evaluated. The City shall evaluate the impacts of silt, debris, backwater conditions, and other hydraulic constraints. The City shall use the data and information obtained during the monitoring period to determine the following for each meter site:

A. Dry weather average daily flow: A typical dry weather week shall be established that is not impacted by rainfall. Velocity data shall be compared to debris levels to analyze the scouring velocity necessary to prevent deposition in the lines. Discrete flows from each metered sub-basin shall be calculated.

B. Dry weather peak flow: Peak flows during dry weather shall be determined from the recorded meter site data.

C. Wet weather average daily flow: Wet weather flows for each rainfall event shall be analyzed to determine the percentage of rainfall that enters the WCTS (also known as the leakiness factor). The City shall establish the RDII by comparing the storm event flow with the dry weather flows. This value will vary for each storm duration and intensity. The City shall determine the RDII for each sub-basin. The City shall prioritize each sub-basin based on the severity of RDII for that basin.

D. Wet weather peak flow: Peak flow rates during wet weather are critical to the capacity analysis. Peaking ratios (Peak flow rate to average dry weather flow) shall be compared for dry and wet weather.

E. Peak inflow rates: Peak inflow rates shall be calculated by observing peak flow during wet weather events.

F. Total I/I volume: The area under each storm event curve shall be evaluated to establish the volume of rainfall induced infiltration/inflow. These values can then be normalized to establish the volume of RDII per inch of rainfall. Projections can then be made to accurately determine the impact of RDII during a normal year.

2. Model Development & Data Conversion

2.1. Existing Model Development

2.1.1. Infrastructure

The City shall integrate all existing Gravity Sewer Line, manhole, Force Main, I/I, and Lift Station GIS data to develop the dynamic hydraulic model of each of the City's WCTS service areas within the hydraulic model. At a minimum, the following database information shall be incorporated into the model:

- Manholes: rim elevation, rim to invert depths, flow lines, type, and elevation source;
- Gravity Sewer Lines & Force Mains: diameter, material, roughness; and
- Lift Stations: flow lines, diameter, depth, slab elevation, water level elevations for pumps "on" and pumps "off."

The updated model shall be an "all pipes model". All Gravity Sewer Lines 10-inch in diameter and greater shall be modeled with survey elevation data collected during other tasks. The City shall field survey critical locations on pipes less than 10-inch, including but not limited to locations of Wet-Weather Related SSOs, and Lift Station discharge points downstream to pipelines of 10 inch or larger.

As much as possible, all Gravity Sewer lines smaller than 10-inch shall be included in the model using assumed slopes, flow lines and rim elevations where available. The City shall use LIDAR data or topographic data for non-surveyed rim elevations. The hydraulic model shall incorporate a unique identifier for each asset, which the City shall link with the City's existing GIS mapping and data storage.

The updated model shall be used to analyze: all Gravity Sewer Lines 10-inches in diameter and larger; all additional Gravity Sewer Lines acting as collector sewers; all Gravity Sewer Lines for distances of at least 1000 feet upstream of manholes and Lift Stations that have experienced a Wet-Weather Related SSO within three (3) years preceding the start date of the field survey of such pipes as required above; all Lift Stations; all Force Mains; and all active and passive flow control devices.

2.1.2. Manhole Depth Surveys

The City shall undertake manhole depth surveys during the hydraulic model update. Manholes surveyed as part of the manhole depth survey shall include at a minimum those manholes on: all Gravity Sewer Lines 10-inches in diameter and larger; all additional Gravity Sewer Lines acting as collector sewers; all Gravity Sewer Lines for distances of at least 1000 feet upstream of manholes and Lift Stations that have experienced Wet-Weather Related SSO(s), and all active and passive flow control devices.) Depth survey data shall be used to both verify the rim to invert distance, pipe size, drop manholes, connectivity, and map update for these manhole assets. The condition assessment report shall be used by the City to update the existing GIS maps for all manholes inspected, generate the rim to invert distance for the hydraulic model and prepare a remedial measures plan to address those manholes in need of rehabilitation. Modeling of smaller diameter sewers (<10 inches) may require elevation data based on known capacity concerns or Wet Weather Related SSO(s). The City estimates that approximately 1,600 of the nearly 8,241 manholes may be on 10 inch or larger pipes and/or other critical sewers.

The City shall use digital cameras on all manholes subject to depth surveys. All photographs that the City takes shall be included in the field inspection computer database so that a permanent electronic record can be maintained. During the manhole depth surveys, each of the following types of information shall be obtained:

- Basin Designation
- Manhole/Cleanout ID
- Inspection Status
- Address
- Surface cover, grade, type of cover (paved, yard, etc.)
- Material of construction – brick, concrete, etc.
- Area and Internal photo of manhole
- All incoming and outgoing pipe depths from rim to invert
- Pipe size
- All incoming and outgoing pipe digital photographs
- All incoming and outgoing pipe diameters and material of construction
- Outgoing pipe length
- Debris depth
- I/I Defects: Active, Evidence or No I/I, with digital photographs
- Field corrections to collection system map

The City shall attempt to locate all manholes to obtain the information for use in the modeling effort. Where manholes are buried under asphalt or concrete and require grade adjustments, the City shall expose and raise those critical manholes.

2.1.3. Manhole Elevation Survey

Following manhole inspection, and during model construction, the City shall perform the necessary rim elevation survey on all manholes to be inspected for the model update. Pipe slopes shall be calculated using the rim elevation data and rim to invert distance from the manhole inspection phase of work. The City shall coordinate the survey datum with City staff and tie the datum into the City control monument system. Using GPS equipment, where possible, the City shall tie the horizontal location and vertical elevation of the Gravity Sewer Line (to 0.1 feet) and pump station control elevations. The hydraulic model shall utilize the manhole rim to invert depth measured during manhole inspection. The City must conduct an elevation survey on the following manhole rims and Lift Stations:

1. Manhole rim elevation survey: Approximately 1,600 each
2. Lift Station control elevations: 22 lift stations

The City shall initiate the elevation survey following the manhole depth survey in order for survey crews to have updated maps and locations of assets. Performing the

manhole inspections prior to the field surveying will optimize the field survey by identifying those manholes that are buried (and will need to be raised) and those assets that could not be located by metal detector. The rim elevations from the survey along with the rim-to-invert distance from the manhole inspections shall be used to establish invert (flow line) elevations and pipe slopes. The data obtained during the Manhole Depth Survey and the Manhole Elevation Survey may be used to meet the requirements of V.B Condition Assessment and Remedial Measures Program.

2.1.4. Operational Parameters

The City shall incorporate into the model the information collected in previous tasks, all pump curves, and lift station control elevations, for each of the Lift Stations incorporated into the model. The City shall field verify the firm capacities of at least the largest four largest Lift Stations. The float/control elevations shall be based on record drawings or survey. VFD curves shall also be created where applicable.

2.1.5. Flow Patterns

The City shall input into the model diurnal flow patterns determined from the city-wide flow monitoring.

2.2. Allocate Existing Wastewater Flows

The City shall allocate and distribute residential and commercial wastewater flows within the service area and assign to the appropriate manholes using the water billing data and point shapefile linked to the parcel base maps.

2.3. Infiltration and Inflow

The City shall develop an I/I modeling strategy best suited to the available data based on the modeler's engineering analysis and in accordance with the practices recommended by the developer of the modeling software selected by the City. The modeling strategy shall be described in the Hydraulic Model Update Report which shall be sealed by a registered professional engineer licensed to practice in the State of Texas. The City shall compare the dry weather flows and wet weather flows with the gauged rain data to establish the relationship between rainfall and I/I and to determine the best method for estimating these flows in the model.

The City shall simulate I/I in the model through the actual flow monitoring data based on service area and diurnal contributions. The effects of precipitation on wastewater flow rates via rapid inflow or gradual infiltration shall also be modeled. The actual level of detail used in the simulations will be dependent upon the quality of data obtained in the flow-monitoring program. Infiltration shall be defined on a service area basis with set rates used for dry and wet flow conditions for all sections of a given line.

2.4. Large Wastewater Customers

The City shall evaluate major water users identified in the model database and update model based on water usage records provided by the City. The City shall directly connect large volume wastewater customers to the model where appropriate. The City shall develop a GIS point database detailing the approximate Water Meter Account

service locations with the associated billing data for a 12 month period.

3. Model Calibration

Model calibration and validation shall use the dry and wet weather criteria presented in the Water Environment Federation Manual of Practice No. FD-17, Third Edition, 2011, Table 5.2.

3.1. Calibration

The City shall perform calibration runs to match the flow monitoring data to the simulation results for average and peak flows at flow meter locations in each service area. The calibration runs shall also include matching the initial response time to known rainfall until the computer calculated flows and travel times (hydrographs) are in agreement with monitored data. The City shall make adjustments to the input data (flow rates, diurnal flow patterns, I/I values, pipe roughness, pump curves, pipe deficiencies, rainfall response characteristics, etc.) to calibrate the results to the flow data. The City shall use in the hydraulic model defined diurnal curves for each flow metering sub-basins and, if necessary, land use, for effective calibration. The City's model shall calculate the resulting hydrographs at points in the system that can then be compared with the monitoring data.

3.2. Sensitivity Analysis

As part of the calibration process, the City shall investigate the sensitivity of the modeling results to changes in various parameters. These parameters shall be varied for a range of typical values and the City shall analyze the effects this variation has on the modeling results. The City shall use the results of this analysis to guide the calibration process.

4. *Existing System Analysis*

The City shall use the calibrated model to determine the existing system flow capacities and identify Potential Capacity Constraints during the Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)). The City shall compare Wet-Weather SSO's with model predictions and verify capacity related SSOs.

The City shall prioritize Potential Capacity Constraints based on analysis of modeling results and historical records. The City shall prepare a field verification plan that will field investigate by priority Potential Capacity Constraints to better define the site specific hydraulics and/or provide additional localized model calibration points.

The City shall use field investigation techniques that are most appropriate for each identified Potential Capacity Constraint, pursuant to Appendix G (Capacity Assessment and Remedial Measures Program). At a minimum, the City shall conduct rainfall monitoring at the original rain gauge locations. The City shall perform the selected field investigation technique to gather system response during wet weather. The City shall compare data recorded to model predictions to verify model results. The City shall consider those Potential Capacity Constraints that are field verified to be confirmed Capacity Constraints that shall undergo a remedial measures alternative analysis followed by inclusion in the Capacity Remedial Measures Plan, in accordance with the requirements set forth in Paragraphs 52-55 of the Consent Decree and Appendix G

(Capacity Assessment and Remedial Measures Program).

5. *Future System Analysis*

The updated hydraulic model may serve as the basis for development of the future system scenario analyses and, if developed, shall account for land use loadings and diurnal response. The City shall make appropriate assumptions for the hydraulic model with respect to future I/I. For any future system scenarios analyzed, the City shall extend service to the anticipated land uses and service area boundaries identified previously, and integrate options for future alternatives.

5.1. Proposed Future Developments

The City shall incorporate other future system improvements into model. The City shall conduct model validation following the addition of proposed new development. Scenario modeling shall include the infrastructure proposed in identified future new developments. Prior to starting this task, the City shall review the future model database for accuracy.

5.2. Allocate Future Flows and Create Scenarios

The City shall properly distribute and allocate to the updated hydraulic model the proposed wastewater flows previously developed for the ten and twenty year planning horizons. The City shall create the dry and wet weather flow scenarios for each of these planning years.

5.3. Future System Analysis

The City shall analyze design year models to the twenty year planning horizon. Identify potential capacity deficient segments/regions within the existing collection system for each design year model.

5.4. Develop System Improvement Alternatives

The City shall develop various system improvement alternatives, in accordance with the requirements of Paragraph 54 of the Consent Decree, to remediate Confirmed Capacity Constraints. Such alternatives shall include but not be limited to direct removal and replacement of capacity deficient Gravity Sewer Lines, I/I reduction, upsizing, pipe slope adjustment, paralleling deficient lines, addition of Lift Stations, service area transfers, and in-line and/or off-line storage options.

All Confirmed Capacity Constraints and the recommended system improvements shall be documented by the City.

Appendix F-4
Capacity Assessment and Remediation Program

This appendix details the process the City will follow to implement the Capacity Assessment and Remedial Measures Program required under this Consent Decree. Terms appearing in this appendix retain the definitions assigned under the Consent Decree. The below process tree visually depicts the steps that the City shall follow when utilizing the updated hydraulic model to assess Potential Capacity Constraints and a field verification process to determine if Potential Capacity Constraints are Confirmed Capacity Constraints and, if so, to develop and implement appropriate remedial measures. The following is a detailed narrative process tree that sets forth the requirements and procedures that the City shall follow for each process level that is summarily depicted in Figure 1.

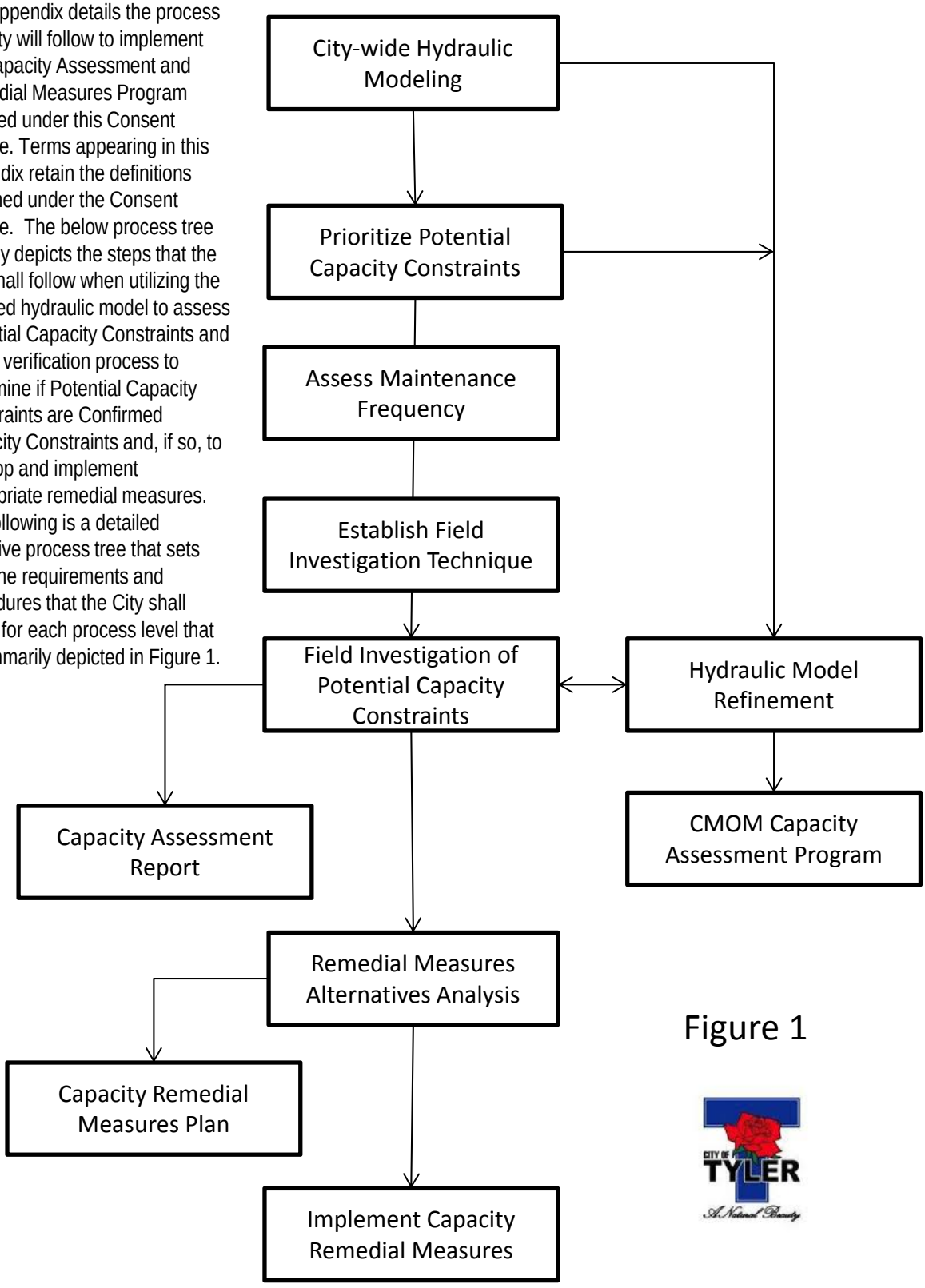


Figure 1

Appendix F-4
Capacity Assessment and Remediation Program

City-wide Hydraulic Modeling

The City shall utilize and run the updated hydraulic model such that the model:

- Uses the following as an assessment storm: the 5 year, 24 hour rainfall amounts and rainfall intensity time distributions in accordance with Technical Paper No. 40 dated May 1961 and prepared by the U.S. Department of Commerce Weather Bureau ("Assessment Storm");
- Applies the Assessment Storm at existing population scenario; and
- Creates an output that identifies Potential Capacity Constraints.

Prioritize Potential Capacity Constraints

For each Potential Capacity Constraint identified by the model, the City shall assign one of the following categorical priorities based on a case-by-case engineering assessment:

- Priority 1 – Model predicts SSO from an asset or group of assets in Tyler's WCTS and review of existing data indicates that any Wet Weather Related SSO(s) from the asset(s) was or were most likely capacity-related SSO(s);
- Priority 2 – Model predicts SSO from an asset or group of assets in Tyler's WCTS, but review of existing data does not indicate that any Wet Weather Related SSO(s) from the asset was or were capacity-related SSO(s);
- Priority 3 –Model predicts Hydraulic Grade Line (HGL) in Gravity Sewer Lines is near manhole rim elevation; and,
- Priority 4 – Review of existing data indicates that the SSO from the asset or group of assets in Tyler's WCTS is most likely a maintenance-related SSO.

The City shall use the criteria set forth in categorical priorities 1 through 4 to prioritize field investigations of Potential Capacity Constraints, such that Priority 1 is given the highest priority and each consecutively numbered priority follows. The City shall conduct field investigations for any Potential Capacity Constraint assigned Priorities 1-4, unless the City has otherwise determined a Potential Capacity Constrained to be a Confirmed Capacity Constraint, in which case it will be already subject to the Remedial Measures Alternatives Analysis indicated below. Where the model shows that the Sewer Segment is surcharged above its crown during the Assessment Storm, the City may, at its sole discretion, choose to conduct a field investigation. If the City does not perform field investigation for any such Sewer Segment, the City shall monitor that Sewer Segment as part of CMOM and shall reassess its categorical status as updates are made to the City's hydraulic model.

Assess Maintenance Frequency

The City Shall evaluate and modify as needed the maintenance frequency for each asset or group of assets under field investigation to prevent blockages that would significantly reduce design capacity during the investigation.

See Page 3, Field Investigation Technique

Hydraulic Model Refinement

The City shall refine the hydraulic model during the Field Investigation Program by:

- Applying additional flow meter and rainfall data as it is collected;
- Applying the Assessment Storm to model; and
- Assessing calibration.

See Page 3, Capacity Assessment Program

Appendix F-4

Capacity Assessment and Remediation Program

From Page 2

Determine Field Investigation Technique

For each field investigation that the City conducts pursuant to this Appendix, the City shall determine the field investigation technique(s) most appropriate for each Potential Capacity Constraint. The City shall use one or more of the following field investigation techniques for each investigation:

- Flow Metering (Generally for Priority 1 or 2 constraints);
- Smart Covers (Generally for Priority 1 or 2 constraints);
- Chalking (Generally for Priorities 3 or 4 constraints);
- Visual Inspection (As needed for Priorities 1-4 constraints);
- Rainfall monitoring (Generally for Priority 1, 2, and 3 constraints);
- Other techniques as determined by the City to be necessary

From Page 2

Hydraulic Model Refinement

See Consent Decree Section V. C. 54 - Capacity Remedial Measures Plan

Field Investigation of Potential Capacity Constraints

For each field investigation that the City conducts pursuant to this Appendix, the City shall implement selected field investigation technique(s) at each location until a "significant wet weather event "is experienced. A significant wet weather event shall be a storm event of not less than 0.5 inches in 6 hours or more than the Assessment Storm that causes a noticeable system response.

The City shall evaluate Potential Capacity Constraints during field investigation using the following criteria:

- For wet weather events less than 1 inch over 24 hours, where the HGL in the Gravity Sewer Lines is near manhole rim elevation, the City shall identify the Potential Capacity Constraint as a Confirmed Capacity Constraint.

- For wet weather events that exceed 1 inch over 24 hours and are less than the Assessment Storm, the City shall apply the observed storm to the model, determine the predicted HGL at the Potential Capacity Constraint location, and compare the predicted HGL in the Gravity Sewer Lines from the model to observed HGL at the observed storm. If the observed HGL is:
  - at or above the model predicted HGL in the Gravity Sewer Lines at the observed storm, then:
    - for any priority 1, 2 or 3 Potential Capacity Constraint, the City shall identify as a Confirmed Capacity Constraint; and
    - for any priority 4 Potential Capacity Constraint, the City shall evaluate on a case-by-case basis to determine if there is a Confirmed Capacity Constraint.
  - less than the model predicted HGL in the Gravity Sewer Lines and is not near manhole rim elevation at the observed storm, then:
    - for any priority 1, 2, or 3 Potential Capacity Constraint, the City shall:
      i. evaluate the Potential Capacity Constraint on a case-by-case case basis to determine if there is a Confirmed Capacity Constraint, if the model predicts an SSO at the Assessment Storm; or
      ii. remove the Potential Capacity Constraint location from the field investigation program and monitor it as part of CMOM, if model does not predict an SSO at the Assessment Storm;
    - for any priority 4 Potential Capacity Constraint, the City shall remove the Potential Capacity Constraint from the field investigation program and monitor it in the future under CMOM.
- For a wet weather event that is approximately equal to or exceeds the Assessment Storm:
  - if an SSO does not occur, the City shall evaluate the intensity of the actual storm event to determine if a Confirmed Capacity Constraint exists;
  - If there is not a significant wet weather response, the City shall remove the Potential Capacity Constraint from the field investigation program.

CMOM Capacity Assessment Program

See Consent Decree Section V. A. CMOM Program

See Page 4, Remedial Measures Alternative Analysis

Capacity Assessment Report

See Consent Decree Section V. C. 53 - Capacity Assessment Report

Appendix F-4
Capacity Assessment and Remediation Program

From Page 3

Remedial Measures Alternatives Analysis

The City shall conduct a remedial measures alternatives analysis pursuant to this Appendix for each Confirmed Capacity Constraint, to select a remedial measures plan for the location. As part of this alternatives analysis the City shall collect necessary additional field data, such as:

- Smoke Testing;
- Dye Testing;
- Flow Metering;
- CCTV;
- Utility conflicts; and/or
- Other data as needed.

The City shall use engineering analyses to determine which remedial measures solution is most likely to resolve the Confirmed Capacity Constraint. Alternative remedial measures solutions to be considered include but are not limited to:

- Re-routing a portion of upstream wastewater flows;
- reducing flows entering the WCTS from customers;
- reducing inflow and/or infiltration;
- increasing conveyance capacity of WCTS;
- installing upstream flow detention facilities;
- continued monitoring of the location if appropriate; and/or,
- implementing other engineering solutions.

The City shall apply the Assessment Storm and twenty year population growth projection to determine appropriate asset sizing as needed for Confirmed Capacity Constraints.

Capacity Remedial Measures Plan

See Consent Decree Section V. C. 54. Capacity Remedial Measures Plan

Plan and Implement Capacity Remedial Measures

For each remedial measures solution selected by the remedial measures alternatives analysis, the City shall create a plan for implementing the remedial measure. The City shall prioritize remedial measures and periodically evaluate these priorities by reviewing:

- the severity of Confirmed Capacity Constraints identified during inspections;
- the frequency and history of capacity- related SSOs;
- the pipe size, age, material, and maintenance history;
- the, relationship of Capacity Constraint areas of the WCTS to growth-related improvements and/or condition related improvements; and,
- other criteria the City determines appropriate.

For each remedial measures solution selected, the City shall also:

- Coordinate the implementation of the capacity-related remedial measures solution with any condition remedial measures, as needed;
- Allocate its budget to account for the planned remedial measures;
- Prepare design documents for bidding and construction, as needed;
- Implement the planned remedial measures; and,
- Monitor growth and development:
    - Where the model predicts a capacity constraint caused by projected twenty year population growth,Tyler shall monitor actual population growth compared with growth projected in the hydraulic model and shall construct capacity projects as needed to accommodate actual rate of growth.

Appendix G
Performance Indicators

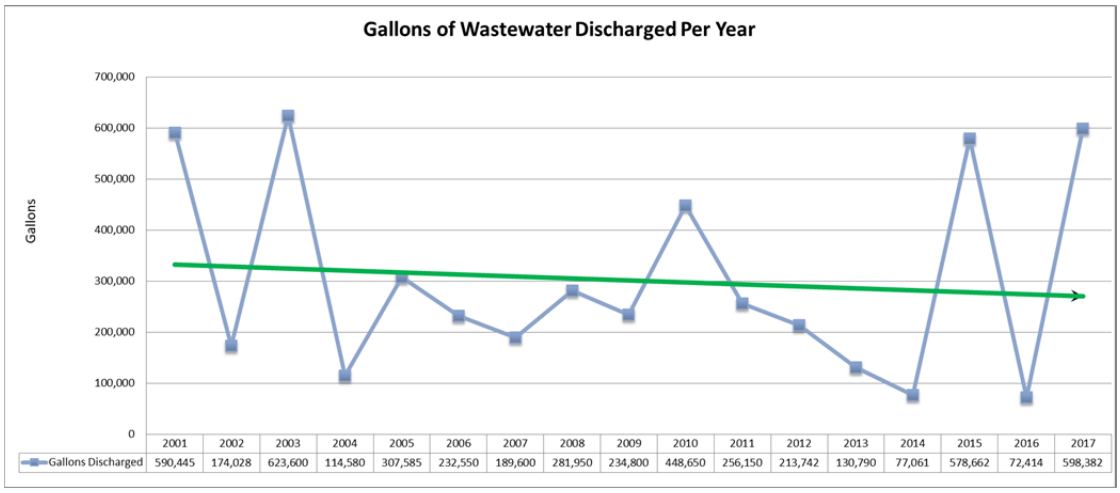
The following presents the metrics that will be used to monitor the CMOM Program. The performance indicators may change over time as better metrics and methods to measure progress are developed.

Appendix G

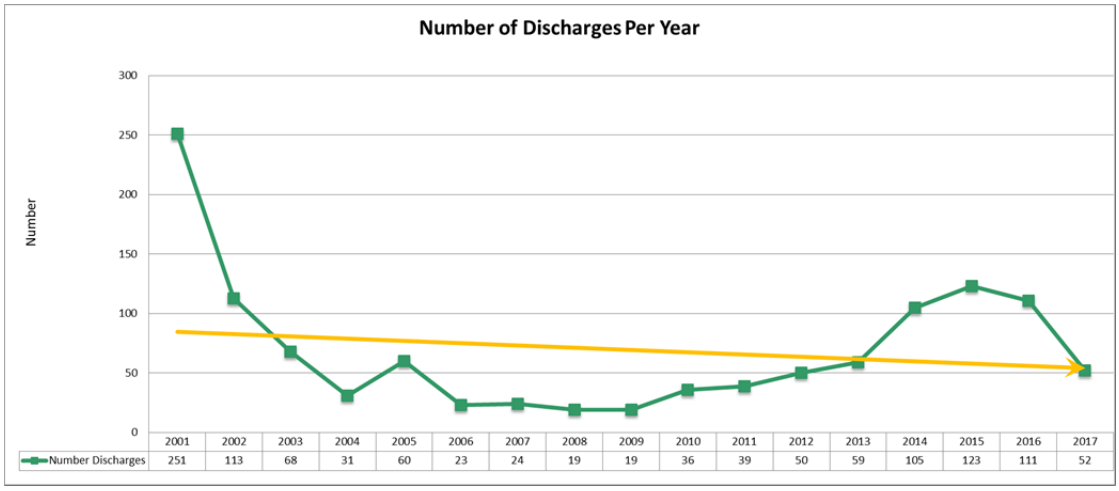
CMOM Performance Indicators

SSO History and Trend

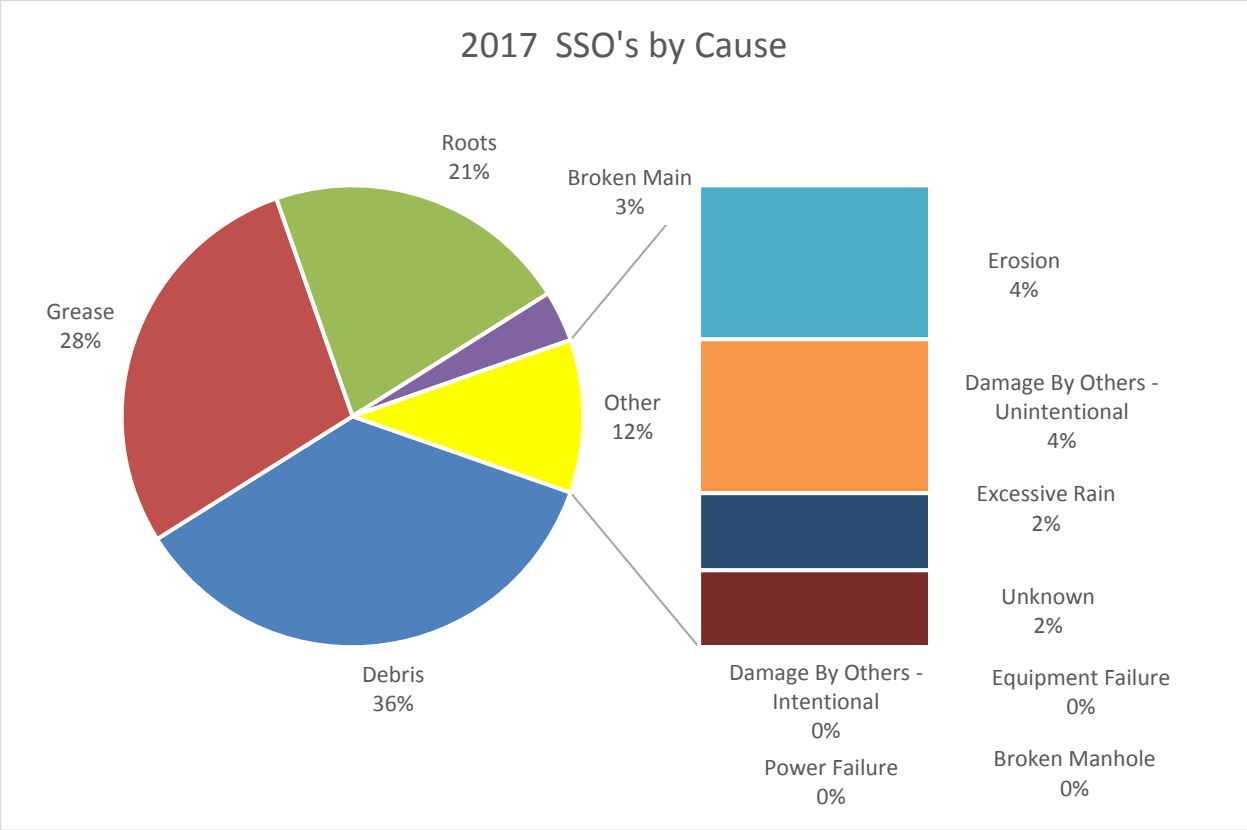
During each CMOM update the performance indicators will be updated. As the CMOM Plan is implemented the trends become stable and outliers can be further evaluated to determine if changes to various CMOM programs are warranted to address concerns. For example, if SSOs associated with grease trend upward, then FOG inspections and public outreach may be increased to address the grease issue. This trending analysis is a gauge to monitor the CMOM Plan effectiveness in reducing SSO/Spill numbers and volume.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Gallons Discharged	590,445	174,028	623,600	114,580	307,585	232,550	189,600	281,950	234,800	448,650	256,150	213,742	130,790	77,061	578,662	72,414	598,382



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number Discharges	251	113	68	31	60	23	24	19	19	36	39	50	59	105	123	111	52



Performance Indicators

1. FOG Program
    a. Number of Permitted FSEs
    b. Number of Inspections
    c. Number of Enforcement/Compliance Actions
2. Small (<24”)Sewer Cleaning (including high frequency cleaning)
    a. Total small diameter miles
    b. Miles cleaned in calendar year
    c. Percentage cleaned in calendar year
    d. Cleaning goal for calendar year
    e. Cumulative miles cleaned
    f. Cumulative percent complete
3. Large (24”+)Diameter Cleaning
    a. Total large diameter miles
    b. Miles cleaned in calendar year
    c. Percentage cleaned in calendar year
    d. Cleaning goal for calendar year
    e. Cumulative miles cleaned
    f. Cumulative percent complete
4. Condition Assessment (Annual goal, actual, Cumulative % of total)
    a. CCTV
    b. Manhole Inspection

    c. Lift Station Inspection
    d. ARV Inspection
    e. Force Main Inspection
5. Number of SSOs/Spills by cause
    a. Fats, Oils, Grease
    b. Roots
    c. Debris
    d. Breaks Due to Erosion
    e. Breaks, Other Causes
    f. Equipment malfunction
    g. Flooding
    h. Excess Infiltration/Inflow
    i. Contractor Damage
    j. Vandalism
    k. Undetermined
    l. Other
6. Trend Analysis
    a. Number of SSOs
    b. Volume
    c. Duration
7. Summary of CMOM Elements implemented or modified

Appendix H
Regulatory

The City of Tyler is under a TCEQ/EPA Consent Decree in association with the wastewater collection system. The Consent Decree was lodged with the United States District Court for the Eastern District of Texas April 10, 2017. This Appendix contains the Consent Decree, administrative actions and schedules for compliance. Any discrepancy in the CMOM Plan and the Consent Decree will require modification of the CMOM Plan to agree with the terms of the Decree.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION

UNITED STATES OF AMERICA and, THE STATE OF TEXAS Plaintiffs, v. THE CITY OF TYLER, Defendant.	)	Civil Action No. 6:17-cv-29

CONSENT DECREE

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WHEREAS, Plaintiff, the United States of America ("United States"), by the authority of the Attorney General of the United States and through its undersigned counsel, acting on behalf of the United States Environmental Protection Agency ("EPA"), and the State of Texas ("Texas"), on behalf of the Texas Commission on Environmental Quality ("TCEQ"), have filed concurrently with this Consent Decree a complaint in this action (the "Complaint") against the City of Tyler, Texas ("Tyler"), pursuant to Section 309 of the Clean Water Act ("CWA"), 33 U.S.C. § 1319, and Chapter 7, Subchapter D, and § 26.121 of the Texas Water Code ("TWC"), and the regulations promulgated and permits issued pursuant to the CWA and TWC, respectively, seeking injunctive relief and civil penalties for Tyler's alleged violations of the CWA and the TWC;

WHEREAS, through the Complaint, Texas also seeks recovery of its attorney's fees, court costs, and/or reasonable investigative costs related to this proceeding if Texas prevails, pursuant to TWC § 7.108;

WHEREAS, the Complaint alleges that Defendant, Tyler, has violated and continues to violate Sections 301 and 402 of the CWA, 33 U.S.C. §§ 1311 and 1342, and TWC §§ 26.121(a)(1) and 7.101, the respective implementing regulations for the CWA, and permits issued under the CWA and the TWC, by: (1) discharging pollutants containing raw sewage from point sources within the City's Wastewater Collection and Transmission System ("WCTS") resulting in Sanitary Sewer Overflows ("SSOs") as both of those terms are defined in this Consent Decree; and (2) failing to comply with the terms and conditions of the City's Texas Pollutant Discharge Elimination System ("TPDES") Permits as that term is defined in this Consent Decree;

WHEREAS, under Section 402 of the CWA, 33 U.S.C. § 1342, EPA may issue permits,

known as National Pollutant Discharge Elimination System ("NPDES") permits, that allow for the discharge of pollutants under certain designated conditions and in accordance with all applicable requirements of the CWA and its implementing regulations, or EPA may delegate administration of the NPDES permit program to any requesting state;

WHEREAS, EPA authorized TCEQ to administer the NPDES pursuant to Section 402(b) of the CWA, 33 U.S.C. § 1342(b), and NPDES permits administered by TCEQ are known as TPDES permits;

WHEREAS, Tyler is a "municipality" pursuant to Section 502(4) of the CWA, 33 U.S.C. § 1362(4), and, therefore, a "person" pursuant to Section 502(5) of the CWA, 33 U.S.C. § 1362(5), and TWC § 26.001(25);

WHEREAS, Texas is also a Plaintiff in this action and joined as a Party under Section 309(e) of the CWA, 33 U.S.C. § 1319(e), which requires the state in which a municipality is located to be joined as a party whenever the municipality is a party to a civil action brought by the United States under Section 309 of the CWA;

WHEREAS, Tyler owns and operates a Publicly Owned Treatment Works ("POTW") as defined by 40 C.F.R. § 403.3, that includes the WCTS and the two Wastewater Treatment Plants ("WWTPs"), as defined in this Consent Decree;

WHEREAS, the United States contends that Tyler has reported certain SSOs to TCEQ from the WCTS, but has also failed to report all known SSOs to TCEQ;

WHEREAS, the United States and Texas contend that these SSOs are violations of the CWA, TWC, and the City's TPDES Permits;

WHEREAS, this Consent Decree requires Tyler to develop, submit, finalize, and implement plans for the continued improvement of its WCTS and the operation of this system, to

address SSOs;

WHEREAS, the United States contends that on and before March 1, 2013, Tyler's WCTS had several locations, referred to in this Consent Decree as "Constructed SSO Locations," where conduits or other facilities were constructed that allowed untreated sanitary wastewater flows to be diverted out of the WCTS to stormwater drainage facilities and then to the waters of the United States and/or into or adjacent to Waters in the State of Texas, and/or otherwise to be released to the environment without treatment during peak flow periods;

WHERAS, shortly after March 1, 2013, EPA identified what it believed to be known or suspected historic Constructed SSO Locations in the WCTS, as listed in Appendix H ("Known or Suspected Historic Constructed SSO Locations and Inspection Results"), and, as of the Date of Lodging of the Consent Decree, Tyler inspected these alleged Constructed SSO Locations and took remedial measures to close such Constructed SSO Locations by, *inter alia*, permanently sealing all previously-constructed SSO pathways from the WCTS with concrete or other material to prevent future SSOs;

WHEREAS, the United States and Texas contend that Tyler previously had known or suspected historic Constructed SSO Locations as listed in Appendix H that are violations of the CWA, the TWC, and the City's TPDES Permits;

WHEREAS, the Parties have negotiated in good faith and have reached a settlement to resolve Plaintiffs' claims in the Complaint and avoid litigation;

WHEREAS, Tyler does not admit any liability to the United States or Texas arising out of the transactions or occurrences alleged in the Complaint;

WHEREAS, the Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation

between the Parties and that this Consent Decree is fair, reasonable, and in the public interest;

NOW THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law, except as provided in Section I of the Consent Decree, and with the consent of the Parties, it is hereby ORDERED, ADJUDGED, and DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 309(b) of the CWA, 33 U.S.C. § 1319(b), and over the Parties. This Court has supplemental jurisdiction over the state law claims asserted by Texas pursuant to 28 U.S.C. § 1367. Venue is proper in the Eastern District of Texas pursuant to Section 309(b) of the CWA, 33 U.S.C. §§ 1319(b), and 28 U.S.C. §§ 1391(b) and 1395(a), because the violations alleged in the Complaint are alleged to have occurred in this judicial district. For purposes of this Decree, or any action to enforce this Decree, Tyler consents to the Court's jurisdiction over this Decree and any such action and over Tyler and consents to venue in this judicial district.

II. APPLICABILITY

2. The obligations of this Consent Decree apply to and are binding upon the United States, Texas, and upon Tyler and any successors, assigns, or other entities or persons otherwise bound by law.

3. No transfer of ownership or operation of the WWTPs and WCTS, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Tyler of its obligation to ensure that the terms of the Decree are implemented. At least thirty (30) Days prior to such transfer, Tyler shall provide a copy of this Consent Decree to the proposed transferee and shall

simultaneously provide written notice of the prospective transfer, together with a copy of the proposed written agreement, to EPA, the United States Department of Justice, TCEQ, and the Office of the Attorney General of Texas. Tyler shall require, as a condition of any sale or transfer, that the purchaser or transferee agrees in writing to be bound by this Consent Decree and submit to the jurisdiction of the Court for its enforcement. Any attempt to transfer ownership or operation of the WWTPs and WCTS without complying with this Paragraph constitutes a violation of this Decree.

4. Within thirty (30) Days after the Effective Date of the Consent Decree, Tyler shall provide a copy of this Consent Decree to the public by posting the Consent Decree on the City's website. The Consent Decree shall remain posted on the City's website for the entire duration of the Consent Decree and shall not be removed until after the Consent Decree is terminated pursuant to Section XXI ("TERMINATION"). Tyler shall also provide a copy of this Consent Decree, or otherwise make it available by providing notice of the location of its posting, to all officers, employees, and agents whose duties might reasonably include compliance with any substantive provision of this Consent Decree, as well as to any contractor retained to perform work expressly required under this Consent Decree. Tyler shall be responsible for ensuring that all employees involved in performing any work pursuant to this Consent Decree perform such work in a manner consistent with the requirements of this Consent Decree.

5. Public Document Repository: Tyler shall post to its website any report required by this Consent Decree and all final EPA approved Deliverables pursuant to Section VI ("REVIEW AND IMPLEMENTATION OF DELIVERABLES"). In the case of any report, Tyler shall post the report to the City's website within fourteen (14) Days of submitting the report to EPA and TCEQ. In the case of final approved Deliverables, Tyler shall post the approved version of the

Deliverable to the City's website within fourteen (14) Days after receiving notification of EPA's approval of the Deliverable. A consolidated listing of the Deliverables and reports required by this Consent Decree is provided in Appendix I ("Consolidated Listing of *United States et. al v. City of Tyler* Consent Decree Deliverables and Consent Decree Reports") for the convenience of the Parties. In the event of any discrepancy between the provisions of Sections V (Compliance Requirements) and IX (Reporting Requirements) and Appendix I, the provisions of Sections V and IX shall control.

6. In any action to enforce this Consent Decree, Tyler shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

III. OBJECTIVES

7. The express purpose of the Parties entering into this Consent Decree is for Tyler to take all necessary measures, consistent with the objectives of the CWA, to achieve compliance with the CWA, the TWC, all applicable federal and state regulations, and the City's TPDES Permits, with the goal of eliminating all SSOs and Constructed SSO Locations, as those terms are defined in Subparagraphs 10.ee and 10.j of Section IV this Decree ("DEFINITIONS").

8. All plans, reports, construction, remedial maintenance, and other obligations in this Consent Decree, and under any amendment to this Consent Decree, shall have the objective of ensuring that the City complies with the CWA, the TWC, all applicable federal and state implementing regulations promulgated thereunder, and the terms and conditions of the City's TPDES Permits.

IV. DEFINITIONS

9. Unless otherwise defined herein, terms used in this Consent Decree shall have the

meaning given to those terms in the CWA, 33 U.S.C. §§ 1251 - 1387, and the regulations promulgated thereunder.

10. Whenever the terms set forth below are used in this Consent Decree, they shall be defined as follows:

a. "Building/Private Property Backup" shall mean a wastewater release or backup into a building or onto private property that is caused by blockages, flow conditions, or other malfunctions in the WCTS; however, a wastewater release or backup that is caused by blockages, flow conditions, or other malfunctions of a Private Lateral is not a Building/Private Property Backup for purposes of this Decree;

b. "Calendar Year" shall mean the twelve (12) Month period starting on January 1 and ending on December 31;

c. "CCTV" shall mean closed circuit television;

d. "City" or "Tyler" shall mean the Defendant City of Tyler, Texas, including all of its departments, agencies, and instrumentalities, and any successors thereto;

e. "City's TPDES Permits" shall mean TPDES Permits Nos. 10653-002 (NPDES Permit No. TX0047988) and 10653-001 (NPDES Permit No. TX0047996) issued for the City's two WWTPs and any future extended, modified, or reissued TPDES permits;

f. "Clean Water Act" or "CWA" shall mean the act formally entitled the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251 - 1387;

g. "Complaint" shall mean the complaint filed by Plaintiffs in this civil action;

h. "Confirmed Capacity Constraint" shall mean any Potential Capacity Constraint, unless, before the issuance of the Capacity Assessment Report required by Paragraph 53 of this Consent Decree, that Potential Capacity Constraint has been confirmed by field investigation to

be unlikely to cause or materially contribute to SSOs;

i. "Consent Decree" or "Decree" shall mean this Consent Decree document, including all appendices attached hereto as listed in Section XXV ("APPENDICES");

j. "Constructed SSO Location" shall mean a place in the WCTS where conduits or other facilities are or were constructed that divert[ed] or potentially divert[ed] sanitary wastewater flows from the WCTS to stormwater drainage facilities and to the waters of the United States, into or adjacent to Waters in the State of Texas, and/or that otherwise release[d] or potentially release[d] sanitary wastewater from the WCTS into the environment;

k. "Date of Lodging" shall mean the date on which this Decree is lodged with the United States District Court for the Eastern District of Texas prior to the commencement of the public comment period and pursuant to a notice of lodging filed by the United States;

l. "Day" or "Days" shall mean a calendar day or calendar days unless expressly stated to be a business day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or state holiday, the period shall run until the close of business of the next business day;

m. "Deliverable" shall mean any written document required to be submitted by or on behalf of Tyler to EPA and/or TCEQ, pursuant to this Consent Decree, that requires EPA's review for comment or approval;

n. "Effective Date" shall mean the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket;

o. "FOG" shall mean fats, oils, and grease;

p. "FOG Control Device" shall mean any grease trap, FOG interceptor, or other mechanism or device, that attaches to, or is applied to a FOG Generator's wastewater plumbing fixtures and lines, the purpose of which is to collect, contain, or remove FOG from the waste stream of a FOG Generator prior to discharge into the WCTS;

q. "FOG Generator" shall mean any non-residential food service establishment or food preparation or processing establishment that discharges FOG into the WCTS;

r. "Force Main" shall mean any pipe in the WCTS that receives and intentionally conveys wastewater, under pressure, from the discharge side of a pump;

s. "Gravity Sewer Line" shall mean any pipe in the WCTS that receives, contains, and conveys wastewater not normally under pressure, but is intended to flow unassisted under the influence of gravity;

t. "Infiltration" shall mean water other than wastewater that enters a sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes, as defined by 40 C.F.R. § 35.2005(b)(20);

u. "Inflow" shall mean water other than wastewater that enters a sewer system (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm water, surface runoff, street wash waters, or drainage, as defined by 40 C.F.R. § 35.2005(b)(21);

v. "I/I" shall mean the total quantity of water from Infiltration and Inflow without distinguishing the source;

w. "Legible Map" shall mean a map in paper, pdf, or other software format that is mutually agreed to by the Parties;

x. "Lift Station" shall mean facilities comprised of pumps that lift wastewater to a higher hydraulic elevation, including all related electrical, mechanical, and structural systems necessary to the operation of that lift station;

y. "Month" shall mean one calendar month running from the numbered day to the same numbered day of the following calendar month, regardless of whether the particular month has 28, 29, 30 or 31 days. In the case where a triggered event would occur on a day of the month which does not exist (for example, on February 30), then the event shall be due on the first (1^{st}) day of the following month (for example, March 1);

z. "Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral;

aa. "Parties" shall mean the parties to this Consent Decree: Plaintiffs the United States and the State of Texas, and Defendant the City of Tyler, Texas;

bb. "Potential Capacity Constraint" shall mean a discrete asset or group of assets in the Tyler WCTS that has, as predicted by the City's updated hydraulic model using the Assessment Storm and existing population, a capacity limitation that is likely to cause or materially contribute to SSOs;

cc. "Private Lateral" shall mean any sewer line connection not owned or operated by the City used to convey wastewater from a building or buildings to any portion of the WCTS;

dd. "Repeat SSO" shall mean any SSO that occurs more than one time within a period of two (2) Calendar Years from the same asset in the WCTS, or, in the case of a Building/Private Property Backup, at the same address;

ee. "Sanitary Sewer Overflow" or "SSO" shall mean any overflow, spill, diversion, or release of wastewater from, or caused by, conditions in the WCTS and shall include:

i. discharges to waters of the United States or into or adjacent to Waters in the State of Texas from the City's WCTS; and

ii. any release of wastewater from the City's WCTS to public or private property that does not reach waters of the United States or Waters in the State of Texas, including Building/Private Property Backups;

ff. "Section" shall mean a portion of this Consent Decree identified by a Roman numeral;

gg. "Sewer Segment" shall mean the continuous run of Gravity Sewer Line pipe extending from one manhole to the next manhole;

hh. "Subparagraph" shall mean a portion of a Paragraph identified by lowercase letters;

ii. "Subsection" shall mean a portion of a Section identified by uppercase letters;

jj. "Subsection Component" shall mean a portion of a Subsection identified by an Arabic numeral followed by a single parenthesis;

kk. "TWC" shall mean the Texas Water Code;

ll. TPDES Permit No. 10653-002 (NPDES Permit No. TX0047988) shall mean the TPDES permit issued to the City by the State of Texas, pursuant to Section 402 of the CWA, 33 U.S.C. § 1342, for the City's Southside Wastewater Treatment Facility and any future extended, modified, or reissued permit;

mm. TPDES Permit No. 10653-001 (NPDES Permit No. TX0047996) shall mean the TPDES permit issued to the City by the State of Texas, pursuant to Section 402 of the CWA,

33 U.S.C. § 1342, for the City's Westside Treatment Facility and any future extended, modified, or reissued permit;

nn. "Tyler" or "City" shall mean the City of Tyler, Texas, including all of its departments, agencies, and instrumentalities, and any successors thereto;

oo. "Wastewater Collection and Transmission System" or "WCTS" shall mean the municipal wastewater collection, retention and transmission system (including all Gravity Sewer Lines, manholes, Lift Stations, Force Mains, and appurtenances thereto) that is owned or operated by the City at any time from the Effective Date of this Consent Decree until its termination under Section XXI ("TERMINATION"), and that is designed to collect and convey municipal sewage (domestic, commercial, and industrial) to the WWTPs;

pp. "Wastewater Treatment Plants" or "WWTPs" shall mean the following two sewage treatment plants operated by the City and all components of such sewage treatment plants: the City's Westside Treatment Plant located at 14939 Country Road 46, in the City of Tyler, Texas, and the City's Southside Treatment Plant located near 110 West Cumberland Rd, in the City of Tyler, Texas;

qq. "Waters in the State of Texas" are "waters" as defined under Texas law, Tex. Water Code 26.001(5), including groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico, inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state;

rr. "Wet-Weather Related SSO" shall mean SSOs identified by Tyler as I/I-related that occurred during precipitation events; and

ss. "Year" shall mean a consecutive twelve (12) Month period.

V. COMPLIANCE REQUIREMENTS

11. The following compliance requirements are actions that the City shall undertake or continue to undertake to achieve the Objectives of this Consent Decree as stated in Section III of this Consent Decree ("OBJECTIVES"). Tyler shall perform the assessments and engineering analyses required by this Consent Decree in order to identify all measures necessary to bring its WCTS into compliance with the requirements of the CWA, the TWC, the respective implementing regulations promulgated thereunder, and the City's TPDES Permits. Tyler shall implement all measures identified by the assessments and engineering analyses and required by this Consent Decree within ten (10) Years after the Effective Date with the goal of eliminating all SSOs from the WCTS.

12. Commencing upon the Effective Date of this Consent Decree, Tyler shall carry out all compliance requirements required by this Section in accordance with the schedules and terms of implementation provided herein. Whenever this Consent Decree provides Tyler with discretion to select the sequencing of WCTS inspections, cleaning, or remedial measures, Tyler shall prioritize the work to be performed upon structured consideration of the following factors: sound engineering practices, Tyler's best professional judgment, industry standards where established and applicable, and the location of SSOs in low income or minority census tract communities as well as other appropriate factors specified in this Consent Decree.

A. CAPACITY MANAGEMENT, OPERATION AND MAINTENANCE (CMOM) PROGRAM

13. No later than the Effective Date, the City shall begin developing a written Capacity, Management, Operation, and Maintenance ("CMOM") Program to enhance its existing programs related to management, operation, and maintenance of its WCTS. The CMOM Program shall establish, and describe in writing, how the City will implement the requirements of Subsection Components A.1) ("Training Program") through A.11) ("Information Management System") of this Subsection within the timeframes provided and shall be developed in accordance with EPA's 2005 Guidance titled "Guide for Evaluating Capacity, Management, Operation, and Maintenance Programs at Sanitary Sewer Collection Systems." The CMOM Program shall be sealed by a registered professional engineer licensed to practice in the State of Texas, demonstrating that the Program has been developed in accordance with EPA's 2005 Guidance and sound engineering practices. The City shall submit its CMOM Program to EPA and TCEQ initially in only partial form as an "Interim CMOM Program" and then subsequently and completely as a "Final CMOM Program," in accordance with the terms of Paragraphs 14 through 16.

14. No later than one-hundred and eighty (180) Days following the Effective Date, and prior to delivering a Final CMOM Program to EPA for review and approval, pursuant to Paragraph 16, Tyler shall develop and submit an Interim CMOM Program to EPA, with a copy to TCEQ, for EPA review and comment, in accordance with Paragraph 80. The Interim CMOM Program shall include the following CMOM Program components, the requirements of which are specifically set forth below in this Subsection: Subsection Component A.2) ("Sewer Overflow Response Plan"), Subsection Component A.3) ("SSO Reporting and Documentation Procedures"), and Subsection Component A.10) ("Root Control Program").

15. Pursuant to the provisions of Paragraph 80, after receiving the Interim CMOM Program and prior to receiving the Final CMOM Program, EPA may, in its discretion, provide the City with comments on the Interim CMOM Program. Tyler shall begin implementing the Interim CMOM Program pursuant to Paragraph 80.b.

16. No later than one (1) Year after the Effective Date, the City shall submit its Final CMOM Program to EPA and TCEQ for EPA review and approval. The Final CMOM Program shall contain written descriptions of all CMOM Program components specified in Subsection Components A.1) ("Training Program") through A.11) ("Information Management System") of this Subsection, as well as a schedule including deadlines for implementation of each Final CMOM Program component. For Subsection Components previously included in and implemented through the City's Interim CMOM Program, the Final CMOM Program shall contain changes to the Interim CMOM Program that reflect the City's experience with its implementation of the Interim CMOM Program and modifications that the City, in its discretion, makes to the Interim CMOM Program during the period of its implementation. The Final CMOM Program shall also incorporate any revisions or clarifications to the Interim CMOM Program requested by EPA in any discretionary comments that may have been provided pursuant to Paragraph 15 subject to Tyler's right to invoke the dispute resolution procedures provided in Section XIII ("DISPUTE RESOLUTION"). The City shall continue to implement the Interim CMOM Program while EPA is reviewing the Final CMOM Program for approval. The City shall implement the Final CMOM Program in accordance with the terms of Paragraph 79.

17. The City may modify its Final CMOM Program as needed to improve management of the City's WCTS and meet the objectives of Section III ("OBJECTIVES"), provided that any such modification is made in accordance with Paragraph 139. The City shall incorporate any such

modifications to the Final CMOM program document by creating a Revised Final CMOM Program and adding that document to the public document repository required by Paragraph 5 ("Public Document Repository") of this Consent Decree within fourteen (14) Days after:

a. the Parties' mutual agreement of modification, for non-material modifications that are made pursuant to Paragraph 139; or

b. the Court's order approving the modification, for material modifications that are requested and so ordered pursuant to Paragraph 139.

18. Tyler, as part of each Annual Report required to be submitted pursuant to Paragraph 88 (Annual Reports) of this Consent Decree, shall, for the applicable reporting period, describe Tyler's progress in meeting CMOM Program goals by providing all details that Tyler is required to report as a part of its CMOM Program pursuant to Subsection Components A.1) ("Training Program") through A.11) ("Information Management System") of this Subsection.

1) <u>Training Program</u>

19. Tyler shall enhance its existing employee training program ("Training Program"). The Training Program shall include technical and skills training for appropriate categories of Tyler's employees, set forth in Appendix A ("Categorical Employee Training Requirements"), and shall include training on sewer investigation, maintenance, and repair techniques and policies as well as SSO response policies and procedures. The Training Program shall focus on Tyler's standard operating procedures and practices for the operation and maintenance of the WCTS and shall include specific instructions on responding to and preventing SSOs in accordance with the approved Sewer Overflow Response Plan ("SORP"), pursuant to Subsection Component A.2) ("Sewer Overflow Response Plan (SORP)"). For any training conducted pursuant to this Subsection Component, Tyler shall memorialize in writing, and retain pursuant to Paragraph

122, the following information: the date of the training; the topic(s) covered by the training; the names of the instructor(s) who conducted the training; and the names of the employees who received the training. As part of each Annual Report required to be submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall include a summary list of all documented training activities completed by each category of employee during the applicable reporting period in the approved format provided in Appendix A.

20. The technical and skills training and SSO response training required under the Training Program shall include:

a. Technical and Skills Training. The technical and skills training program shall be designed to facilitate prevention of and response to SSOs and shall include the following components:

i. the categories of employees (including a listing of job classifications within each category) that will be provided training in specific topics related to SSO prevention and response measures addressed through operation and maintenance of the WCTS, describing the specified training to be provided commensurate with the specific job responsibilities of each category of employee;

ii. a list and description of the topics to be covered in the technical and skills training for each relevant category of employee to facilitate compliance with the CWA, the TWC, the implementing regulations promulgated thereunder, and Tyler's permits, through SSO prevention, response, and elimination measures (including, where appropriate, training on sewer cleaning, FOG inspection, sewer inspection, Constructed SSO Location identification sewer repair, replacement and rehabilitation techniques, data collection, information management, reporting and recordkeeping

necessary to implement Tyler's CMOM Program) before an employee can undertake specific work assignments or tasks; and

iii. identification of the types of training records that Tyler maintains and of the information management system used to plan and document completed training, including methods for addressing failure to complete minimum training requirements for each category of employee;

b. SSO Response Training. The City shall provide SSO response training that trains employees:

i. how to make a determination of whether an SSO has occurred;

ii. on the elements of and required implementation of the Sewer Overflow Response Plan, as set forth in Subsection Component A.2) ("Sewer Overflow Response Plan") of this Consent Decree;

iii. how to document and report SSOs pursuant to the SSO Reporting and Documentation Procedures, as set forth in Subsection Component A.3) ("SSO Reporting and Documentation Procedures"); and

iv. how to document and report noncompliance with Tyler's TPDES permits.

2) Sewer Overflow Response Plan (SORP)

21. The City shall develop a SORP that includes, at a minimum, the following components:

a. a listing of identified goals for the SORP, including that the City:

i. respond to SSOs as rapidly as possible with a response goal of less than four (4) hours after Tyler first discovers or is notified of a potential overflow;

ii. halt SSOs as rapidly as feasible;

iii. employ SSO mitigation measures whenever appropriate;

iv. employ measures to prevent SSO recurrence; and

v. report SSOs timely and completely in accordance with the requirements of Subsection Component A.3) ("SSO Reporting and Documentation Procedures");

b. a description of the actions Tyler will undertake to provide notice to the public and to any applicable government authorities of the occurrence of an SSO from the WCTS as required by TWC §26.039 and 30 TAC §319.303, and any amendments thereto, the City's TPDES Permits, or other applicable law;

c. written Standard Operating Procedures (SOPs) for responding to SSOs that are designed to minimize SSO volumes and minimize the environmental impacts and potential human health risks of SSOs;

d. an adequate methodology for estimating the volume of an SSO;

e. additional written SOPs for specifically responding to Building/Private Property Backups, which shall include the following non-exclusive list of specific procedures:

i. a description of Tyler's response practices and methods for communicating with customers about:

A. how to report Building/Private Property Backups; and

B. how to contact Tyler in order to obtain support in responding to a Building/Private Property Backup;

ii. the typical timeframe objectives for both initial response and completion of cleanup activities;

iii. the types of measures that may be taken by Tyler to cleanup Building/Private Property Backups found to be caused by conditions in Tyler's WCTS, including, as warranted by specific circumstances, procedures necessary to

disinfect and/or remove items potentially contaminated by Building/Private Property Backups, wet vacuuming or other removal of spillage, wiping floors and walls with cleaning solution and disinfectant, flushing out and disinfecting plumbing fixtures, carpet cleaning and/or replacement or other appropriate measures to disinfect and/or remove items potentially contaminated by Building/Private Property Backups; and

iv. a description of the process by which measures to correct or repair conditions in the WCTS causing or contributing to Building/Private Property Backups are selected;

f. an inspection of each Sewer Segment that experiences an SSO using CCTV as soon as practicable, but in any event not later than five (5) business days following the cessation of the SSO. Such inspection shall at a minimum extend at least through the first adjacent Sewer Segment upstream and downstream of the specific WCTS asset experiencing an SSO;

g. identification of appropriate measures to prevent SSO recurrence, including, but not limited to, identifying the known or suspected cause of each SSO, if possible; eliminating material causing sewer blockages that result in SSOs; and/or identifying capacity limitations;

h. a description of standard response procedures for SSOs that occur at Lift Stations or Force Mains. In the event that a repair at a Lift Station or Force Main may cause or lengthen the time of an SSO, the SORP shall provide a procedure for determining when a wastewater pump-around will be provided;

i. a plan to ensure the preparedness, including responsiveness training, of Tyler employees, contractors engaged for work on the City's WCTS, and, Northeast Texas Public Health District ("NET-Health") food service/processing establishment inspectors if appropriate due to responsibilities related to implementation of the FOG program, for effectively

implementing the SORP in the event of an SSO; and

j. a description of the follow-up process that the City of Tyler will use to evaluate the adequacy of its response to SSOs.

3) SSO Reporting and Documentation Procedures

22. The City shall report and document SSOs in accordance with all requirements of this Subsection, Appendix B ("Tyler Wastewater Collection Field Work Order Form"), and the Tyler Permits.

23. SSO Documentation.

a. The City shall utilize the field work order form attached as Appendix B ("Tyler Wastewater Collection Field Work Order Form") to document the information required therein for each SSO that the City is notified of and/or responds to. Such documentation may include "information not available" where appropriate. In addition to utilizing the preset fields for information on the field work order form, the City shall document on that form any additional narrative information appropriate to fully document the nature of the SSO. The narrative field shall be used to document descriptive comments or summaries needed to elaborate on any preset field or otherwise account for information not captured by a preset field, *e.g.*, to provide a further description of an SSO categorized as "other."

b. The City shall maintain an electronic SSO tracking database that records and makes readily accessible the information recorded on the field work order form for each SSO. The City shall incorporate all information gathered on the field work order forms into the electronic SSO tracking database as soon as feasible and in any event no less often than once a month. The underlying data from any field work order form shall be inputted into the electronic SSO tracking database no later than sixty (60) Days following the form's creation.

24. SSO Reporting.

a. The City shall report to TCEQ as required under the City's TPDES Permits.

b. The City shall make available to EPA, upon request, a copy of any five-day reports or monthly compliance reports submitted to TCEQ under the City's TPDES permits. The City shall provide such reports to EPA no later than seven (7) Days after the date of receipt of EPA's request.

c. On a Calendar Year basis, Tyler shall compile copies of the monthly compliance reports submitted to TCEQ under the City's TPDES permits and submit these compiled reports to EPA as part of its Annual Report, as set forth in Paragraph 88 of this Consent Decree.

d. As part of the Quarterly Reports required to be submitted pursuant to Paragraph 87 of this Consent Decree, Tyler shall provide EPA and TCEQ, in either an electronic spreadsheet or other electronic compilation, the following information for each SSO:

i. the location of the SSO by street address, asset identification number or any other appropriate method (*e.g.*, by latitude and longitude);

ii. the name of the receiving water, if applicable (including via separate storm sewer);

iii. an estimate of the volume (in gallons) of sewage discharged and recovered;

iv. a description of the sewer system component from which the SSO was released (*e.g.*, manhole, Gravity Sewer Line, Lift Station wet well, Constructed SSO Location, etc.);

v. the cause(s) or suspected cause(s) of the SSO, if possible to identify;

vi. a description of the SSO's potential impact, if any, on public health and to

water quality in the receiving water body;

vii. a listing of any Repeat SSOs, including the date(s) of the Repeat SSOs;

viii. the estimated date and time when the SSO began and date and time when the SSO was stopped, or the anticipated time the SSO is expected to discontinue;

ix. all steps taken to respond to the SSO;

x. a corrective actions summary that describes steps taken to reduce, eliminate, and prevent reoccurrence of the SSO, including a summary of when such steps were taken or are planned; and

xi. a summary of all notifications to the public or other agencies or departments as required by law or regulation.

25. As part of the Annual Report required to be submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall also provide to EPA and TCEQ any information contained in Tyler's records regarding releases or backups of wastewater from Private Laterals that Tyler created (*e.g.*, customer complaints) during the applicable reporting period (even though Tyler is not required to create such records under the CWA,TWC, or this Consent Decree), including, if available, information specifying the location of the release or backup, the cause of the release or backup, and a description of how the release or backup was remedied.

26. Tyler shall maintain records of the Private Lateral reports described under Paragraph 25 for a period of not less than five (5) Years. Tyler shall maintain records of all other reports described by this Subsection Component, and records reflecting the actions that Tyler has taken and will take to prevent SSOs from recurring, including a timeframe for undertaking those steps, and any work orders or similar records associated with the investigation and/or repair of problems related to SSOs, as required by Section XIV ("RIGHT OF ENTRY AND

INFORMATION COLLECTION AND RETENTION").

27. On an annual basis, Tyler shall maintain an electronic list and description of complaints from customers or others regarding SSOs that occur within the Calendar Year. Tyler shall begin maintaining this list from the Effective Date through the end of that Calendar Year and thereafter shall maintain this list for each Calendar Year during the term of this Consent Decree and as required by Section XIV ("RIGHT OF ENTRY AND INFORMATION COLLECTION AND RETENTION").

4) <u>System-Wide Routine Cleaning Program</u>

28. Tyler shall supplement and enhance its existing WCTS cleaning practices to develop a System-Wide Routine Cleaning Program to include all Gravity Sewer Lines in the WCTS for regularly scheduled cleaning to prevent future SSOs. For the purposes of this Section, "cleaning" shall be defined as the physical removal from the WCTS of FOG, debris, roots and/or any other obstructions from the Gravity Sewer Lines.

29. As part of Tyler's System-Wide Routine Cleaning Program under this Section, Tyler shall:

a. clean each unique Sewer Segment in its WCTS with sizes less than twenty-four (24) inches in diameter not less frequently than once every seven (7) Calendar Years;

b. clean each unique Sewer Segment in its WCTS with sizes twenty-four (24) inches and larger in diameter not less frequently than once every ten (10) Calendar Years;

c. clean a minimum of one hundred (100) miles of Gravity Sewer Lines each Calendar Year (prorated for any partial Calendar Year after the Effective Date in which these requirements apply). To comply with this minimum 100 miles annual requirement, Tyler may additionally count each cleaning of a Sewer Segment cleaned under the High Frequency

Cleaning Program, pursuant to Paragraph 31, during the same Calendar Year or cleaned as part of the field investigation to confirm Potential Capacity Constraints, pursuant to Paragraph 52, during the same Calendar Year; and

d. maintain information on the nature of material removed from each Sewer Segment (*e.g.*, FOG, roots, debris) and develop and maintain a system to classify the amount of such material removed (*e.g.*, heavy, moderate, or minimal).

30. As part of the Annual Report submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall provide:

a. the total miles of unique Gravity Sewer Lines cleaned during the reporting period and Legible Map(s) depicting the locations of Sewer Segments that were so cleaned;

b. the total miles of Gravity Sewer Lines cleaned during the reporting period, including all lengths of Gravity Sewer Lines cleaned in accordance with the Revised High Frequency Cleaning Program described in Subsection Component 5) ("Revised High Frequency Cleaning Program"), to demonstrate that Tyler has cleaned a minimum of one hundred (100) miles of the total Gravity Sewer Lines in the WTCS; and

c. an identification of whether particular Sewer Segments were added or removed from the Revised High Frequency Cleaning Program described in Subsection Component 5), based upon information that Tyler gathered on the nature and classified amount of materials removed during the System-Wide Routine Cleaning program, pursuant to Paragraph 29.d.

5) <u>Revised High Frequency Cleaning Program</u>

31. Tyler shall further develop a high frequency cleaning program designed to proactively prevent recurring blockages in the WCTS, commonly referred to as a "hot spot cleaning," to the maximum extent feasible (the "Revised High Frequency Cleaning Program"). To develop this

Revised High Frequency Cleaning Program, Tyler shall utilize and refine its existing high frequency cleaning program, as set forth in Appendix C ("Existing High Frequency Cleaning Program") to further establish proactive cleaning schedules for those Sewer Segments that have experienced Repeat SSOs, or that are otherwise known by the City to be susceptible to FOG, roots and/or debris build-up, by requiring Tyler to more frequently clean or flush those Sewer Segments than other Sewer Segments in the WCTS.

32. The Revised High Frequency Cleaning Program shall:

a. include all Sewer Segments that have experienced Repeat SSOs and identify criteria for determining when high frequency cleaning is appropriate for Sewer Segments that have not experienced Repeat SSOs, such as an analysis of SSO history and related information, the review of CCTV findings, the results of previous sewer cleaning findings, and the results of City and NET Health inspections of FOG Generator facilities;

b. establish tiered categories of "hot spot" areas within the WCTS based on significance of SSOs, the similarity of the cause of SSOs, or other prioritization criteria;

c. recommend appropriate cleaning frequencies and cleaning methods for Sewer Segments in each of the tiered categories identified in Paragraph 31.b;

d. maintain a list of Sewer Segments subject to Tyler's Revised High Frequency Cleaning Program, identifying how often each Sewer Segment is cleaned; and

e. update the list of Sewer Segments subject to Tyler's Revised High Frequency Cleaning Program as necessary to prevent SSOs based on the criteria identified in Paragraph 32.a.

33. As part of the Annual Report submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall provide:

a. a list of Sewer Segments subject to the Revised High Frequency Cleaning Program during the reporting period, identifying how often each Sewer Segment was cleaned during the reporting period; and

b. Legible Map(s) depicting the locations of Sewer Segments subject to the Revised High Frequency Cleaning Program during the reporting period.

6) Sewer System Internal Inspection Program

34. Tyler shall develop an ongoing Sewer System Internal Inspection Program and shall implement such program following completion of the Condition Assessment required under Paragraph 58 of this Consent Decree. Under the Sewer System Internal Inspection Program, Tyler shall internally inspect its entire WCTS on a seven (7) Year cycle for Gravity Sewer Lines less than twenty-four (24) inches in diameter and a ten (10) Year cycle for Gravity Sewer Lines twenty-four (24) inches in diameter and larger following completion of the Gravity Sewer Line Assessment required under Paragraph 57 of this Consent Decree.

35. As part of the Sewer System Internal Inspection Program, Tyler shall, at a minimum:

a. inspect each Sewer Segment in accordance with the inspection methods required by the relevant Paragraphs of Subsection V.D ("CONDITION ASSESSMENT AND REMEDIAL MEASURES PROGRAM");

b. evaluate the condition of each Sewer Segment using the National Association of Sewer Service Companies ("NASSCO") Pipeline Assessment and Certification Program ("PACP") pipe condition rating system identified in Appendix D ("Gravity Sewer Line Condition Assessment and Remedial Measures Program");

c. document any observed deterioration and/or need for remediation;

d. utilize the inspection results from previous WCTS inspections, including Tyler's

performance of the Gravity Sewer Line Condition Assessment required by Paragraphs 57 and 58 of this Consent Decree, to identify and continue to monitor the condition of any assets previously rated A, B, or C to determine if additional deterioration has occurred. Assets found to have additional deterioration shall be re-rated using the rating system identified in Appendix D; and

e. retain all records of inspections conducted pursuant to this Paragraph for at least one inspection cycle.

7) <u>Sewer System Manhole Inspection Program</u>

36. Tyler shall develop an ongoing Sewer System Manhole Inspection program, and shall begin re-inspecting all manholes in the WCTS on the following continuous cycle after the completion of the Assessment of Manholes required under Paragraph 59: Tyler shall re-inspect all manholes on Gravity Sewer Lines less than twenty-four (24) inches in diameter on a seven (7) year cycle; and Tyler shall re-inspect all manholes on Gravity Sewer Lines twenty-four (24) inches in diameter or larger on a ten (10) year cycle. Such manhole inspections may be conducted concurrently with any Sewer Segment routine cleaning activity that occurs as part of Tyler's System-Wide Routine Cleaning Program, pursuant to Paragraph 28 of Subsection Component A.4) ("System-Wide Routine Cleaning Program").

37. As part of Tyler's Sewer System Manhole Inspection Program under this Section, Tyler shall:

a. inspect each manhole using appropriate methods, as identified in the relevant Paragraphs of Subsection V.D ("CONDITION ASSESSMENT AND REMEDIAL MEASURES PROGRAM");

b. evaluate the condition of and prioritize each manhole using the industry-accepted manhole condition rating system, identified in Appendix E ("Manhole Condition Assessment

and Remedial Measures Program");

c. document any observed deterioration and/or need for replacement;

d. utilize the inspection results from previous WCTS inspections, including Tyler's performance of the Manhole Condition Assessment required by Paragraphs 57 and 59 of this Consent Decree, to identify and continue to monitor the condition of any assets previously rated A, B, or C to determine if additional deterioration has occurred. Assets found to have additional deterioration shall be re-rated using the rating system identified in Appendix E; and

e. retain all records of inspections conducted pursuant to this Paragraph for at least two (2) inspection cycles.

8) Lift Station Preventive Maintenance Plan

38. Tyler shall develop a Preventive Maintenance Plan describing the routine inspection, testing and maintenance tasks, together with respective task schedules, required at each Lift Station in the WCTS to assure reliable operation of that Lift Station and to prevent SSOs. The Preventive Maintenance Plan required by this Paragraph shall also include supporting written Standard Operating Procedures ("SOPs") describing the inspection, testing and maintenance tasks to be performed. At a minimum, the Preventive Maintenance Plan and SOPs shall address the following topics:

a. periodic Lift Station inspections and daily site visits;

b. wet well cleaning;

c. pumping equipment periodic inspection, testing, and routine maintenance;

d. valve inspection, exercising, and routine maintenance;

e. electrical equipment periodic inspection, testing, and routine maintenance;

f. pump control equipment periodic inspection, testing, and routine maintenance,

including the inspection, cleaning and calibration of floats or other wet well level sensing equipment;

g. alarm/SCADA system functionality testing, and routine maintenance; and

h. alternate power system failure-response testing and routine maintenance, including generator and/or switchover equipment exercising as applicable.

9) Fats, Oils, and Grease (FOG) Control Program

39. Tyler shall develop a FOG Control Program either independently or in conjunction with the existing FOG monitoring program of NET-Health to minimize the discharge of FOG from FOG Generators in order to prevent FOG accumulations in the WCTS that result in blockages causing SSOs.

40. Tyler shall document, in writing, all elements of its FOG Control Program, as further set forth in this Paragraph. As part of its FOG Control Program, Tyler shall, at a minimum:

a. develop a comprehensive FOG control ordinance to provide legal authority to regulate and control the discharge of FOG into the WCTS. The FOG ordinance shall provide the legal authority to implement a permit and enforcement program for FOG Generators;

b. describe other programs within the City of Tyler, such as building codes and the regulatory authority of NET Health, that have complementary existing authority to regulate FOG and how those authorities will be integrated into the FOG Control Program;

c. promulgate any rules, regulations, policies, forms, or procedures necessary to implement the FOG Control Program required by this Subsection Component;

d. analyze and monitor FOG-related SSO occurrences, including but not limited to mapping the locations of SSOs caused by FOG, identifying sources of FOG in the WCTS, if possible, and creating a protocol to address these locations and sources through increased FOG

control inspections, enforcement against FOG Generators, public education, increased cleaning frequencies, and/or other proactive mechanisms;

e. maintain a list of all FOG Generators that includes a description of the FOG generating process and grease trap size, updated no less often than annually;

f. establish standards for the design and construction of FOG Control Devices constructed after the adoption of the standards including standards for capacity and accessibility, discharge standards and limitations, site maps, design documents and as-built drawings;

g. establish FOG Control Device management, operations, and maintenance best management practices that address onsite recordkeeping requirements, cleaning frequency, cleaning standards, use of additives, and ultimate disposal;

h. continue to utilize the NET-Health FOG disposal manifest system and refine the existing FOG disposal manifest system to conform to the City's FOG ordinance and ensure that the City maintains records of FOG-control device cleaning and the ultimate disposal of FOG;

i. establish staffing (technical and legal) and equipment requirements to ensure effective implementation of the FOG Control Program;

j. establish a FOG enforcement program, including specific enforcement mechanisms for noncompliant facilities, to ensure compliance with the FOG Control Program. As part of the Annual Report required in Paragraph 88 of this Consent Decree, Tyler shall report the number of enforcement actions initiated and/or concluded during the prior Calendar Year;

k. develop recordkeeping systems and procedures to track and identify, when possible, the source of all FOG-related SSOs, and FOG blockages;

l. coordinate information on FOG-related SSOs to FOG inspection staff to ensure effective implementation of the FOG Control Program;

m. establish construction inspection procedures, including scheduling, inspection report forms, and inspection recordkeeping requirements, to assure that FOG Control Devices constructed after the adoption of standards developed pursuant to this Paragraph are constructed in accordance with established design and construction standards;

n. establish compliance inspection procedures, including scheduling, inspection report forms, and inspection recordkeeping requirements, to assure that FOG Control Devices are being managed, operated, and maintained in accordance with the established management, operations, and maintenance standards;

o. develop a tiered compliance inspection frequency schedule that shall identify the number of regulated commercial FOG Generators in each tier and the frequency of inspection for each tier, including the rationale and explanation of the tier frequency schedule. All FOG Generators shall be inspected at least once annually. Certain FOG Generators shall be inspected more frequently if, due to non-compliance with City's Fog Control Program, more frequent inspections are necessary to prevent the occurrence of SSOs;

p. develop a compliance assistance program to help FOG Generators to comply with the FOG Control Program and to provide guidance and training for FOG Generators and their employees;

q. develop a written guide for both new and existing FOG Generators that identifies applicable City ordinances and regulations related to the installation, operation, and maintenance of FOG Control Devices;

r. continue a public education program concerning FOG for the purpose of reducing the amount of FOG entering the WCTS from private residences and refine such program to achieve a goal of increasing private residents' understanding of the measures they can take to

minimize the amount of FOG that enters the WCTS from their residences; and

s. establish performance indicators to be used to measure the effectiveness of the FOG Control Program and establish a periodic review in order to update the FOG Control Program as warranted.

10) Root Control Program

41. Tyler shall develop a Root Control Program to identify and control the intrusion of roots in the WCTS that contribute to SSOs.

42. Tyler shall document, in writing, all elements of its Root Control Program, as further set forth in this Paragraph. As part of its Root Control Program, Tyler shall, at a minimum:

a. describe how Tyler will proactively address Sewer Segments where roots have been identified to have caused or contributed to SSOs in the past and how Tyler will proactively address these areas through increased sewer main inspections, cleaning frequencies, cutting frequency, and/or other proactive mechanisms, such as chemical root control;

b. describe the staff, equipment, and procedures that will be used to identify Sewer Segments with significant root intrusion through sewer cleaning activities, CCTV inspection, and SSO response activities;

c. identify the staff, by job classification, and equipment (*i.e.*, chemicals used in chemical root control) that will be used to respond to root problems and prevent the reoccurrence of root growth;

d. describe root control activities performed in reaction to an SSO event; and

e. describe root control activities performed to prevent further recurrence of root blockages.

43. Reporting Root Control Activities. As part of each Annual Report submitted pursuant to

Paragraph 88 of this Consent Decree, Tyler shall report the total miles of Gravity Sewer Lines where both reactive and preventive root control activities were conducted during the applicable reporting period and particularly:

a. identify the Sewer Segments addressed and whether or not those Sewer Segments were previously identified by the analysis conducted under Subparagraph 40.d;

b. state whether chemical and/or mechanical means were used for root control; and

c. identify the degree to which each of these methods were employed on a percentage basis (*i.e.*, the respective percent (%) of total miles reported).

11) Information Management System

44. Tyler shall develop an updated Information Management System (including an Information Management Program and a Spatial Data Management System ("SDMS")), the requirements of which are set forth by this Subsection Component. Tyler shall describe its planned Information Management System in an Information Management System Development Plan that is included in the Final CMOM Program submitted to EPA and TCEQ for EPA review and approval pursuant to this Subsection V.A ("CMOM PROGRAM").

45. The Information Management System Development Plan shall describe the steps Tyler will take to fully develop and implement the Information Management System required by this Section with a proposed schedule for carrying out all planned steps no later than five (5) Years after the Effective Date. Tyler shall begin implementing the Information Management System Development Plan, according to the schedule set forth therein, upon EPA's approval of the Final CMOM Program.

46. Information Management Program. Tyler shall utilize its Information Management Program developed according to the schedule set forth under this Subsection Component to

maintain data on WCTS system assets and SSOs. The Information Management Program shall be capable of integrating specific asset and SSO data, including but not limited to:

a. Condition Assessment data as required by Subsection V.D ("CONDITION ASSESSMENT AND REMEDIAL MEASURES PROGRAM");

b. maintenance Records for each asset, including maintenance history, repair history, and the status of maintenance work to be implemented and completed under the Consent Decree;

c. SSO data as specified in Subsection Component A.3) ("SSO Reporting and Documentation Procedures") to evaluate and modify sewer system cleaning and inspection programs focused on the elimination of SSOs; and

d. spatial tracking tools, such as Geographic Information System ("GIS") or the functional equivalent.

47. Spatial Data Management System (SDMS). As part of its Information Management System, Tyler shall utilize an SDMS developed according to the schedule set forth under this Subsection Component to map its WCTS (*i.e.*, Geographic Information System or a functionally equivalent software suite). The SDMS must allow for the electronic entry and management of all WCTS components, including the following associated spatial data:

a. attribute data for Sewer Segments, including:

i. known or estimated date of installation;

ii. pipe length;

iii. inverts at manholes;

iv. slope;

v. diameter (or dimensions if not cylindrical);

vi. type (*e.g.*, gravity or pressure);

vii. material (if available);

viii. nominal capacity (*i.e.*, manning) design; and

ix. geographic location.

b. attribute data for structures including:

i. structure type (*e.g.*, siphon, manhole, junction box, Force Main, air relief valve);

ii. invert elevation;

iii. geographic location; and

iv. known or estimated date of installation.

48. Tyler shall use its best efforts to locate sewer components that cannot be located in the field. These efforts shall include the use of a Spatial Data Management System, as-built drawings, surveying and/or Global Positioning Systems, and sewer condition assessment data.

49. Routine Updates to Assets Included in Information Management Program and Spatial Data Management System. Pursuant to Paragraph 45 after the implementation schedule in the Information Management System Development Plan becomes fully incorporated into the Final CMOM Program (*i.e.*, upon EPA approval of the Final CMOM Program), Tyler shall begin making routine updates to the attribute data contained in its Information Management System to keep such data current. Specifically, Tyler shall update the WCTS attribute data maintained in the Information Management Program and/or Spatial Data Management System within ninety (90) Days of when Tyler becomes aware of, or otherwise receives reliable information indicating, that the attribute data included in its Information Management Program and/or Spatial Data Management System is incorrect. For purposes of this Paragraph, whenever Tyler completes any inspection, testing, condition assessment, or rehabilitation activity on a WCTS

component, Tyler receives reliable information about the attribute data included in its Information Management System.

B. UPDATING HYDRAULIC MODEL

50. Hydraulic Model Update. Within sixty (60) Days after the Effective Date, Tyler shall commence implementation of the hydraulic model update requirements set forth in Appendix F ("Hydraulic Model Update") and incorporated herein by reference, in order to update its existing SewerGEMS hydraulic model for the WCTS (SewerGems v.2.4.8). The updated hydraulic model shall be developed in accordance with the requirements of Appendices F and G ("Capacity Assessment and Remedial Measures Program"). The updated hydraulic model shall be completed within two (2) Years after the Effective Date. Within thirty (30) Days after completion of the updated hydraulic model, Tyler shall submit to EPA for review and comment, with a copy to TCEQ, pursuant to Section VI ("REVIEW AND IMPLEMENTATION OF DELIVERABLES"), a Hydraulic Model Update Summary that:

a. describes the hydraulic model, including the brand of model software and its capabilities;

b. provides Legible Map(s) and schematics that identify and characterize the portions of the WCTS included in the model; or, if Tyler cannot provide Legible Map(s), provides a tabular summary of the information organized by Sewer Segment and indexed by the asset ID numbers;

c. identifies the model's input parameters, constraints, assumed values and outputs; and

d. includes a written summary of activities undertaken to configure, calibrate, and verify the model, providing, as part of the summary, graphs, numerical comparisons, and/or other

data depicting the variation between modeled and measured peak wet-weather flow rates.

C. HYDRAULIC CAPACITY ASSESSMENT AND REMEDIAL MEASURES PROGRAM

51. Hydraulic Model Assessment of Potential Capacity Constraints. Tyler shall utilize its updated hydraulic model, developed pursuant to Subsection V.B of this Consent Decree ("UPDATING HYDRAULIC MODEL"), to determine whether the analyzed portions of its WCTS are predicted by the model to be adequately sized to transport the current peak dry-weather flows and peak wet-weather I/I generated by the "Assessment Storm" defined in Appendix G ("Capacity Assessment and Remedial Measures Program"). Tyler shall run the hydraulic model to identify Potential Capacity Constraints as set forth in Appendix G.

52. Field Investigation to Confirm Potential Capacity Constraints. Within forty-two (42) Months after the Effective Date, the City shall complete appropriate field investigations, pursuant to Appendix G ("Capacity Assessment and Remedial Measures Program"). The City shall select the appropriate field investigation to be performed for each Potential Capacity Constraint based on the available information and in accordance with the process described in Appendix G and incorporated herein by reference.

53. Capacity Assessment Report. Within forty-two (42) Months after the Effective Date, Tyler shall develop and submit to EPA and TCEQ a Capacity Assessment Report, pursuant to Section IX ("REPORTING REQUIREMENTS") of this Consent Decree, that documents and describes any refinement(s) to the following that have occurred since the submission of the Hydraulic Model Update Summary required by Paragraph 50: the model updating process, the flow metering and rainfall monitoring program, and/or model calibration/verification. The Capacity Assessment Report shall also document and describe field investigations of Potential

Capacity Constraints. This Capacity Assessment Report shall identify those elements of the WCTS predicted by the model to be Potential Capacity Constraints and determined by field investigation to be Confirmed Capacity Constraints. The Capacity Assessment Report shall include:

a. Legible Map(s) and schematics depicting the locations of Potential Capacity Constraints during current peak dry-weather flows and the Assessment Storm defined in Paragraph 51;

b. a list identifying model-predicted Potential Capacity Constraints by asset identification number; and

c. a summary of the field investigation information for any Potential Capacity Constraint that was not a Confirmed Capacity Constraint.

54. Capacity Remedial Measures Plan. Tyler shall prepare a Capacity Remedial Measures Plan for Confirmed Capacity Constraints. The Capacity Remedial Measures Plan shall be submitted to EPA for review and approval, with a copy to TCEQ, within forty–two (42) Months after the Effective Date. The Capacity Remedial Measures Plan shall identify the capacity remedial measures projects designed to eliminate Confirmed Capacity Constraints. For each capacity remedial measures project identified in the Capacity Remedial Measures Plan, Tyler shall include: the project name; the existing Gravity Sewer Line or other facility that will be remediated by the remedial measures; and pertinent design information for that planned capacity improvement. For parallel Gravity Sewer Lines or replacement Gravity Sewer Lines, the Capacity Remedial Measures Plan shall also list the pipe size, pipe length, and the hydraulic design criteria utilized for sizing, including the maximum percentage-full allowed in each Pipe Segment during the Assessment Storm. In designing such Pipe Segments, the City of Tyler shall

comply with TCEQ Chapter 217 Design Criteria for Sewerage System. At a minimum, all improvements shall be sized to accommodate peak wet-weather I/I generated by the Assessment Storm (defined in Appendix G ("Capacity Assessment and Remediation Program")) and peak dry-weather flows generated by projected population growth through 2035. Where the hydraulic model recommends a nominal pipe size that would be at or greater than ninety-five percent (95%) of capacity during the Assessment Storm event, the City shall upsize the pipe to the next larger nominal pipe size.

55. The Capacity Remedial Measures Plan shall include a schedule for completing the capacity remedial measures identified therein, such that all work is scheduled for completion within ten (10) Years after the Effective Date. Tyler shall prioritize the implementation of the identified remedial measures based upon the risk and consequences of SSOs that could occur from the asset or group of assets in the Tyler WCTS found to be deficient in capacity. All Capacity Remedial Measures identified in the plan shall be completed no later than ten (10) Years from the Effective Date.

56. Reporting Completion of Annual Capacity Remedial Measures. As part of the Annual Report submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall provide a tabular summary of all capacity remedial measures projects identified and scheduled in the Capacity Remedial Measures Plan, pursuant to Paragraphs 54 and 55, that were completed in the applicable reporting period. The summary shall identify each project by name, completion date, and shall provide the following remediation figures: miles of Gravity Sewer Lines addressed, number of Force Mains upgraded for capacity improvements, and number of Lift Stations upgraded for capacity improvements. The tabular summary required by this Paragraph shall also attach a Legible Map identifying the Force Mains, Lift Stations and Sewer Segments that were

remediated.

D. CONDITION ASSESSMENT AND REMEDIAL MEASURES PROGRAM

57. Condition Assessment. Tyler shall conduct a system-wide inspection and assessment of the structural condition of all Gravity Sewer Lines and manholes in its WCTS by implementing the Condition Assessment requirements of Paragraphs 58-60 and the associated remedial measures requirements of Paragraphs 61-63.

58. Assessment of Gravity Sewer Lines. According to Tyler, the WCTS includes a total of approximately six hundred (600) miles of Gravity Sewer Lines. Tyler shall perform a Condition Assessment on the entire length of the Gravity Sewer Lines in the WCTS within eight (8) Years after the Effective Date in accordance with the following requirements of this Paragraph:

a. Tyler shall assess Sewer Segments utilizing the NASSCO PACP pipe condition rating system identified in Appendix D ("Gravity Sewer Line Condition Assessment and Remedial Measures Program");

b. Tyler shall annually conduct internal visual assessments of no less than seventy-five (75) miles of the Gravity Sewer Lines in the WCTS, of which a minimum of fifty (50) miles must be assessed using CCTV, until all 600 miles of the Gravity Sewer Lines are assessed. The remaining miles may be assessed using other internal assessment methods such as smoke-testing, pole-camera and dyed-water testing. All non-plastic Gravity Sewer Lines shall be assessed using CCTV. For the period between the Effective Date and the last Day of the first Calendar Year following the Effective Date, Tyler may prorate these mileage requirements at a rate of 0.205 miles per Day. After all 600 miles of the Gravity Sewer Lines are assessed pursuant to this Section, Tyler shall commence implementation of the Sewer System Internal Inspection in the City's Final CMOM Program pursuant to Subsection Component V.A.6) ("Sewer System

Internal Inspection Program") of this Consent Decree;

c. for Sewer Segments previously inspected by CCTV on or after January 1, 2011, and for which Tyler has retained the CCTV video footage of such inspection(s), Tyler may review CCTV video footage of the Sewer Segments and assess the condition of those Sewer Segments by utilizing the pipe condition rating system identified in Subparagraph 58.a;

d. when prioritizing Sewer Segments for assessment and more specifically for CCTV, Tyler shall select those Sewer Segments based upon factors including, but not limited to, pipe age and materials, analysis of past SSO frequency and volumes, proximity of sewer pipes to surface waters, or other appropriate factors. Tyler shall not use the inspection of any Sewer Segments installed after the Effective Date to fulfill the minimum annual inspection requirement of seventy-five (75) miles, nor shall Sewer Segments installed after the Effective Date be included in the requirement of Paragraph 58 that Tyler perform a Condition Assessment of the entire length of its Gravity Sewer Lines in the WCTS within eight (8) Years after the Effective Date.

59. Assessment of Manholes. Tyler shall conduct a system-wide assessment of all manholes in the WCTS within five (5) Years of the Effective Date. Tyler shall evaluate the condition of the manholes utilizing the rating system identified in Appendix E ("Manhole Condition Assessment and Remedial Measures Program").

60. Reporting and SDMS Integration.

a. Reporting Completion of Condition Assessment Activities. As part of the Annual Report submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall provide the following information about the Condition Assessment activities completed pursuant to Paragraphs 57-59 in the applicable reporting period:

i. the total miles of Gravity Sewer Lines assessed;

ii. the total miles of Gravity Sewer Lines inspected by CCTV and the total miles of Gravity Sewer Lines inspected by other internal inspection methods;

iii. the total number of manholes assessed;

iv. the NASSCO PACP and manhole rating scores for all Sewer Segments and all manholes assessed, pursuant to Appendices D ("Gravity Sewer Line Condition Assessment and Remedial Measures Program") and E ("Manhole Condition Assessment and Remedial Measures Program"), respectively, in the applicable reporting period;

v. Legible Map(s) of the condition assessment results, depicting the location of each asset and the condition assessment result; and

vi. the number of Sewer Segments and/or manholes condition-rated as Category E or D by the NASSCO PACP and manhole rating systems set forth in Appendices D and E, respectively, or otherwise found to have defects that warrant remedial measures, which are designated for remediation as part of the associated Annual Condition Remedial Measures Plan (pursuant to Paragraph 61) for the reporting period;

b. Integration into Spatial Data Management System. Tyler shall import the results of its annual Condition Assessment activities into Tyler's SDMS, described more fully in Subsection Component V.A.11) ("Information Management System"), to, at a minimum, record for each associated asset the objective numeric rating given to the asset and the date it was assessed.

61. Annual Condition Remedial Measures Plans. For each Year that Tyler completes

Condition Assessment activities pursuant to Paragraphs 57-59, Tyler shall subsequently submit to EPA for review and approval, with a copy to TCEQ, an Annual Condition Remedial Measures Plan no later than July 1st of each Year following the completion of the previous Year's Condition Assessment. Each Annual Condition Remedial Measures Plan shall be based upon the results of the associated Condition Assessment activities conducted for the previous Year. Each Annual Condition Remedial Measures Plan shall specifically identify how Tyler shall remediate all Sewer Segments and/or manholes condition-rated as Category E or D by the NASSCO PACP and manhole rating systems set forth in Appendices D ("Gravity Sewer Line Condition Assessment and Remedial Measures Program") and E ("Manhole Condition Assessment and Remedial Measures Program"), respectively, and other defects that warrant remedial measures.

62. Completion of Work in Remedial Measures Plans. Subject to the overall limitation set forth in this Paragraph, the work in each Annual Condition Remedial Measures Plan shall be completed no later than three (3) Years from the date that Tyler submits to EPA and TCEQ the Annual Report that identifies the defect(s) designated for remediation, pursuant to Paragraph 60.a.vi. Provided however, in any Year during the first three (3) Years after the Effective Date in which Tyler's Remedial Measures Plan for manholes is based on an assessment of more than thirty percent (30%) of the 8,241 manholes in Tyler's WCTS (as of the Date of Lodging), Tyler shall be allowed an extension of up to four (4) Years to complete the work in its associated Condition Remedial Measures plan for such manholes. Notwithstanding these individual completion timeframes, Tyler shall complete all Condition Remedial Measures required under this Consent Decree no later than ten (10) years from the Effective Date. Thus, if Tyler utilizes the entire eight (8) Years to complete the Condition Assessment of the Gravity Sewer Lines, pursuant to Paragraph 58, Tyler shall complete all associated remedial measures included in its

final Annual Condition Remedial Measures Plan no later than two (2) Years from the completion of the Condition Assessment.

63. Reporting Completion of Annual Remedial Measures. As part of the Annual Report submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall provide a tabular summary of all condition remedial measures work identified and scheduled in the Remedial Measures Plan, pursuant to Paragraphs 61 and 62, that were completed in the applicable reporting period. The summary shall identify each completed remedial measure by name, completion date and shall provide the following remediation figures: miles of Gravity Sewer Lines and number of manholes remediated. The tabular summary required by this Paragraph shall also attach a Legible Map identifying the manholes and Sewer Segments that were remediated.

E. LIFT STATION CONDITION/CAPACITY EVALUATION AND IMPROVEMENT PROGRAM

64. No later than the Effective Date, all Lift Stations in the WCTS shall have backup power sources on site or have access to a portable standby generator, portable pumps or vactor trucks (collectively "Lift Station Alternate Power Systems"). Tyler shall at all times maintain these backup power sources for the Lift Stations.

65. Within one (1) Year of the Effective Date, Tyler shall assess the physical and operational condition of each of the Lift Stations in its WCTS to identify deficiencies that caused or contributed to the occurrence of past SSOs or that may cause or contribute to future SSOs. At a minimum, this assessment shall include for each Lift Station:

a. a visual inspection and written documentation of the condition of the Lift Station structure, including the wet well;

b. a visual inspection and written documentation of the condition of the Lift Station equipment, including pumps, motors, valves, electrical system, pump control system, and Lift Station alarm/SCADA system;

c. operational testing and written documentation of results of pumps, motors, valves, pump controls and alarm/SCADA system;

d. a determination of the actual maximum discharge capacity of the Lift Station with the largest pump out of service (firm pumping capacity) utilizing field measurement such as flow metering, wet well drawdown testing, or other sound engineering practice; and

e. determination of whether adequate backup power is available to prevent an SSO, including power failure response testing and written documentation of results of the Lift Station Alternate Power System.

66. Lift Station Assessment Report. Within eighteen (18) Months of the Effective Date, Tyler shall submit to EPA and TCEQ a Lift Station Assessment Report, pursuant to Section IX ("REPORTING REQUIREMENTS") of this Consent Decree, sealed by a registered professional engineer licensed to practice in Texas that presents the findings of Tyler's Lift Station assessments pursuant to Paragraph 65. This Lift Station Assessment Report shall be submitted concurrently with the Lift Station Improvement Plan required under Paragraph 67. At a minimum, this Report shall include a narrative describing the physical and operational condition of each Lift Station, supported by the logs, inspection reports, photographs, data, calculations, and other pertinent documentation collected by Tyler.

67. Lift Station Improvement Plan. Tyler shall prepare a Lift Station Improvement Plan based on the findings of Tyler's Lift Station assessments conducted pursuant to Paragraph 65, and shall, at a minimum, list the improvements required at each Lift Station to prevent future

SSOs, such as, but not limited to: structural repairs, pumping equipment reconditioning/replacement, valve/piping reconditioning/replacement, electrical system reconditioning/replacement, alarm/SCADA system enhancements, backup power system installation or enhancements, and related improvements; and the schedule for completing those improvements. The Lift Station Improvement Plan shall also set forth a proposed time frame for the completion of all listed improvements. Tyler shall submit its Lift Station Improvement Plan to EPA, with a copy to TCEQ, for review and approval by EPA concurrently with the Lift Station Assessment Report required by Paragraph 66.

68. All Lift Station improvements pursuant to the Lift Station Improvement Plan required under Paragraph 67 shall be completed as rapidly as feasible and not later than five (5) Years after the Effective Date. The completion of improvements shall be prioritized based upon the risk of failure and the consequence of failure of the Lift Station.

69. Reporting Completion of Annual Lift Station Remedial Measures. As part of the Annual Report submitted pursuant to Paragraph 88 of this Consent Decree, Tyler shall provide a list that identifies by name and completion date all Lift Station improvements scheduled in the Lift Station Improvement Plan, pursuant to Paragraphs 67 and 68, that were completed in the applicable reporting period.

F. FORCE MAIN ASSESSMENT AND REMEDIAL MEASURES PROGRAM

70. Tyler shall conduct an assessment of its Force Mains over a period not exceeding one (1) Year after the Effective Date of this Consent Decree.

71. During the assessment, Tyler shall prepare an inventory listing each Force Main in the WCTS indicating the associated Force Main construction material, known or estimated installation date, diameter, length, special corrosion protection measures, if any, such as

sacrificial anodes or impressed current, average daily dry-weather flow rate and peak flow rate at a maximum Lift Station discharge capacity. The inventory shall include any redundant or standby Force Mains and indicate the carrying capacity of the redundant Force Main (as a percentage of the Lift Station discharge) and the typical operating mode (*i.e.*, emergency standby, wet-weather standby, or other mode). Additionally, during the assessment, Tyler shall identify Force Main defects, including Force Mains in need of repair or other remedial measures.

72. Tyler shall assess each Force Main in the inventory by reviewing past maintenance records, physically examining the air release valves, and visually inspecting the ground surface over the entire length of the Force Main, to the extent practicable.

73. Force Main Remedial Measures. If any defects are found during the assessment of Force Mains required under this Section, Tyler shall repair the defects to prevent the occurrence of SSOs as soon as feasible, and in any event no later than three (3) years from the date Tyler submits the Force Main Assessment Program Report required under Paragraph 74.

74. Force Main Assessment Program Report. Within eighteen (18) Months after the Effective Date, Tyler shall submit to EPA and TCEQ a Force Main Assessment Program Report, pursuant to Section IX ("REPORTING REQUIREMENTS") of this Consent Decree, that summarizes Force Main assessment and inventory activities performed pursuant to this Section and identifies and describes any Force Main defects found during the assessment. Additionally, as part of the Annual Report submitted pursuant to Paragraph 88, Tyler shall provide a tabular summary of all Force Main Remedial Measures identified and scheduled pursuant to Paragraph 73, that were completed in the applicable reporting period or that were completed in response to any Force Main failure during the applicable reporting period. The summary shall identify each remedial measure by name, provide the completion date, and shall indicate whether it was

scheduled for in the Force Main Assessment Program Report or completed in response to a Force Main failure during the applicable reporting period.

G. ELIMINATION OF CONSTRUCTED SSO LOCATIONS

75. Identification of Additional Constructed SSO Locations. As part of Tyler's performance of the WCTS assessment or cleaning activities required under this Consent Decree, Tyler shall inspect all WCTS assets for the presence of additional Constructed SSO Locations beyond those listed in Appendix H ("Historic Constructed SSO Locations and Inspection Results"). If Tyler discovers or is notified of additional Constructed SSO Location(s) not included in Appendix H at any time before Tyler satisfies the requirements of Subsection D ("CONDITION ASSESSMENT AND REMEDIAL MEASURES PROGRAM"), of Section V ("COMPLIANCE REQUIREMENTS") of this Consent Decree, Tyler shall report such location(s) in writing to the United States and Texas by submitting an Additional Constructed SSO Locations Report, pursuant to Section IX ("REPORTING REQUIREMENTS") of this Consent Decree, no later than two (2) business days after Tyler discovers or is notified of the additional Constructed SSO Location(s). In any such Additional Constructed SSO Locations Report, Tyler shall provide:

a. the geographic location of each Constructed SSO Location;

b. a description of the nature of each Constructed SSO Location;

c. the date of discovery of each Constructed SSO Location; and

d. accompanying photographic documentation of the each Constructed SSO Location.

76. Removal of Identified Additional Constructed SSO Locations. Within thirty (30) Days after submitting an Additional Constructed SSO Locations Report to the United States and Texas, pursuant to Paragraph 75, Tyler shall take all necessary measures to permanently remove

the identified additional Constructed SSO Locations from service. Within seven (7) Days after completing removal of the Constructed SSO Location, Tyler shall submit a Removal of Additional Constructed SSO Locations Report to the United States and Texas pursuant to Section IX ("REPORTING REQUIREMENTS") of this Consent Decree. Each Removal of Additional Constructed SSO Locations Report shall cross-reference the related Additional Constructed SSO Locations Report previously submitted to the United States and Texas, pursuant to Paragraph 75, and shall provide:

a. a listing of the remedial measures taken by Tyler to remove the Constructed SSO Locations;

b. the date that the Constructed SSO Location was permanently removed; and

c. photographic documentation of all remedial measures taken on the Constructed SSO Location.

77. Annual Report. Tyler shall provide, as part of the Annual Report submitted pursuant to Paragraph 88 of this Consent Decree, a summary listing of all identified Constructed SSO Locations discovered during the applicable reporting period.

VI. REVIEW AND IMPLEMENTATION OF DELIVERABLES

78. For all Deliverables required under this Consent Decree, Tyler shall submit the Deliverable to the attention of the designated recipient(s) in compliance with the certification requirements of Section X ("CERTIFICATION") of this Consent Decree. For any Deliverables due to EPA under this Consent Decree, Tyler shall concurrently provide a copy of the Deliverable to TCEQ at the time that such Deliverable is submitted to EPA. EPA shall use its best efforts to expeditiously review and approve or review and comment, as appropriate, on each Deliverable.

79. Deliverables Submitted for EPA Approval. The terms of this Paragraph apply to all Deliverables that are required to be submitted to EPA for review and approval (as opposed to EPA review and/or comment) under this Consent Decree.

a. EPA Action on Deliverables Submitted for Approval. EPA shall review any Deliverable submitted to EPA for review and approval and shall, after providing TCEQ with a reasonable opportunity for consultation, take one of the following actions, in writing with notice to Tyler:

i. wholly approve the submittal;

ii. wholly disapprove the submittal, explaining the reason(s) for disapproval by describing how the Deliverable does not meet the requirements of the Consent Decree;

iii. approve the submittal in part and disapprove the remainder, explaining the reason(s) for the partial disapproval by describing how any disapproved portion does not meet the requirements of the Consent Decree; or,

iv. conditionally approve the submittal, in whole or in part, setting forth specified conditions that direct how the submittal must be modified, in whole or in part, to comport with the conditional approval; in the event that EPA grants a conditional approval only in part, it shall explain the reason(s) for the partial disapproval by describing how any disapproved portion does not meet the requirements of the Consent Decree.

b. Implementation of Approved Deliverables. If a Deliverable is approved by EPA pursuant to Subparagraph 79.a.i, Tyler shall immediately take all actions to implement the Deliverable in accordance with the schedules and requirements of the Deliverable, as approved,

and this Consent Decree. If the Deliverable is approved only in part, pursuant to Subparagraph 79.a.iii, or conditionally approved, pursuant to Subparagraph 79.a.iv, Tyler shall, upon receipt of written direction from EPA pursuant to Subparagraph 79.a, take all actions required by the approved Deliverable that EPA determines are technically severable from any disapproved portions, subject to Tyler's right to dispute only the specified conditions or the disapproved portions under Section XIII ("DISPUTE RESOLUTION") of this Consent Decree or the determination that the portions are technically severable. Following EPA approval of any Deliverable or portion thereof, such Deliverable or portion thereof as approved shall be incorporated into and become enforceable under this Consent Decree. Implementation of any non-deficient portion of a submittal shall not relieve Tyler of any liability for stipulated penalties for any deficient portion of the submittal.

c. Disapproved Deliverables. If a Deliverable is disapproved by EPA in whole or in part pursuant to Subparagraph 79.a.ii or a.iii, respectively, Tyler shall, subject to Tyler's right to invoke Dispute Resolution under Section XIII ("DISPUTE RESOLUTION") of this Consent Decree, correct all deficiencies indicated by EPA or otherwise revealed and resubmit the Deliverable, or disapproved portion thereof, for EPA approval no later than thirty three (33) Days after the date of EPA's notice of EPA's disapproval, pursuant to this Paragraph, or such other time as EPA, after providing TCEQ with a reasonable opportunity for consultation, and Tyler agree to in writing. If the resubmission is approved in whole or in part, Tyler shall proceed in accordance with Subparagraph 79.b.

d. Resubmitted Deliverables. If a Deliverable, or portion thereof, is resubmitted to EPA pursuant to Subparagraph 79.c, and the resubmitted Deliverable is further disapproved in whole or in part due to a defect previously identified and not corrected, Tyler shall be deemed to

have failed to submit such resubmittal timely and adequately unless Tyler invokes Dispute Resolution under Section XI ("DISPUTE RESOLUTION") of this Consent Decree and EPA either agrees to modify its earlier position or the Court fails to adopt EPA's position. Further, for any Deliverable, or portion thereof, that Tyler resubmits to EPA pursuant to Subparagraph 79.c, EPA may take the following actions on any resubmitted Deliverable in writing with notice to Tyler, after providing TCEQ with a reasonable opportunity for consultation:

i. wholly approve the submittal;

ii. again require Tyler to correct any deficiencies with the Deliverable, in accordance with Subparagraph 79.c, subject to Tyler's right to invoke Dispute Resolution under Section XI of this Consent Decree and the right of EPA and/or TCEQ to seek stipulated penalties as set forth in Paragraph 81; or,

iii. itself correct any deficiencies with the resubmitted Deliverable by modifying or developing any disapproved or conditioned portion, explaining how the correction meets the requirements of the Consent Decree. Upon EPA's correction of any such deficiencies, the resubmitted Deliverable, or portion thereof, shall be incorporated into and become enforceable under this Consent Decree, and Tyler shall take all actions to immediately implement the EPA-corrected Deliverable in accordance with the schedules and/or terms of the Deliverable as approved, subject to Tyler's right to invoke Dispute Resolution under Section XI of this Consent Decree and the right of EPA and/or TCEQ to seek stipulated penalties as set forth in Paragraph 81.

80. Deliverables Submitted for EPA Review and Comment. The terms of this Paragraph apply to all Deliverables that are required to be submitted to EPA for review and comment (as

opposed to EPA review and approval) under this Consent Decree.

a. EPA Action on Deliverables Submitted for Review and Comment. EPA shall review any Deliverable submitted to EPA for review and comment under this Consent Decree, and EPA may elect to provide written comments on the Deliverable. Tyler is required to consider any comments so provided by EPA. If EPA provides written comments identifying deficiencies in the submitted Deliverable and explaining how the Deliverable does not meet the requirements of the Consent Decree, and requests that Tyler respond to those comments, Tyler shall provide a written response to EPA within thirty three (33) Days after the date of notice of EPA's written comments and, if so requested by EPA, shall resubmit the Deliverable at the same time Tyler provides its written response in a manner that addresses EPA's comments, subject to Tyler's right to invoke Dispute Resolution under Section XIII ("DISPUTE RESOLUTION") of the Consent Decree. If Tyler fails substantively to address EPA's comments or resubmit the Deliverable when resubmission is requested by EPA, such failure is subject to the accrual of Stipulated Penalties as set forth in Paragraph 81. If Tyler invokes Dispute Resolution as provided in this Paragraph, stipulated penalties become due only as set forth in Section XIII.

b. Implementation. Immediately upon submitting any Deliverable to EPA pursuant to this Paragraph, Tyler shall take all actions to implement the Deliverable in accordance with the schedules and requirements of the Deliverable, as submitted to EPA, and this Consent Decree.

81. Accrual of Stipulated Penalties Applicable to Untimely Submissions of Deliverables. Any stipulated penalties applicable to the original Deliverable, as provided in Section XI ("STIPULATED PENALTIES") of this Consent Decree, shall begin to accrue on the date the original Deliverable is due, but shall not be payable unless the resubmitted Deliverable is

untimely or is disapproved in whole or in part; provided that, if EPA notifies Tyler in EPA's response to the original submission that it was so deficient as to constitute a material breach of Tyler's obligations under this Consent Decree, the stipulated penalties applicable to the original submission shall be due and payable notwithstanding any further resubmission(s) subject to Tyler's right to invoke Dispute Resolution under Section XIII ("DISPUTE RESOLUTION") of the Consent Decree.

VII. CIVIL PENALTY

82. Tyler shall pay a total civil penalty of $563,000.00 with fifty percent (50%) of such penalty, $281,500.00, payable to the United States and the remaining 50%, $281,500.00, payable to Texas as set forth in Paragraphs 83 and 84.

83. Within sixty (60) Days after the Effective Date of this Consent Decree, Tyler shall pay to the United States $281,500.00 of the civil penalty due by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice in accordance with written instructions that shall be provided by notice to Tyler following lodging of the Consent Decree by the Financial Litigation Office of the U.S. Attorney's Office for the Eastern District of Texas. At the time of payment, Tyler shall send a copy of the EFT authorization form and the EFT transaction record, together with a transmittal letter, which shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in *United States et al. v. City of Tyler*, and shall reference the civil action number and DOJ case number 90-5-1-1-09767, by notice to the United States and by email to acctsreceivable.CINWD@epa.gov; and by mail to:

EPA Cincinnati Finance Office
26 Martin Luther King Drive
Cincinnati, Ohio 45268

In the event that full cash payment to the United States is not made within 60 Days after

the Effective Date of this Consent Decree, Tyler shall pay to the United States interest on the balance due from the original due date to the date of full payment, at the rate calculated pursuant to 28 U.S.C. § 1961.

84. Within sixty (60) Days after the Effective Date of this Consent Decree, Tyler shall make payments directed to Texas by Paragraphs 82 and 85 of this Consent Decree as follows: Tyler shall pay Texas by wire transfer to the Texas Comptroller of Public Accounts – Federal Reserve Clearing Account for the Office of the Attorney General:

Financial Institution (short name):	TX COMP AUSTIN
Routing Number:	114900164
Account Name:	Comptroller of Public Accounts Treasury Operations
Account Number to Credit:	463600001
Reference:	[Remitter's Name], AG Case # CX9629116377, Priscilla M. Hubenak, Chief, Environmental Protection Division
Attention	Office of the Attorney General, Kristy Lerma, Financial: Rptg

At the time of payment, Tyler shall send by notice to Texas a copy of the wire transfer authorization form and the wire transaction record, together with a transmittal letter, which shall state that the payment is for the Civil Penalty and Attorney's Fees owed pursuant to the Consent Decree in the *United States et. al v. City of Tyler*, and shall reference the civil action number and Reference: AG # CX9629116377.

VIII. ATTORNEY'S FEES

85. Tyler shall pay Texas $30,000 in attorney's fees. Tyler shall make full payment of this amount in accordance with Paragraph 84 of this Consent Decree.

IX. REPORTING REQUIREMENTS

86. Tyler shall submit any report required by this Consent Decree, including but not limited to the Quarterly Reports required by Paragraph 87 and the Annual Reports required by Paragraph 88, concurrently to EPA and TCEQ on the date such report is due.

87. Quarterly Reports.

a. For each Calendar Year after the Effective Date and until termination of this Consent Decree, Tyler shall submit to EPA and TCEQ four (4) distinct Quarterly Reports containing the information required by Subparagraph 87.b for each of the following three (3) Month quarterly reporting periods within any Calendar Year: January 1st through March 31st (Quarter 1); April 1st through June 30th (Quarter 2); July 1st through September 30th (Quarter 3); and October 1st through December 31st (Quarter 4). Each Quarterly Report shall be due no later than one (1) Month after the expiration of the applicable quarter period and shall provide information for the entire reporting period. For the first Quarterly Report after the Effective Date only, the applicable reporting period shall be that portion of the applicable quarter between the Effective Date and the end of that quarter. For the first Calendar Year after the Effective Date only, Tyler shall only submit Quarterly Reports for the quarters that occur between the Effective Date and the end of the Calendar Year.

b. In each Quarterly Report, Tyler shall report all SSOs occurring during the applicable quarter period and provide for each SSO all information required by Subparagraph 24.d of this Consent Decree.

88. Annual Reports. For each Calendar Year after the Effective Date and until termination of this Consent Decree, Tyler shall submit to EPA and TCEQ Annual Reports. Each Annual Report shall be due no later than March 1st of each Calendar Year after the Effective Date and

shall provide information for the entire applicable reporting period. For the first Annual Report, the applicable reporting period shall be that portion of the Calendar Year between the Effective Date and the end of the Calendar Year. For each subsequent Annual Report, the applicable reporting period shall be the full preceding Calendar Year. At a minimum, and in addition to the reporting requirements set forth in Section V ("COMPLIANCE REQUIREMENTS") and any other reporting requirement set forth elsewhere in this Consent Decree for inclusion in an Annual Report, each Annual Report shall include:

a. a summary of the CMOM Program elements implemented or modified pursuant to this Consent Decree, including a comparison of actual performance with any performance measures that have been established;

b. a trends analysis of the number, volume, duration, and cause of Tyler's SSOs for a twenty-four (24) Month period updated to reflect the SSOs that occurred during the previous twelve (12) Month period. For reporting trends and other SSO data, Tyler shall provide the information in such format as it deems appropriate;

c. a compilation of all Quarterly Reports submitted pursuant to Paragraph 87 during the applicable reporting period;

89. All reports shall be submitted to the persons designated in Section XVII of this Consent Decree ("NOTICES") for EPA and TCEQ and shall be certified pursuant to Section X of this Consent Decree ("CERTIFICATION"). The certification requirement in Section X does not apply to emergency or similar notifications where compliance would be impractical.

90. Compliance with this Section does not relieve Tyler of any other reporting obligations required by the CWA, the TWC, or any implementing regulations promulgated thereunder, or by any other federal, state, or local law, regulation, permit, or other requirement, including the

City's TPDES Permits.

91. Notification to EPA or TCEQ pursuant to this Section of an anticipated delay shall not by itself excuse the delay or otherwise satisfy the notification requirements set forth in Section XII ("FORCE MAJEURE").

92. Any information provided pursuant to this Consent Decree may be used by the United States and/or Texas in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

X. CERTIFICATION

93. In all Deliverables, notices, documents, reports, or self-certifications submitted to the United States and Texas pursuant to this Consent Decree, Tyler shall, by a Tyler senior management official, sign and certify such notices, documents and reports as follows:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

XI. STIPULATED PENALTIES

94. Tyler shall be liable for stipulated penalties to the United States and Texas for violations of this Consent Decree as specified in this Section. A violation includes failing to perform any obligation required by the terms of this Consent Decree, including any work plan or schedule approved under this Consent Decree, according to all applicable requirements of this Consent Decree and within the specified time schedules established by or approved under this Consent Decree. Stipulated penalties for which a demand has been made under this Section shall be paid

unless excused under Section XII ("FORCE MAJEURE"), or otherwise determined not to be due and owing under the terms of this Section.

95. Delay in Payment of Civil Penalty. If Tyler fails to pay the civil penalty required under Section VII of this Consent Decree ("CIVIL PENALTY") when due, Tyler shall be liable to pay the United States and Texas a Stipulated Penalty of $2,000 for each day that Tyler is late in paying the penalty.

96. SSOs that Reach Waters of the United States or Waters in the State of Texas. Tyler shall be liable to pay the United States and Texas a Stipulated Penalty for each SSO that reaches waters of the United States or Waters in the State of Texas. The Stipulated Penalties required under this Paragraph shall be as follows:

Period of Noncompliance:	Penalty Per Deliverable Per Day:
Within four (4) Years of Effective Date	$500
Between 4 and seven (7) Years of Effective Date	$1,500
More than 7 Years from Effective Date	$3,000

97. SSOs that Do Not Reach Waters of the United States or Waters in the State of Texas. Tyler shall be liable to pay the United States and Texas a Stipulated Penalty for each SSO that does not reach waters of the United States or Waters in the State of Texas. The Stipulated Penalties required under this Paragraph shall be as follows :

Period of Noncompliance:	Penalty Per Deliverable Per Day:
Within four (4) Years of Effective Date	$350
Between 4 and seven (7) Years of Effective Date	$750
More than 7 Years from Effective Date	$1,500

98. Failure to Timely Remove Additional Constructed SSO Locations. Tyler shall be liable

to pay the United States and Texas a Stipulated Penalty for each Day Tyler fails to permanently remove the identified Constructed SSO Locations from service in accordance with the schedule contained in Paragraph 76. The Stipulated Penalties required under this Paragraph shall be as follows:

Period of Noncompliance:	Penalty Per Deliverable Per Day:
One (1) to thirty (30) Days	$1,500
Thirty-one (31) to sixty (60) Days	$2,500
Sixty-one (61) to one hundred-eighty (180) Days	$3,500
More than 180 Days	$4,500

99. Failure to Submit Timely and/or Adequate Deliverables. Tyler shall be liable to pay the United States and Texas a Stipulated Penalty for each Day Tyler fails to submit a timely and/or adequate Deliverable, including but not limited to any plan, the Interim CMOM Program, or the Final CMOM Program. Tyler shall likewise be liable to pay the United States and Texas a Stipulated Penalty for each Day it fails to make any required material changes to such Deliverables within the required time frames. The Stipulated Penalties required under this Paragraph shall be as follows:

Period of Noncompliance:	Penalty Per Deliverable Per Day:
One (1) to thirty (30) Days	$500
Thirty-one (31) to sixty (60) Days	$1,500
More than 60 Days	$2,500

100. Failure to Implement Remedial Measures in Section V. Subsections B, C, D, E, and/or F. Tyler shall be liable to pay the United States and Texas a Stipulated Penalty for each Day Tyler fails to complete the remedial measures set forth in Section V, Subsections B ("UPDATING

HYDRAULIC MODEL"), C ("CAPACITY ASSESSMENT AND REMEDIAL MEASURES PROGRAM") D ("CONDITION ASSESSMENT AND REMEDIAL MEASURES PROGRAM"), E ("LIFT STATION CONDITION/CAPACITY EVALUATION AND IMPROVEMENT PROGRAM"), and/or F ("FORCE MAIN ASSESSMENT PROGRAM") in accordance with the final deadlines required thereunder. The Stipulated Penalties required under this Paragraph shall be as follows:

Period of Noncompliance:	Penalty Per Violation Per Day:
One (1) to thirty (30) Days	$750
Thirty-one (31) to sixty (60) Days	$1,500
Sixty-one (61) to one hundred-eighty (180) Days	$2,500
More than 180 Days	$4,000

101. Failure to Comply with Reporting Requirements. Tyler shall be liable to pay the United States and Texas Stipulated Penalties for each violation of Section XIV ("REPORTING REQUIREMENTS") of this Consent Decree. The Stipulated Penalties required under this Paragraph shall be as follows:

Period of Noncompliance:	Penalty Per Deliverable Per Day:
One (1) to thirty (30) Days	$350
Thirty-one (31) to sixty (60) Days	$750
More than 60 days	$1,500

102. Stipulated penalties under this Section shall begin to accrue on the Day after performance is due or on the Day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

103. Subject to Paragraph 104, Tyler shall pay stipulated penalties that accrue pursuant to this Section to the United States and Texas, as applicable, within thirty (30) Days after receipt of a written demand by either Plaintiff, unless Tyler invokes the dispute resolution procedures under Section ("DISPUTE RESOLUTION") of this Consent Decree within the 30-day period. Prior to either Plaintiff making a written demand for Stipulated Penalties pursuant to this Paragraph, the Plaintiffs shall consult. Where the Plaintiffs jointly pursue Stipulated Penalties that accrue pursuant to any Paragraph(s) in this Section, Tyler shall pay fifty percent (50%) of the total penalty owed to the United States and the remaining fifty percent (50%) of the total penalty owed to Texas. Where only one Plaintiff, the United States or Texas, pursues Stipulated Penalties, only that Plaintiff shall recover the full amount of the penalty accrued pursuant to the Paragraph(s) invoked, and the Plaintiff not joining in the pursuit of Stipulated Penalties shall be deemed to have waived such penalties. The Plaintiff independently making a demand for payment of Stipulated Penalties shall concurrently send a copy of the written demand to the other Plaintiff.

104. Either the United States or Texas, or both, may in the unreviewable exercise of each Plaintiff's own discretion, reduce or waive stipulated penalties whether accrued or otherwise due to them, respectively, under this Consent Decree. Any such reduction or waiver shall only apply to Stipulated Penalties owed to the Plaintiff exercising the discretion allowed under this Paragraph and shall not affect the right of the other Plaintiff to enforce the stipulated penalties provisions of this Section.

105. Stipulated penalties shall continue to accrue as provided in Paragraph 102 during any Dispute Resolution as authorized under Section XII ("FORCE MAJEURE"), but need not be paid until the following:

a. if the dispute is resolved by agreement or by a decision of the United States and/or Texas that is not submitted for judicial review, Tyler shall pay accrued penalties agreed on or determined to be owing, together with interest, to the United States and/or Texas within thirty (30) Days after the effective date of the agreement or the receipt of the United States' or Texas's decision or order;

b. if the dispute is submitted for judicial review and the United States and/or Texas prevails in whole or in part, Tyler shall pay all accrued penalties that are determined due by the Court, together with interest, within sixty (60) Days after receiving the Court's decision or order, except as provided in Subparagraph 105.c; and

c. if the District Court's decision is appealed, Tyler shall pay all accrued penalties determined to be owing, together with interest, within fifteen (15) Days after receiving the final appellate court decision.

106. Tyler shall pay stipulated penalties owing to the United States and/or Texas, in the manner set forth and with the confirmation notices required by Section VII ("CIVIL PENALTY"), except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid.

107. If Tyler fails to pay stipulated penalties according to the terms of this Consent Decree, Tyler shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States or Texas from seeking any remedy otherwise provided by law for Tyler's failure to pay any stipulated penalties.

108. Subject to the provisions of Section XV of this Consent Decree ("EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS"), the stipulated penalties provided for in this

Consent Decree shall be in addition to any other rights, remedies, or sanctions available to the United States and Texas for Tyler's violation of this Consent Decree or applicable law. Where a violation of this Consent Decree is also a violation of the CWA and/or the TWC, Tyler shall be allowed a credit, for any stipulated penalties paid, against any statutory penalties imposed for such violation.

XII. FORCE MAJEURE

109. "Force Majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Tyler, of any entity controlled by Tyler, or of Tyler's consultants and contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Tyler's best efforts to fulfill the obligation. The requirement that Tyler exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any such event both as it is occurring and after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. "Force Majeure" does not include Tyler's financial inability to perform any obligation under this Consent Decree.

110. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a Force Majeure event, Tyler shall provide notice orally or by electronic or facsimile transmission to the United States and Texas, within five (5) business Days of when Tyler first knew that the event might cause a delay. Within fourteen (14) Days following oral, electronic, or facsimile transmission notice, Tyler shall provide in writing to the United States and Texas, to the extent known after reasonable investigation: an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a

schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Tyler's rationale for attributing such delay to a Force Majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Tyler, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Tyler shall include with any notice all available documentation supporting the claim that the delay was attributable to a Force Majeure event. Failure to comply with the above requirements shall preclude Tyler from asserting any claim of Force Majeure for that event for the period of time of such failure to comply and for any additional delay caused by such failure. Tyler shall be deemed to know of any circumstance of which Tyler, any entity controlled by Tyler, or Tyler's contractors knew or should have known.

111. If Plaintiffs agree that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Decree that are affected by the Force Majeure event will be extended by Plaintiffs for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the Force Majeure event shall not, of itself, extend the time for performance of any other obligation. Plaintiffs will issue a notice, in writing, to Tyler of the length of the extension, if any, for performance of the obligations affected by the Force Majeure event.

112. If Plaintiffs do not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, then Plaintiffs will issue a notice, in writing, to Tyler of Plaintiffs' position that the delay or anticipated delay was not caused by a force majeure event and provide an explanation for this position.

113. If Tyler elects to invoke the dispute resolution procedures set forth in Section XIII ("DISPUTE RESOLUTION"), it shall do so no later than fifteen (15) Days after receipt of

Plaintiffs' notice. In any such proceeding, Tyler shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Tyler complied with the requirements of Paragraphs 109 and 110. If Tyler carries this burden, the delay at issue shall be deemed not to be a violation by Tyler of the affected obligation of this Consent Decree identified to Plaintiffs and the Court.

XIII. DISPUTE RESOLUTION

114. This Section applies to disputes for which Tyler has invoked its right to Dispute Resolution under this Consent Decree. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Tyler's failure to seek resolution of a dispute under this Section shall preclude Tyler from raising any such issue as a defense to an action by the United States and/or Texas to enforce any obligation of Tyler arising under this Decree.

115. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when Tyler sends the United States and Texas a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed twenty (20) business Days from the date the dispute arises, unless that period is modified by written agreement between Plaintiffs and Tyler. During the period of informal negotiations:

a. with respect to disputes regarding force majeure under Section XII ("FORCE

MAJEURE") and termination under Section XXI ("TERMINATION"), Plaintiffs shall consult about their position. The position that Plaintiffs take in their written notification to Tyler as set forth in Section XII ("FORCE MAJEURE") or Section XXI ("TERMINATION") will be the position of Plaintiffs in informal dispute resolution pursuant to this Paragraph, unless Plaintiffs mutually agree to modify that position and inform Tyler of their modified position on the dispute in writing. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the Plaintiffs shall be considered binding unless, within thirty (30) business Days after the conclusion of the informal negotiation period, Tyler invokes formal dispute resolution procedures as set forth in Paragraph 116; and

b. with respect to all other disputes under this Consent Decree, the United States shall, after providing Texas a reasonable opportunity for consultation, inform Tyler of the United States' position. If the United States and Tyler cannot resolve a dispute by informal negotiations, then the position advanced by the United States shall be considered binding unless, within thirty (30) business Days after the conclusion of the informal negotiation period, Tyler invokes formal dispute resolution procedures as set forth in Paragraph 116.

116. Formal Dispute Resolution. Tyler shall invoke formal dispute resolution procedures by serving on Plaintiffs a written Statement of Position regarding the matter in dispute within thirty (30) business Days after the conclusion of the informal negotiation period, as provided in Subparagraphs 115.a and 115.b. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Tyler's position and any supporting documentation relied upon by Tyler. During the period of formal negotiations:

a. with respect to disputes regarding force majeure under Section XII ("FORCE MAJEURE") and termination under Section XXI ("TERMINATION"), the position Plaintiffs

provided to Tyler pursuant to Subparagraph 115.a shall be the position of Plaintiffs under this Paragraph, unless Plaintiffs mutually agree to modify their position. Plaintiffs shall consult and serve on Tyler Plaintiffs' Statement of Position within forty-five (45) business Days after receipt of Tyler's Statement of Position. Plaintiffs' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by Plaintiffs. Plaintiffs' Statement of Position shall be binding on Tyler, unless Tyler files a motion for judicial review of the dispute in accordance with Paragraph 117; and

b. with respect to all other disputes under this Consent Decree, the United States shall provide Texas a reasonable opportunity for consultation during the preparation of the United States' Statement of Position. The United States shall serve on Tyler the United States' Statement of Position within forty-five (45) business Days after receipt of Tyler's Statement of Position. The Statement of Position served by the United States shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. The United States' Statement of Position shall be binding on Tyler, unless Tyler files a motion for judicial review with in ten (10) business Days of receiving the United States' Statement of position, in accordance with Paragraph 117.

117. Judicial Review. Tyler may seek judicial review of the dispute by filing with the Court and also serving on the United States and Texas a motion requesting judicial resolution of the dispute. The motion must be filed within twenty (20) Days after Tyler is served with the Plaintiffs' Statement of Position, pursuant to Subparagraph 116.a, or the United States' Statement of Position, pursuant to Subparagraph 116.b. The motion shall contain a written statement of Tyler's position on the matter in dispute, including any supporting factual data,

analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree. The United States and/or Texas shall respond to Tyler's motion as follows:

a. with respect to disputes regarding force majeure under Section XII ("FORCE MAJEURE") and termination under Section XXI ("TERMINATION"), Plaintiffs shall file their response to Tyler's motion within the time period allowed by the Local Rules of this Court. Plaintiffs shall consult about their response. Unless Plaintiffs mutually agree to modify their position, the position provided to Tyler in their Statement of Position pursuant to Subparagraph 116.a shall be the position of the Plaintiffs under this Paragraph. Tyler may file a reply memorandum, to the extent permitted by the Local Rules or order of the Court; and

b. with respect to all other disputes under this Consent Decree, the United States shall provide Texas a reasonable opportunity for consultation during the preparation of the United States' response. The United States shall file its response to Tyler's motion within the time period allowed by the Local Rules of this Court. Tyler may file a reply memorandum, to the extent permitted by the Local Rules or order of the Court.

118. Standard of Review. Except as otherwise provided in this Consent Decree, in any dispute brought under this Section, Tyler shall bear the burden of demonstrating that its position complies with this Consent Decree. The Parties' positions are reviewable only on the record of the dispute, including the statements of position submitted by the Parties pursuant to Paragraph 115. In any judicial proceeding pursuant to Paragraph 116, the Parties reserve the right to argue regarding the applicable standard of review.

119. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Tyler under this Consent Decree, unless

and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 105. If Tyler does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XI ("STIPULATED PENALTIES").

XIV. RIGHT OF ENTRY AND INFORMATION COLLECTION AND RETENTION

120. The United States, Texas, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any facility covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

a. monitor the progress of activities required under this Consent Decree;

b. verify any data or information submitted to the United States or Texas in accordance with the terms of this Consent Decree;

c. obtain samples and, upon request, splits of any samples taken by Tyler or its representatives, contractors, or consultants;

d. obtain documentary evidence, including photographs and similar data; and

e. assess Tyler's compliance with this Consent Decree.

121. Upon request, Tyler shall provide EPA and TCEQ, or their authorized representatives, splits of any samples taken by Tyler. Upon request, EPA and TCEQ shall provide Tyler splits of any samples taken by EPA or TCEQ.

122. Except for the more limited timeframe provided in Paragraph 26 for records of the Private Lateral reports described under Paragraph 25, until five (5) Years after the termination of this Consent Decree, pursuant to Section XXI ("TERMINATION"), Tyler shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records,

or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to Tyler's performance of its obligations under this Consent Decree. Drafts of final documents or plans, and non-substantive correspondence and emails do not need to be retained. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States or Texas, Tyler shall provide copies of any non-privileged documents, records, or other information required to be maintained under this Paragraph.

123. At the conclusion of the information-retention period provided in the preceding Paragraph, Tyler shall notify the United States and Texas at least ninety (90) Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States or Texas, Tyler shall deliver any such documents, records, or other information to EPA or TCEQ. Tyler may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If Tyler asserts such a privilege, it shall provide the following:

a. the title of the document, record, or information;

b. the date of the document, record, or information;

c. the name and title of each author of the document, record, or information;

d. the name and title of each addressee and recipient;

e. a description of the subject of the document, record, or information; and

f. the privilege asserted by Tyler.

However, no documents, records, or other information required to be created or generated by this Consent Decree shall be withheld on grounds of privilege.

124. Tyler and/or its contractors may also assert that information required to be provided under this Section is protected as Confidential Business Information ("CBI") under 40 C.F.R. Part 2. As to any information that Tyler seeks to protect as CBI, Tyler shall follow the procedures set forth in 40 C.F.R. Part 2.

125. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or Texas pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of Tyler to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XV. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

126. This Consent Decree resolves the civil claims of the United States and Texas for the violations alleged in the Complaint filed in this action through the Date of Lodging of this Consent Decree.

127. The United States and Texas reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated in Paragraph 126. This Consent Decree shall not be construed to limit the rights of the United States or Texas to obtain penalties or injunctive relief under the CWA, the TWC, or their implementing regulations, or under other federal or state laws, regulations, or permit conditions, except as expressly specified in Paragraph 126. The United States and Texas further reserve all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Tyler's WWTPs and WCTS, whether related to the violations addressed

in this Consent Decree or otherwise.

128. In any subsequent administrative or judicial proceeding initiated by the United States or Texas for injunctive relief, civil penalties, or other appropriate relief relating to Tyler's WWTPs and WCTS, or Tyler's alleged violations of the CWA or TWC, Tyler shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or Texas in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 126 of this Section.

129. This Consent Decree is not a permit, or a modification of any permit, under any federal, state, or local laws or regulations. Tyler is responsible for achieving and maintaining compliance with all applicable federal, state, and local laws, regulations, and permits; and Tyler's compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States and Texas do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Tyler's compliance with any aspect of this Consent Decree will result in compliance with provisions of the CWA, the implementing regulations promulgated thereunder, the TWC, or with any other provisions of federal, state, or local laws, regulations, or permits.

130. This Consent Decree does not limit or affect the rights of Tyler or of the United States or Texas against any third parties not party to this Consent Decree, nor does it limit the rights of third parties not party to this Consent Decree against Tyler, except as otherwise provided by law.

131. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

132. Nothing in this Consent Decree limits the rights or defenses available under Section 309(e) of the CWA, 33 U.S.C. § 1319(e), in the event that the laws of the State, as currently or hereafter enacted, may prevent Tyler from raising the revenues needed to comply with this Decree.

XVI. COSTS

133. The Parties shall bear their own costs of this action, including attorneys' fees, except that Texas may collect its attorney's fees as set forth in Paragraph VIII ("ATTORNEY'S FEES") in this Consent Decree, and the United States and Texas shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by Tyler.

XVII. NOTICES

134. Unless otherwise specified herein, whenever notifications, submissions, reports, Deliverables, or communications are required by this Consent Decree, they shall be made in writing and addressed as follows:

To the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611, Ben Franklin Station
Washington, D.C. 20044-7611
Re: DOJ No. 90-5-1-1-09767

-AND-

Associate Director, Water Enforcement Branch
Compliance Assurance and Enforcement Division
U.S Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202
(214) 665-6470

To EPA:

Associate Director, Water Enforcement Branch
Compliance Assurance and Enforcement Division
U.S Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202
(214) 665-6470

To Texas:

Mary E. Smith
Environmental Protection Division, MC-066
Office of the Attorney General
P.O. Box 12548
Austin, Texas 78711-2548

Reference: AG # CX9629116377

-AND-

James Sallans
Litigation Division, MC-175
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

To TCEQ:

James Sallans
Litigation Division, MC-175
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

To Tyler:

Director of Utilities and Public Works
City of Tyler
P.O. Box 2039
Tyler, Texas 75710-2039

AND

Lisa Crossman
Utility Engineer
City of Tyler
511 W. Locust St.
Tyler, Texas 75702

-AND-

Jim Mathews
Mathews & Freeland, LLP
8140 N. MoPac
Building 2, Suite 260
Austin, Texas 78759

135. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided in Paragraph 134.

136. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XVIII. EFFECTIVE DATE

137. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket.

XIX. RETENTION OF JURISDICTION

138. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders modifying this Decree, pursuant to Sections XX ("MODIFICATION") and XXI ("TERMINATION"), or effectuating or enforcing compliance with the terms of this Decree.

XX. MODIFICATION

139. The Parties may modify the terms of this Consent Decree, including any attached

appendices, by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it is effective only upon approval by the Court. Non-material changes to this Consent Decree may be made by written agreement of the Parties without court approval, provided that the Parties also mutually agree in writing that a modification is in fact a non-material change to this Decree.

140. If any Party or Parties seek a modification to this Consent Decree, the Party(ies) seeking a modification shall send a written notice to the other Party(ies) setting forth the requested changes and the reasons therefor. Disputes concerning modification under this Section are not subject to Section XIII ("DISPUTE RESOLUTION") of this Consent Decree. Instead, the Parties shall negotiate informally concerning the modification for a period of up to thirty (30) Days from the date of receipt of the notice, unless that period is modified by written agreement. If at the end of the period of informal negotiations the Parties are not in agreement, the Party or Parties seeking the modification retain(s) any rights it/they may have to seek modification from the Court pursuant to Federal Rule of Civil Procedure 60(b).

XXI. TERMINATION

141. After Defendant has complied with all of the compliance requirements under Section V this Decree, and has paid the civil penalty contained in Section VII ("CIVIL PENALTY"), has paid the attorney's fees contained in Section VIII ("ATTORNEY'S FEES"), and has demonstrated satisfactory compliance with the requirements of this Decree and the City's TPDES Permits for a period of one (1) Year after completing the requirements of this Decree, Defendant may serve upon the Plaintiffs a "Request for Termination of Consent Decree," with supporting documentation demonstrating that the conditions for termination set forth in this Section have been met.

142. Following the Plaintiffs' receipt of Defendant's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Defendant has satisfactorily complied with the requirements for termination of this Decree.

143. If the Plaintiffs agree that Defendant has satisfactorily complied with the requirements for termination of this Consent Decree, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Consent Decree.

144. If the Plaintiffs do not agree that Defendant has satisfactorily complied with the requirements for termination of this Consent Decree, they will notify Defendant in writing, and provide an explanation for this position, and Defendant may invoke Dispute Resolution under Section XIII ("DISPUTE RESOLUTION") of this Consent Decree. However, Defendant shall not seek Dispute Resolution under Section XIII of any dispute regarding termination until sixty (60) Days after service of its Request for Termination. Defendant shall have the burden of proof that the conditions for termination of the Decree have been satisfied. This Decree shall remain in effect pending resolution of the dispute by the Parties or the Court in accordance with Section XIII ("DISPUTE RESOLUTION").

XXII. PUBLIC PARTICIPATION

145. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) Days for public notice and comment in accordance with 28 C.F.R. § 50.7 and TWC § 7.110. The United States and Texas each reserve the right to withdraw or withhold their consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Tyler consents to entry of this Consent Decree without further notice and agrees not to withdraw from, or oppose entry of, this

Consent Decree by the Court or to challenge any provision of the Decree, unless the United States and/or Texas has notified the Parties in writing that either one or both no longer support entry of the Decree.

XXIII. SIGNATORIES/SERVICE

146. Each undersigned representative of Tyler, EPA, the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice, and Texas certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

147. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Tyler agrees to accept service of process by mail to the addresses set forth in Section XVII ("NOTICES") with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XXIV. INTEGRATION

148. This Consent Decree, inclusive of all Appendices, constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than Deliverables that are subsequently submitted and approved pursuant to this Decree, no other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, nor shall it be used in construing the terms of this Decree.

XXV. APPENDICES

149. The following is a list of Appendices to this Consent Decree:

a. "Appendix A" is the "Categorical Employee Training Requirements" List;

b. "Appendix B" is the "Tyler Water Utilities Wastewater Collection Field Work Order Form";

c. "Appendix C" is the "Existing High Frequency Cleaning Program";

d. "Appendix D" is the "Gravity Sewer Line Condition Assessment and Remedial Measures Program";

e. "Appendix E" is the "Manhole Condition Assessment and Remedial Measures Program";

f. "Appendix F" is the "Hydraulic Model Update";

g. "Appendix G" is the "Capacity Assessment and Remedial Measures Program";

h. "Appendix H" is the "Historic Constructed SSO Locations and Inspection Results"; and

i. "Appendix I" is the "Consolidated Listing of *United States et. al v. City of Tyler* Consent Decree Deliverables and Consent Decree Reports".

XXVI. FINAL JUDGMENT

150. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States, Texas, and Tyler.

Dated and entered this ____ day of _____, _____.

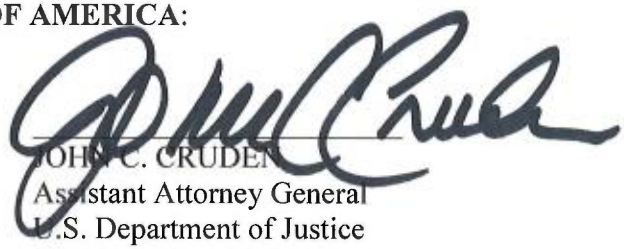
_____

UNITED STATES DISTRICT JUDGE
Eastern District of Texas

Consent Decree in United States and the State of Texas v. City of Tyler, Texas

WE HEREBY CONSENT to the entry of this Consent Decree, subject to the public notice and comment provisions of 28 C.F.R. § 50.7:

FOR PLAINTIFF UNITED STATES OF AMERICA:



JOHN C. CRUDEN
Assistant Attorney General
U.S. Department of Justice
Environment and Natural Resources Division

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U.S. Department of Justice
Environment and Natural Resources Division
Environmental Enforcement Section
999 18th Street, South Terrace, Suite 370
Denver, CO 80202
Telephone: 303-844-1558
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Consent Decree in United States and the State of Texas v. City of Tyler, Texas

WE HEREBY CONSENT to the entry of this Consent Decree, subject to the public notice and comment provisions of 28 C.F.R. § 50.7:

FOR PLAINTIFF UNITED STATES OF AMERICA (Continued):

BRIT FEATHERSTON
Acting United States Attorney
Eastern District of Texas

JAMES GILLINGHAM
Assistant U.S. Attorney
Eastern District of Texas
110 N. College Avenue; Suite 700
Tyler, Texas 75702
E-mail: James.Gillingham@usdoj.gov
(903) 590-1400
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Texas State Bar # 24065295

Consent Decree in United States and the State of Texas v. City of Tyler, Texas

WE HEREBY CONSENT to the entry of this Consent Decree, subject to the public notice and comment provisions of 28 C.F.R. § 50.7:

FOR PLAINTIFF UNITED STATES OF AMERICA (Continued):

STACEY DWYER
Acting Division Director
Compliance Assurance and Enforcement Division
United States Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200 (6EN-W)
Dallas, TX 75202

JAMES O. PAYNE, Jr.
Regional Counsel
United States Environmental Protection Agency
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United States Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202
Telephone: 214-665-3189

Consent Decree in United States and the State of Texas v. City of Tyler, Texas

WE HEREBY CONSENT to the entry of this Consent Decree, subject to the public notice and comment provisions of 28 C.F.R. § 50.7:

FOR PLAINTIFF UNITED STATES OF AMERICA (Continued):

SUSAN SHINKMAN
Director
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
United States Environmental Protection Agency

MARK POLLINS
Division Director
Water Enforcement Division
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
United States Environmental Protection Agency

JAMES VINCH
Water Enforcement Division
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
United States Environmental Protection Agency
1200 Pennsylvania Ave., NW (2243A)
Washington, DC 20460
Telephone: 202-564-1256
Facsimile: 202-564-0024

Consent Decree in United States and the State of Texas v. City of Tyler, Texas

WE HEREBY CONSENT to the entry of this Consent Decree, subject to the public notice and comment provisions of TWC § 7.110:

FOR PLAINTIFF STATE OF TEXAS:

KEN PAXTON
Attorney General of Texas

JEFFREY C. MATEER
First Assistant Attorney General

BRANTLEY STARR
Deputy First Assistant Attorney General

JAMES E. DAVIS
Deputy Attorney General for Civil Litigation

PRISCILLA M. HUBENAK
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Office of the Attorney General of Texas
Environmental Protection Division
P. O. Box 12548, Capitol Station
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Telephone: (512) 463-2012
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ATTORNEYS FOR THE STATE OF TEXAS

Consent Decree in United States and the State of Texas v. City of Tyler, Texas

WE HEREBY CONSENT to the entry of this Consent Decree:

FOR CITY OF TYLER:

MARTIN HEINES
Mayor, City of Tyler

EDWARD BROUSSARD
City Manager
212 N. Bonner Ave.
Tyler, Texas 75702

DEBORAH PULLUM
City Attorney
212 N. Bonner Ave.
Tyler, Texas 75702
Telephone: 903-531-1161
Facsimile: 903-531-1281

JIM MATHEWS
Mathews & Freeland, L.L.P.
8140 N. MoPac Expressway
Building 2, Suite 260
Austin, Texas 78759

Appendix A

Appendix A

Categorical Employee Training Requirements

Tyler Water Utilities Wastewater Collection

			Repair/Construction					Admin/Office/Supervisor						Preventative Maintenance			
	OUTSIDE VENDOR TRAINING *	Hours	Crew Leader	Semi-Skilled Laborer	Laborer	Truck Driver	Equipment Operator	Operations Manager	Superintendent - PM	Superintendent - Construction	Senior Clerk	Senior Secretary	GIS Data Analyst	Utilities Maintenance Repair	Laborer	Utilities Maintenance Repair - CCTV	Semi-Skilled Laborer
1	Basic Wastewater Operations	20	R	R	R	R	R	R	R	R	E	E	E	R	R	R	R
2	Wastewater Collection	20	R	R	R	R	R	R	R	R	E	E	E	R	R	R	R
3	Water Utilities Safety	20	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
4	Water Utilities Calculations	20	E	E	E	E	E	E	E	E	NA	NA	NA	E	E	E	E
5	Pumps & Motor Maintenance	20	R	E	E	E	R	R	R	R	NA	NA	NA	R	E	R	E
6	Wastewater Treatment	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	Wastewater Laboratory	20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	Wastewater Technology	40	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	CCTV - PACP Training	20	NA	NA	NA	NA	NA	E	R	R	NA	NA	R	NA	NA	R	NA
10	Applied Confined Space Safety	8	E	E	E	E	E	E	E	E	E	E	NA	E	E	E	E
	CITY OF TYLER IN-HOUSE TRAINING																
	Sewer Overflows																
11	SSO Reporting Procedures		R	NA	NA	NA	E	R	R	R	R	R	NA	R	E	R	E
	Work Orders/Asset Collection																
12	Initial OneSolution		R	E	E	E	R	R	R	R	R	R	R	R	E	R	E
13	OneSolution Asset Management		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
14	GIS/GPS Data Collection		R	E	E	E	R	R	R	R	E	E	R	R	E	R	E
	Vactor																
15	Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
16	Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
17	Operator - Cleaning/Nozzle Setup		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
18	Decan/Cleaning Procedures		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	E
	Sewer Rodder																
19	Rodder - Setup/Initial Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
20	Rodder - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
21	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	Water Jet Rig																
22	Jetter - Initial Setup/Operations		R	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
23	Jetter - Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	R	R	R	R
24	Operator - Setup/Operations		NA	E	E	E	E	E	R	R	NA	NA	NA	R	R	R	R
	CCTV																
25	CCTV - CUE's Rover & Wincam		E	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
26	Camera Preventive Maintenance		NA	E	E	E	E	R	R	R	NA	NA	NA	E	E	R	R
27	PACP Recertification - 3 years		NA	E	E	E	E	R	E	E	NA	NA	NA	NA	NA	R	NA

Notes:

* Outside Vendor Training provided by Texas Engineering Extension (TEEX) and other outside vendors

Legend:

R = Required training by CMOM

E = Elective training, conducted at City of Tyler's discretion

NA = Not Applicable

Rev Date: 09/11/15

Appendix B

Appendix B
Tyler Water Utilities Wastewater Collection
Field Reporting Form
903-531-1285

Work Order No.:_____

1. Notification of possible wastewater blockage/release received by: ☐ Phone Call ☐ Email ☐ In Person
2. Notification received: Date: _____ Time: _____ AM / PM
3. Name of person making report:
   _____
   Phone # or email: _____
4. Location:
   Address, intersection or other location information:
   _____
   a. Crew dispatched at:
   Date: _____ Time: _____ AM / PM
   b. Arrived onsite:
   Date: _____ Time: _____ AM / PM
5. Did release of wastewater occur? ☐ Yes ☐ No
6. Is release a result of issue with public sewer system?
   ☐ Yes - Asset ID: _____ ☐ No = Private
   a. ☐ Pipe c. ☐ Lift Station
   b. ☐ Manhole d. ☐ WWTP
   e. ☐ Cleanout ☐ Other_____
7. Date/Time release cleared:
   Date: _____Time: _____ AM / PM

   Estimated duration of release: _____hr. _____min.
   Estimated flow rate: _____ GPM
   Estimated volume of release: _____ gallons
   Estimation Method: ☐ TCEQ
   ☐Other:_____
8. Was any amount of the release contained/ recovered?
   ☐ Yes _____gallons ☐ No

Method of recovery: a. ☐ Pumped back into collection system
b. ☐ Cleaned with vacuum truck
c. ☐ Other _____

Cleanup actions taken: ☐ Area disinfected ☐ Area flushed

9. Corrective Action Taken:_____

10. Potential field cause(s) of release (check all that apply):
    a. ☐ Fats, Oils, Grease g.☐ Flooding
    b. ☐ Roots h.☐ Excess Infiltration/Inflow
    c. ☐ Debris i. ☐ Contractor Damage
    d. ☐ Breaks Due to Erosion j. ☐ Vandalism
    e. ☐ Breaks, Other Causes k.☐ Undetermined
    f. ☐ Equipment malfunction l. ☐ Other: _____
11. Follow-up actions recommended:
    ☐ cable ☐ wash ☐ wash and treat ☐ root removal
    ☐ replace sewer tap
    ☐ other: _____

12. Route for wastewater released :
    ☐ Building Backup
    ☐contained before storm drain
    ☐ entered storm-drain
    ☐ entered dry streambed
    ☐ entered flowing or standing water in creek

    Name of receiving waters: _____
13. Was fish kill observed? ☐ No
    ☐ Yes – Report to Operations Manager Est. No. Killed: _____
    TWU Employee Name: _____Date: _____

To Be Completed by Supervisor

A. A Classification of Wastewater Release:
   1. ☐ TPDES non-compliance due to:
      a. ☐ unauthorized discharge
      b. ☐ failure to properly operate and maintain system
      Specify:_____
   2. ☐ Spill requiring report under TWC 26.039.
      ☐ 24 hour report ☐ Monthly report
   3. ☐ SSO as defined by Consent Decree
B. Was upstream/downstream sampling conducted?
   ☐ No ☐ Yes – See Sampling Results
C. Potential danger to human health and safety or the environment:
   ☐ No ☐ Yes – Describe: _____
D. Discharge route: _____
   Watershed for:

   ☐Wastewater Treatment Plant – South Side
   TPDES Permit 10653-02/TX004798

   ☐Wastewater Treatment Plant – West Side
   TPDES Permit 10653-002/TX0047988

E. Date scheduled for CCTV: _____(within 5 days)
   Date completed: _____Video #: _____Score: _____
F. Action taken to prevent reoccurrence :
   ☐ repair manhole/ invert
   ☐ repair sewer main
   ☐ schedule line to replaced or slip lined
   ☐ place on High Frequency Cleaning list: ☐ No
   ☐ Yes - ☐ 12 mo. ☐ 6 mo. ☐ 3 mo.
   ☐ schedule follow-up CCTV inspection: ☐ No
   ☐ Yes - ☐ 1 year ☐ 2 years ☐ 3 years
   ☐ call lift station technician
   ☐ other_____
G. Supervisor review:

Name: _____ Date: _____

City Point of Contact:
Kevin R. Olson/Operations Manager
TCEQ Region 5: Lisa Fisher 903-535-5137 FAX 903-525-0384
EPA Region 6: Phone 214-665-6595; FAX 214-665-2168

Appendix C

Appendix C
Tyler Water Utilities
Wastewater Collection
Existing High Frequency Cleaning Program

Tyler Water Utilities has an existing high frequency cleaning program, by which sewer segments may be placed on a 12-month, 6-month or 3-month cleaning cycle, following review by the Wastewater Collection System Superintendent. This existing program is subject to change as Tyler develops its Revised High Frequency Cleaning Program, pursuant to the terms of Section V.A.5 (CMOM Program - Revised High Frequency Cleaning Program) of the Consent Decree. Under the existing program, if a sewer segment experiences more than one SSO within a 12-month period, it is placed on a 12-month cleaning frequency cycle. The method of cleaning is based on the nature of the primary problem: 1) "cabling" the line to remove roots, 2) "washing and treating" the line to remove grease, or 3) "cabling and washing" the line to remove both roots and grease. Also under the existing program, if the segment continues to experience SSOs, it may be moved to the 6-month cleaning cycle. If SSOs persist in the pipe segment, it may then be moved to the 3-month cleaning cycle.

After each SSO, a CCTV inspection is scheduled for the Sewer Segment in question to determine if any other follow-up actions are required or a change of cleaning frequency is warranted. Sewer Segments may be moved to a lower frequency cleaning cycle or removed from the existing high frequency cleaning program following rehabilitation, repair or replacement of the pipe segment.

A list of pipe segments included in the 3-month, 6-month and 12-month cleaning cycles of the existing high frequency cleaning program, current as of the Date of Lodging of the Consent Decree, is attached.

Tyler Water Utilities 05/27/2016

Hot Spot Cleaning List

3 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
1	9/8/2012	2719 Ada	grease	1500	cable, wash & treat
2	1/3/2013	S. Broadway & Loop 323	Grease	800	Wash & Treat
3	8/22/2013	1015 W. Gentry	Grease	500	Wash & Treat
				2800 Feet	
				0.5 Miles	
			4 times a year	**2.1 Miles**	

6 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
1	1/15/2011	121 E. Front	grease & debris	100	PM wash
2	2/15/2011	4427 & 4431 Dundee	grease	450	PM Wash
3	4/13/2011	2025 WSW Loop 323	grease	2275	wash & Treat
4	4/29/2011	6805 South Place	roots & grease	500	cable & wash
5	2/15/2012	1101 S. Fleishel	grease	1700	wash & treat
6	2/20/2012	1300 S. Beckham	grease	2700	wash & treat
7	3/11/2012	Plume & Troup	grease	8000	PM wash & Treat
8	3/13/2012	3314 Troup Hwy	grease	3000	Pm wash & treat
9	3/13/2012	3333 Troup Hwy	grease	2400	PM wash & Treat
10	4/5/2012	5502 S. Broadway	grease	2900	wash & Treat
11	4/25/2012	Bois D Arc & Wilson	grease	1600	PM wash & Treat
12	4/26/2012	425 E. Cedar	grease	400	PM wash & Treat
13	6/14/2012	Cain & Old Noonday	grease	1000	PM wash
14	6/20/2012	1725 Loop 323 WSW	grease	225	wash & treat
15	6/21/2012	Anthony & DC Drive	grease	1200	wash & treat
16	7/12/2012	2613 E. 5th	grease	200	wash & treat
17	7/15/2012	502 W. Houston	grease	200	wash & treat
18	7/19/2012	1500 WSW Loop 323	grease	1750	wash & treat
19	7/21/2012	105 Tournament	grease	300	wash & treat
20	8/4/2012	6724 S. Broadway	grease	800	wash & treat
21	8/7/2012	2805 Garden Valley	grease	525	wash & treat
22	8/13/2012	S.E. corner of Palace & Gentry	grease	975	wash & Treat
23	9/4/2012	427 S. Oakland	grease	375	wash & treat
24	9/4/2012	Ada & Manilee	grease	900	wash & treat
25	9/4/2012	3320 S. Broadway	grease	900	wash & treat
26	9/8/2012	2719 Ada	grease	0	moved to 3 Month
27	9/19/2012	5315 S. Broadway	grease	2250	wash & Treat
28	9/27/2012	D.E. of Depreist	roots	900	cable
29	10/11/2012	behind 2221 McMurrey	grease	1200	wash & treat
30	10/15/2012	800 Neches	grease	525	wash & treat
31	10/22/2012	100 S. Peach	grease	375	wash & treat
32	11/9/2012	5th * S. Broadway	grease	450	wash & treat
33	11/30/2012	D.E. of Pabst south of Bow	roots	800	cable & wash
34	12/21/2012	3214 Hardwood	roots	325	cable
35	12/21/2012	Elm & Glenwood	roots & grease	100	cable, wash & treat
36	12/22/2013	2611 W. Gentry	grease	1250	cable, wash & treat
37	12/30/2012	4622 Leisure Lane	grease	800	wash & treat
38	1/3/2013	S. Broadway & Loop 323	grease	0	Moved to 3 Month
39	1/3/2013	Donnybrook & Loop 323	grease	1850	wash & treat
40	1/23/2013	100 Rice Rd	grease	500	wash & treat

41	3/6/2013	1105 E. Gentry	grease	200	wash & Treat
42	5/16/2013	804 W. 26th	grease & roots	1100	cable & wash
43	4/9/2013	1820 N. Gaston	roots & debris	625	cable & wash
44	6/24/2014	719 Baxter	grease	2400	wash & Treat
45	9/15/2014	Locust & Townsend	grease & roots	600	cable & wash
46	12/1/2014	6435 Old Jacksonville	grease	750	wash & Treat
47	1/16/2015	2214 W.S.W. Loop323	grease	1700	wash & treat
48	2/28/2013	Magnolia & Lake	grease & debris	800	cable & wash
49	1/15/16	845 Crosby	grease	1075	cable & wash

		55150 Feet
		10.4 Miles
	2 Times a year	**20.9 Miles**

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
1	2/14/2011	601 Harvard	Grease	450	wash
2	3/1/2011	1204 S. Wall	Roots	500	cable
3	1/6/2012	2022 N. Wolford	grease	150	wash
4	1/7/2012	520 & 614 Elmridge	Grease	900	wash
5	1/29/2012	4812 Downing	Grease & debris	1800	wash
6	2/21/2012	Caldwell Zoo	Root/debris	1650	cable/wash
7	3/1/2012	1538 N. Hill	Roots/grease	500	cable/wash
8	3/1/2012	Specialty & Old Troup	Debris	1350	pm wash
9	3/3/2012	305 E. Fourth	roots	300	cable
10	3/5/2012	3205 Tulsa	grease	700	Pm wash & treat
11	3/5/2012	1703 N. Broadway	grease	75	Pm wash & treat
12	3/6/2012	1100 Blk Magnolia	roots & debris	1000	cable & wash
13	3/6/2012	4222 Southpark Dr	Roots	1250	cable
14	3/8/2012	725 Pam	Debris	1500	cable
15	3/8/2012	2011 Sterling	Roots	1000	cable
16	3/8/2012	Independence & Broadway	grease	1950	PM wash & treat
17	3/15/2012	3916 Jan	grease	2375	wash
18	3/18/2012	218 E. Locust	Debris	400	pm wash
19	3/18/2012	713 Jeffery	roots	1400	cable
20	3/21/2012	2222 SSE Loop 323	grease	400	wash
21	3/22/2012	319 S. Beckham	roots & grease	225	cable & treat
22	3/22/2012	Fifth & Fleishel	Grease/debris	550	pm wash
23	3/22/2012	800 w. 27TH	grease & debris	300	pm wash
24	3/26/2012	300 Blk of Oakland	Debris	800	pm wash
25	3/26/2012	1733 Richards	roots	400	cable
26	3/26/2012	Pam & Joy	Roots/grease	1225	cable/wash
27	3/28/2012	3110 Towne Park	grease	1350	PM wash
28	3/30/2012	916 Academy	grease	425	PM wash & treat
29	3/31/2012	1306 Hawthorne	roots	1050	cable & wash
30	4/1/2012	Oliver & Rosevelt	roots	1900	PM cable
31	4/2/2012	1725 S. Sneed	Grease/debris	375	wash/cable
32	4/2/2012	2027 Lee St	Grease	800	wash
33	4/3/2012	1417 Santa Rosa	roots	1800	PM cable
34	4/4/2012	1126 Buena Vista	roots	1950	PM cable
35	4/9/2012	601 Golden rd	grease	150	Pm wash
36	4/9/2012	1729 Arnold	grease	400	PM wash
37	4/10/2012	710 S. Porter	roots & grease	2200	PM wash & cable
38	4/10/2012	D.E. of Ferdell	roots	350	cable
39	4/11/2012	5314 Athens	Grease	1200	wash & treat

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
40	4/13/2012	Angeline & Alice	roots	950	cable
41	4/15/2012	behind 1100 W. Claude	Roots	550	cable
42	4/15/2012	1800 Blk of Bradshaw	roots	750	cable & wash
43	4/17/2012	3904 W. Gentry	grease	500	wash & treat
44	4/22/2012	D.E. of Pabst-sout of Bow	roots & debris	0	Moved to 6 Month
45	4/22/2012	719 Pabst	grease	1500	PM wash
46	4/23/2012	3001 Buddie	grease	2250	PM wash
47	4/24/2012	819 N. Spring	grease	950	PM wash
48	4/30/2012	CR 427- Lake Park Dr	roots	3000	cable
49	5/1/2012	D.E. of Hayes	roots & grease	1200	cable & wash
50	5/4/2012	3409 Brookside	roots	1750	cable
51	5/7/2012	2402 Bellwood	grease	1600	PM wash
52	5/8/2012	2nd MH east of Palace & North of Gentry	Roots/grease	525	cable & wash
53	5/9/2012	4013 Appletree	grease	4000	wash & treat
54	5/14/2012	401 Sunnyside	grease	1000	PM wash
55	5/20/2012	504 S. Beckham	Grease/debris	250	pm wash
56	5/20/2012	1107 Wilmington	grease	1400	Pm wash
57	5/22/2012	518 S. Parkdale	roots	800	cable
58	5/22/2012	624 David	grease	1225	PM wash
59	5/24/2012	310 N. Beverly	grease	350	Pm wash
60	5/24/2012	Beverly south of Locust	grease	400	PM wash
61	5/25/2012	610 S. College	grease	700	PM wash
62	5/30/2012	Elm & Palmer	grease	300	PM wash
63	5/30/2012	Wildwood & Front	grease	1350	PM wash
64	5/31/2012	400 Old Grande	Roots/grease	700	pm wash/cable
65	6/8/2012	1705 N. Broadway	grease	900	PM wash
66	6/11/2012	1808 E. Lawrence	roots & grease	750	PM cable & wash
67	6/26/2012	625 S. Augusta	roots & grease	1200	cable & wash
68	6/29/2012	3009 Meadowlark	roots & grease	800	cable
69	7/3/2012	3324 NNE Loop 323	grease	800	PM wash
70	7/4/2012	8414 Cambridge	grease	800	wash & treat
71	7/10/2012	409 N. Border	grease	450	PM wash
72	7/10/2012	2310 E. Erwin	grease	3000	wash & treat
73	7/10/2012	2604 E. Erwin	grease	750	wash & treat
74	7/20/2012	804 W. 26th St	grease	1000	PM wash
75	7/25/2012	Highland &5th St well #9	roots	800	Cable
76	7/28/2012	1211 S. College	roots & grease	300	PM cable
77	8/3/2012	4702 Troup Hwy	grease	600	PM wash
78	8/7/2012	Behind 2700 N. Grand	grease	900	wash & treat
79	8/10/2012	2401 Mimosa	roots	1125	cable
80	8/10/2012	Queen & Spring	grease	600	PM wash
81	8/13/2012	SE corner of Palace & Gentry	GREASE	0	Moved to 6 Month
82	8/16/2012	3323 Garden Valley	Grease/roots	350	cable & Wash
83	8/23/2012	2519 N. Confederate	grease	1225	wash & treat
84	8/30/2012	3220 Walton rd	Roots	1750	cable
85	9/4/2012	2900 Baldwin	roots	1225	cable
86	9/4/2012	D.E. of Neches	grease	375	wash & treat
87	9/8/2012	302 Dayton	roots	900	cable & wash
88	9/11/2012	4598 Old Troup	grease	1200	wash & treat
89	9/11/2012	Shaw & Broadway	Grease	1575	wash
90	9/15/2012	1540 S. Academy	grease	1250	wash & treat

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
91	9/19/2012	Behind 2301 Debby	Roots	2700	cable
92	9/19/2012	Old Omen & 5th	Roots	500	cable
93	9/20/2012	Lyons S. of Front	roots	600	cable & wash
94	9/24/2012	3885 Brighton Creek	roots	750	cable
95	9/27/2012	3720 Mineola Hwy	grease	1500	wash
96	9/28/2012	Glenwood & Grove	roots	2000	cable & wash
97	10/4/2012	727 S. Englewood	grease	900	PM wash
98	10/8/2012	3621 McDonald Rd	grease	100	wash & treat
99	10/9/2012	3214 Old Jacksonville	grease	100	wash & treat
100	10/18/2012	4400 Paluxy	grease	1225	wash & treat
101	10/18/2012	5750 Eaglesnest	roots	1225	cable
102	10/18/2012	Cecil & County Rd	roots	600	cable
103	10/20/2012	Hill & park	grease	300	PM wash
104	10/22/2012	3800 Lexington	roots	375	cable & wash
105	10/27/2012	3200 Garden Valley & charlotte	roots	950	cable & wash
106	10/28/2012	6101 Wilderness	roots	1500	cable
107	10/29/2012	2406 Pinkerton	roots	250	cable & wash
108	10/30/2012	5908 Plantation	debris	675	cable & wash
109	11/1/2012	Belmead & Shelley	grease	300	PM wash
110	11/3/2012	306 & 311 Rosedale	roots	300	cable & wash
111	11/5/2012	Ford & fannin	grease	700	Pm wash
112	11/7/2012	106 E. 2nd	grease	350	wash & treat
113	11/7/2012	1021 W. Shaw	roots	1125	cable & wash
114	11/14/2012	114 Tournament	roots	625	cable & wash
115	11/17/2012	716 N. Confederate	roots	875	cable & wash
116	11/18/2012	519 Victory	roots	800	PM cable
117	11/21/2012	3129 Vineyard	roots	1000	cable
118	11/23/2012	2314 & 2316 Aberdeen	roots & grease	300	cable & wash
119	11/26/2012	Tenneha & Barrett	grease	250	wash & treat
120	11/29/2012	439 S. Hill	roots	450	cable & wash
121	11/29/2012	D. E. of Clublake	roots	1500	cable & wash
122	11/30/2012	2100 Bandera	roots	600	cable & wash
123	11/30/2012	Camp & Caryle	roots	225	cable & wash treat
124	11/30/2012	D.E. of Pabst south of Bow	roots	800	cable & wash
125	12/2/2012	408 N. Parkdale	grease/roots	700	cable/wash
126	12/4/2012	2707 Willard	grease	600	PM wash
127	12/9/2012	5315 S. Broadway	Grease	0	wash & treat
128	12/10/2012	820 NNW Loop 323	roots	300	cable & wash
129	12/10/2012	1538 N. Hill	roots	800	cable & wash
130	12/11/2012	Sybil & Southpark	roots	1300	cable & wash
131	12/11/2012	Whiteoak & Holyoak	roots	750	cable
132	12/17/2012	329 Brookwood	roots	150	cable & wash
133	12/21/2012	3214 Harwood	roots	325	cable & wash
134	12/21/2012	4021 New Copeland Rd	roots	600	cable & wash
135	12/24/2012	601 N. Broadway	grease & debris	1000	cable &(wash & treat)
136	12/29/2012	818 Dobbs	roots	200	cable
137	12/31/2012	1402 S. Sneed	roots	525	cable & wash
138	12/31/2012	1700 Sampson	Grease & roots	600	cable & wash
139	1/5/2013	217 Heritage Circle	roots	250	Cable
140	1/7/2013	704 S. Fleishel	grease	800	wash & treat
141	1/7/2013	2016 Crestwood	roots	450	Cable

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
142	1/9/2013	1614 S. College	grease	1100	cable & wash
143	1/10/2013	7302 Princedale	grease & debris	600	pm wash
144	1/12/2013	3600 Bain	roots & grease	600	cable & wash
145	1/14/2013	106 E. Elm	grease	300	wash & treat
146	1/14/2013	1527 Haynie	roots	450	cable
147	1/17/2013	10th & Sunnybrook	grease	200	PM wash
148	1/17/2013	1005 S. Tipton	roots & grease	1400	cable & wash
149	1/21/2013	815 Sheperd	roots & grease	750	cable & treat
150	1/21/2013	1016 Amherst	roots & grease	800	cable & treat
151	1/21/2013	2703 Old Bullard	roots & grease	600	cable & wash
152	1/21/2013	810 S. Porter	roots & grease	1600	PM wash & cable
153	1/22/2013	D.E. of Nancy	roots & grease	1000	cable & wash
154	1/23/2013	801 & 817 Pam	roots & grease	550	cable & wash
155	1/24/2013	2503 New Copeland	roots & grease	625	cable & wash
156	1/25/2013	400 W. Cochran	grease	300	PM wash
157	1/25/2013	3105 Carter	roots & grease	625	cable & wash
158	1/26/2013	2447 Sunnybrook	roots & grease	100	cable & wash
159	1/28/2013	1420 N. Fannin	roots & grease	400	cable & wash
160	1/30/2013	2419 N. Englewood	roots & grease	900	cable & wash
161	1/31/2013	3424 Cope St	grease	800	wash
162	2/1/2013	442 Morgan	roots & grease	1200	cable & wash
163	2/4/2013	519 Hunters Court	dirt	150	PM wash
164	2/4/2013	5427 Quailcreek	roots & grease	950	cable & wash
165	2/10/2013	Hollystar & Morning Star	roots & grease	400	cable, wash & treat
166	2/13/2013	8393 Garrett	grease	300	cable, wash & treat
167	2/13/2013	3623 Wynnwood	roots & debris	550	cable, wash
168	2/13/2013	114 Amherst	roots & grease	525	cable & wash
169	2/14/2013	2523 Fleetwood	grease & debris	400	pm wash
170	2/14/2013	133 N. Forest	roots & grease	525	cable & wash
171	2/15/2013	Lake Placid & Old J Ville	grease	325	pm wash
172	2/15/2013	305 W. Charnwood	roots & grease	300	cable & wash
173	2/15/2013	517 Harpole	grease & debris	450	pm wash
174	2/20/2013	2419 E. 5th	roots & grease	450	cable & wash
175	2/20/2013	5050 Shiloh	debris	825	pm wash
176	2/21/2013	643 S. Baxter	root	350	cable & wash
177	2/23/2013	1007 W. Bow	roots & debris	400	cable & wash
178	2/23/2013	2812 N. Glass	roots & debris	1000	cable & wash
179	2/27/2013	2111 Glenbrook	roots & debris	250	cable & wash
180	2/27/2013	1208 Neches	grease & debris	500	pm wash
181	2/28/2013	Magnolia & Lake	debris	800	cable & Wash
182	3/3/2013	1823 Old Omen	roots & grease	400	cable & wash
183	3/5/2013	1018 E. Elm	roots	300	cable & wash
184	3/5/2013	711 W. 3rd	roots & grease	325	cable & wash
185	3/7/2013	Locust & Beverly	Debris	100	pm wash
186	3/7/2013	1007 W.N.W.Loop323	roots & debris	300	cable
187	3/9/2013	1705 Gish Ln	roots	450	cable
188	3/15/2013	Edwards & Locust	roots & debris	250	cable & wash
189	3/18/2013	711 Spring Creek	roots	450	cable & wash
190	3/19/2013	3721 Arlington	roots	250	cable & wash
191	3/20/2013	Joel & Robert E. Lee	Debris	300	pm wash
192	3/21/2013	2515 W. Shaw	grease	850	cable & wash

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
193	3/24/2013	226 E. Dodge	grease & debris	200	cable & wash
194	3/25/2013	2022 Belvedere	roots	850	pm cable
195	3/26/2013	3300 Curtis	roots	400	cable & wash
196	3/27/2013	1400 Hawthorne	grease & roots	800	cable & wash
197	3/30/2013	2809 Bellwood	grease & debris	1050	cable & wash
198	4/1/2013	1415 Hawthorne	roots	250	pm cable
199	4/4/2013	Spring & Locust	Debris	350	pm wash
200	4/5/2013	1121 S. Baxter	grease	800	wash & treat
201	4/7/2013	Stratford & Hubbard	roots	500	cable & wash
202	4/8/2013	800 W. Queen	grease & roots	350	cable & wash
203	4/9/2013	Clinic & Dawson	Debris	650	pm wash
204	4/9/2013	1820 N. Gaston	roots & debris	650	cable & wash
205	4/11/2013	Stanford & Crestview	roots & debris	350	cable & wash
206	4/12/2013	2937 Keenan	roots & debris	400	cable & wash
207	4/15/2013	1222 Buena Vista	roots	500	cable & wash
208	4/15/2013	34th & Grand	grease & debris	500	pm wash
209	4/17/2013	Locust & Frank	grease	150	wash & treat
210	4/22/2013	3217 Rolling Hill	grease & roots	1400	cable & wash
211	4/26/2013	830 S. Fannin	roots	325	pm cable
212	4/29/2013	3424 Cope St	grease & roots	950	cable & wash
213	5/4/2013	7132 Gatewood	grease & roots	800	cable & wash
214	5/7/2013	Broadway & Alpine	grease & roots	1150	cable & wash
215	5/8/2013	900 blk Boyd	grease & roots	250	cable & wash
216	5/10/2013	Shelley & Broadway	grease & debris	750	wash & treat
217	5/4/2013	6600 S. Broadway	grease	1750	wash & treat
218	5/15/2013	1820 Don	grease & other	450	pm wash
219	5/16/2013	1219 Kenilworth	grease & roots	400	cable & wash
220	5/16/2013	804 W. 26th St	grease & roots	1100	cable & wash
221	5/28/2013	922 W. 5th	roots & grease	1000	cable & wash
222	3/18/2013	13443 CR 206 behind Goodyear plant	roots & debris	3000	cable & wash
223	4/26/2013	Rose Stadium south to north side	debris	600	pm wash
224	6/15/2013	1718 Sampson	debris	650	pm wash
225	6/19/2013	Bellaire & Garden Valley	roots	1000	pm cable
226	5/30/2013	Pinkerton & Danica	grease	300	pm wash
227	5/29/2013	420 N. Bois d' arc	roots	525	pm cable
228	7/2/2013	Willow Brook Country Club	roots & debris	250	pm cable
229	6/2/2013	3520 New Copeland	roots	750	pm cable
230	6/11/2013	1600 Rice rd	roots & debris	500	pm cable
231	6/20/2013	Donnybrook & Rieck	grease & rags	250	pm wash
232	6/26/2013	1125 Pinedale Pl	debris	1200	cable & wash
233	7/15/2013	1st & Chilton	roots	200	pm cable
234	7/20/2013	2010 Sybil Ln	debris & gravel	650	pm wash
235	7/17/2013	Bow & Bois d' arc	grease	550	pm wash
236	7/22/2013	2314 Robertson Ave	roots	450	pm cable
237	7/23/2013	2400 N. Confederate	roots	600	cable & wash
238	7/24/2013	D.E. of Shenandoah	roots	250	cable & wash
239	7/26/2013	701 W.S.W. Loop 323	grease	950	wash & treat
240	7/28/2013	3200 Cameron	roots & debris	300	cable & wash
241	8/2/2013	801 Trinity	grease & debris	900	pm wash
242	8/5/2013	5916 Rhones Quarter	roots	850	pm cable
243	8/8/2013	Paul & Grand	roots	350	pm cable

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
244	8/23/2013	709 Duckenfield	roots	650	pm cable
245	8/27/2013	3215 Old Jacksonville	roots & grease	100	cable & wash
246	8/26/2013	719 Oakland	roots	100	pm cable
247	8/26/2013	1505 E. Erwin	grease	375	pm wash
248	9/5/2013	700 Olympic Plaza	roots	1000	pm cable
249	9/17/2013	Dawson & Beckham	Debris	450	cable
250	9/20/2013	2714 Tenneha	roots & grease	350	cable & wash
251	9/21/2013	1204 S. Wall	roots & debris	500	cable & wash
252	10/2/2013	3963 Chapel Woods	debris	300	cable
253	10/2/2013	310 Carriage	roots & debris	500	cable & wash
254	10/5/2013	2204 Airline	rags	400	cable & wash
255	10/6/2013	400 blk Chimney Rock	rags & debris	300	pm wash
256	10/9/2013	5th & Sneed	debris	150	pm wash
257	10/15/2013	3408 Shady Trail	roots & debris	400	cable & wash
258	10/16/2013	802 E. Locust	debris	450	cable & wash
259	10/17/2013	1300 blk Summitt	roots & grease	500	cable & wash
260	10/18/2013	615 E. 3rd	roots & debris	200	cable & wash
261	10/24/2013	800 Woodhall Ct	grease & debris	600	cable & wash
262	10/31/2013	1939 Devine	grease	450	pm wash
263	10/31/2013	3230 Berryhill	roots	450	pm cable
264	11/12/2013	8145 Kevin	roots	1200	cable & wash
265	11/21/2013	2347 Alta Mira	roots & debris	400	cable & wash
266	11/27/2013	3005 N. Whitten	grease	700	cable & wash
267	12/16/2013	2802 Greenwood	roots & grease	950	cable & wash
268	12/15/2013	2928 Dinah	roots	300	cable & wash
269	12/21/2013	515 Hampton Hills	roots	550	pm cable
270	12/21/2013	1634 S. Vine	mud	250	pm cable
271	12/29/2013	2602 Shenandoah	grease	325	cable & wash
272	12/31/2013	508 Bandera	roots	500	pm cable
273	12/31/2013	Sunnybrook & 10th	roots	200	pm cable
274	1/3/2014	Peach & Mockingbird	roots & grease	400	cable & wash
275	1/14/2014	3415 Keaton	roots	900	cable & wash
276	2/1/2014	1502 Woodlands	roots	450	cable & wash
277	2/2/2014	907 S. Lyons	grease & roots	450	cable & wash
278	1/27/2014	215 E. Line	grease & debris	150	cable & wash
279	2/7/2014	3400 Varsity	grease & debris	400	cable & wash
280	1/31/2014	1200 Blk E. Front	roots	450	pm cable
281	2/16/2014	1733 E. Richards	roots	400	pm cable
282	2/2/2014	1820 Hankerson	roots & grease	500	cable & wash
283	2/14/2014	2810 W. Erwin	roots	600	pm cable
284	1/25/2014	2504 W. Oakwood	roots	200	pm cable
285	1/27/2014	4430 Hwy 31 W	grease & debris	650	cable & wash
286	2/15/2014	400 Thigpen	roots & grease	600	cable & wash
287	2/17/2014	Bellwood & Lyons	roots & grease	300	cable & wash
288	2/17/2014	8219 Purdue	roots	600	cable & wash
289	2/20/2014	Hurt & Connally	roots & debris	1500	cable & wash
290	2/24/2014	2875 Shiloh	grease & debris	1150	Pm Wash
291	2/25/2014	1208 S. Sneed	roots & debris	550	cable & wash
292	3/3/2014	1924 Clubview	roots & grease	750	cable & wash
293	3/5/2014	Lake Placid & Vine	grease & debris	250	cable & wash
294	2/27/2014	1600 Manorway	grease & debris	850	cable & wash

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
295	3/7/2014	420 Top Hill	grease & roots	250	cable & wash
296	3/16/2014	Harvard & Oxford	grease	1550	cable & wash
297	3/18/2014	Barrett & Grand	grease & debris	150	pm wash
298	3/19/2014	621 Beth	roots	1100	cable & wash
299	3/19/2014	205 Chimney Rock	grease & roots	150	cable & wash
300	3/24/2014	628 N. Bois d arc	grease & roots	800	cable & wash
301	3/25/2014	Sunnybrook & Ellis	roots	150	pm cable
302	3/26/2014	6213 Huntington	roots & debris	500	cable & wash
303	3/18/2014	D.E. Pabst	roots & debris	300	cable & wash
304	4/3/2014	3326 Brookside	roots	750	cable & wash
305	4/4/2014	202 N. Parkdale	roots & debris	1000	cable & debris
306	4/7/2014	2324 S. Vine	roots	500	cable & wash
307	4/8/2014	5310 Indian Springs	grease & debris	300	cable & wash
308	4/8/2014	Fenton & Northridge	grease	300	cable & wash
309	4/9/2014	Courtney & Miller	grease & debris	125	wash & treat
310	4/9/2014	Winona & Gentry	roots	200	cable & wash
311	4/16/2014	2001 Montrose	grease	800	cable & wash
312	4/16/2014	1437 N. Fannin	grease, debris	300	cable & wash
313	4/21/2014	1412 W. Queen	roots	1000	cable & wash
314	4/23/2014	509 W. Douglas	grease & roots	150	cable & wash
315	4/24/2014	2032 Neeley	roots	500	cable & wash
316	4/24/2014	2430 Boldt	grease &roots	550	cable & wash
317	4/30/2014	3015 Cameron	roots	550	cable & wash
318	5/16/2014	2119 Clubview	roots & debris	400	cable & wash
319	5/19/2014	640 Beechwood	roots & debris	500	cable & wash
320	5/23/2014	Donnybrook & Dobbs	roots & debris	200	cable & wash
321	5/29/2014	3705 McMillian	roots & debris	1100	cable & wash
322	5/31/2014	2207 Jackie	roots & grease	350	cable & wash
323	6/2/2014	2200 blk of Golden rd	roots & debris	700	cable & wash
324	6/3/2014	2415 E. Erwin	roots & debris	2500	cable & wash
325	6/17/2014	2300 Buck	roots & debris	450	cable & wash
326	6/18/2014	846 Donnybrook	grease & debris	450	cable & wash
327	3/11/2014	Cain & Old Noonday	grease	1000	pm wash
328	6/27/2014	2505 Kensington	roots	300	cable
329	7/2/2014	319 Harpole	roots	350	cable & wash
330	7/11/2014	1601 Everglades	grease	300	wash
331	7/17/2014	3416 Old Noonday	roots	1200	cable & wash
332	8/25/2014	Lollar & Grand	roots & debris	350	cable & wash
333	9/8/2014	3114 Oak Bend	debris	300	cable & wash
334	9/9/2014	922 S. College	roots	550	cable & wash
335	9/11/2014	Parkdale S. of Front	roots	350	cable & wash
336	9/12/2014	1617 Milam	roots	600	cable & wash
337	9/16/2014	1212 Clinic	grease & debris	400	cable & wash
338	9/16/2014	3004 Tanglewood	roots	450	cable & wash
339	9/20/2014	2700 Pollard	roots	250	cable & wash
340	8/28/2014	4562 Van Hwy	roots	1150	cable & wash
341	9/23/2014	Paluxy & Loop 323	grease	300	wash & treat
342	10/2/2014	530 S.S.W. Loop 323	grease	1150	wash & treat
343	10/6/2014	2331 Devine	debris	100	cable & wash
344	10/21/2014	8310 Crooked Trail	debris	1000	cable & wash
345	10/31/2014	1037 Lyons	grease & debris	425	cable & wash

12 Month Schedule

#	Date added to Schedule	Location	Problem	Footage	Task
346	11/1/2014	3509 Woods Blvd	grease & debris	650	cable & wash
347	11/2/2014	100 Ridgecrest	roots & debris	900	cable & wash
348	11/6/2014	601 Valentine	roots & debris	300	cable & wash
349	11/7/2014	912 Grove	roots & debris	500	cable & wash
350	11/17/2014	802 Trinity	grease & debris	500	cable & wash
351	11/25/2014	Danica & Golden	grease & debris	350	wash
352	11/28/2014	409 Hollyoak	grease & debris	650	cable & wash
353	11/26/2014	4112 Birdwell	grease & roots	1000	cable & wash
354	12/1/2014	Crockett & Robertson	grease & debris	550	cable & wash
355	12/3/2014	Shelley & Silverwood	grease & roots	525	cable & wash
356	12/1/2014	Shaw & Bennett	grease & debris	475	cable & wash
357	12/6/2014	Timbercreek & Avenham	grease & debris	250	cable & wash
358	12/9/2014	2447 Sunnybrook	grease	325	cable & wash
359	12/15/2014	Bellemere & Wakefield	roots	925	cable &wash
360	12/15/2014	1206 Clyde	roots	550	cable & wash
361	12/16/2014	Parkdale & MLK	grease & roots	400	cable & wash
362	12/17/2014	1325 Graham	roots & debris	300	cable & wash
363	12/17/2014	217 Rix	roots & debris	300	cable & wash
364	12/22/2014	Libbie & Troup	grease	1200	wash & treat
365	12/26/2014	1501 Drexel	roots	900	cable & wash
364	12/29/2014	3529 Cameron	roots & debris	800	cable & wash
365	1/3/2015	1705 N. Glenwood	grease & debris	600	cable & wash
366	1/4/2015	2015 Rosewood	roots & debris	375	cable & wash
367	1/6/2015	2223 Rosemont	roots & debris	750	cable & wash
368	1/7/2015	Fleishel & Fifth	grease & debris	850	cable & wash
369	1/8/2015	Kensington & Kidd	grease	345	cable & wash
370	1/8/2015	1904 Lamplight	debris	100	cable & wash
371	1/11/2015	133 Donna	grease & debris	275	cable & wash
372	1/12/2015	7750 Morning Star	grease & debris	450	cable & wash
373	1/12/2015	6005 Wilshire	grease, debris, roots	375	cable & wash
374	1/20/2015	3019 Club Lake	grease & debris	650	cable & wash
375	1/20/2015	521 Princeton	grease, debris, roots	625	cable & wash
376	1/24/2015	905 S. Chilton	grease & debris	275	cable & wash
377	1/25/2015	2829 Old Henderson	grease	500	cable, wash, treat
378	1/27/2015	2137 Woodhaven	grease &roots	350	cable & wash
379	2/3/2015	649 S. Broadway	grease & debris	475	cable & wash
380	2/3/2015	1419 Marian	grease	160	cable & wash
381	2/2/2015	Robert E. Lee & Broadway	grease	500	cable & wash
382	2/5/2015	1206 N. Whitten	debris	250	cable & wash
383	2/12/2015	829 David	grease	850	cable & wash
384	2/13/2015	Erwin & Hill	grease & debris	425	cable & wash
385	2/14/2015	2213 Vernon	roots & debris	825	cable & wash
386	2/17/2015	1st & Vine	debris	400	cable & wash
387	2/26/2015	1222 Augusta	roots & grease	285	cable & wash
388	2/26/2015	De Charles & Dinah	grease & debris	745	cable & wash
389	2/26/2015	3205 Fry	grease, roots, debris	475	cable & wash
390	3/4/2015	3148 Rosemary	roots & debris	350	cable & wash
391	3/4/2015	918 Camellia	debris	375	cable & wash
392	3/6/2015	4500 Blk New Copeland	grease, roots ,debris	165	cable & wash
393	3/7/2015	4007 Old Chandler	grease & roots	775	cable & wash
394	3/7/2015	2913 Shaffer Ln	roots & grease	440	cable & wash

Tyler Water Utilities

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Hot Spot Cleaning List

12 Month Schedule

#	Date added to Schedule	Location	Task	Footage	Problem
395	3/8/2015	1823 E.S.E. Loop 323	grease	375	wash & treat
396	3/8/2015	712 Leon	debris & grease	275	cable & wash
397	3/9/2015	604 Maxwell	grease, roots, debris	775	cable & wash
398	3/10/2015	2612 Eileen	grease, roots, debris	375	cable & wash
399	3/10/2015	Victory & Turtle Creek	grease, roots, debris	525	cable & wash
400	3/13/2015	2nd & Talley	debris	425	cable & wash
401	3/14/2015	1538 & 1600 N. Hill	grease & debris	500	cable & wash
402	3/19/2015	3006 Silver Creek	roots & debris	250	cable & wash
403	3/19/2015	Horace & Commerce	grease, roots, debris	650	cable & wash
404	3/20/2015	100 blk of Thigpen	grease	400	(wash & treat)
405	3/21/2015	1800 N. Glenwood	roots	400	cable & wash
406	3/27/2015	6101 Huntington	roots	450	cable & wash
407	4/1/2015	217 Heritage Circle	roots & debris	900	cable & wash
408	4/2/2015	1000 E.S.E Loop 323	debris	150	cable & wash
409	4/3/2015	1519 Austin	roots	400	cable & wash
410	4/7/2015	1900 Waunell	roots	300	cable & wash
411	4/9/2015	Clinic & Dawson	Debris	650	pm wash
412	4/9/2015	Wellington Place	grease, roots, debris	300	cable & wash
413	4/10/2015	516 Fair Ln	grease, roots, debris	550	cable & wash
414	4/11/2015	Adams & Erwin	debris	700	cable & wash
415	4/12/2015	4800 Gretna Green	sand & debris	350	cable & wash
416	4/27/2015	2015 Rose Rd.	grease, roots, debris	600	cable & wash
417	4/29/2015	8238 Baylor	roots	750	cable & wash
418	4/29/2015	1400 W. Gentry	grease	675	cable & wash
419	5/3/2015	2909 Medina	roots	550	cable & wash
420	5/4/2015	2328 Alta Mira	grease,roots,debris	300	cable & wash
421	5/7/2015	807 W. 24th	grease,roots,debris	150	cable & wash
422	5/7/2015	530 S.S.W. Loop 323	grease,roots,debris	400	cable & wash
423	5/12/2015	318 W. Dobbs	debris	300	cable & wash
424	5/20/2015	1725 Haynie	grease,roots,debris	600	cable & wash
425	5/21/2015	3223 Martha	roots	400	cable & wash
426	5/24/2015	921 E. 8th	sand	350	wash
427	5/24/2015	1121 N. Bois D Arc	root & debris	250	cable & wash
428	5/25/2015	1319 S. Donnybrook	roots	275	cable & wash
429	6/1/2015	124 Ronnette	grease & debris	500	cable & wash
430	7/2/2015	DE Wilder Trail	debris	500'	cable
431	8/2/2015	2820 Staley	grease & debris	1150'	cable & wash
432	8/5/2015	28th & Tenneha	grease & debris	300'	cable & wash
433	8/8/2015	200 E. Fuller	debris	450'	cable & wash
434	8/13/2015	29th & Confederate	grease,roots,debris	550'	cable & wash
435	8/19/2015	Behind 2701 W. Erwin	roots & debris	1100'	cable & wash
436	9/2/2015	2401 Devine	roots & debris	1050'	cable & wash
437	9/25/2015	1923 Woodlawn	grease & debris	650'	cable & wash
438	9/27/2015	410 Muller Garden	Debris	250'	cable & wash
439	10/7/2015	Earle E. of Patricia	grease,roots,debris	575'	cable & wash
440	10/16/2015	2609 S. Chilton	debris	200'	cable & wash
441	10/16/2015	2615 S. Chilton	roots & grease	575'	cable & wash
442	10/23/2015	3363 Cascade Blvd	Debris	450'	wash
443	10/24/2015	614 Richardson	Grease	500'	Cable & Wash
444	10/24/2015	5417 Briarcove	Grease	225'	cable & wash
445	10/25/2015	1200 Doctors Dr	Grease	375'	cable & wash
446	10/26/2015	415 Thigpen	Grease	150'	wash & treat

Tyler Water Utilities
05/27/2016
Hot Spot Cleaning List

12 Month Schedule

#	Date added to Schedule	Location	Task	Footage	Problem
447	10/30/2015	1700 W. Claude	grease,roots,debris	1225'	cable & wash
448	11/4/2015	5412 Patton	grease & debris	900'	cable & wash
449	11/18/2015	Plaza & Northridge	grease & debris	325'	cable & wash
450	11/20/2015	740 Blackwell	grease	500'	cable & wash
451	11/20/2015	2211 W.S.W. Loop 323	grease	575'	cable & wash
452	12/3/2015	3023 Benbrook	grease,roots,debris	525'	cable & wash
453	12/28/2015	124 Ronnette	grease & debris	125'	cable & wash
454	12/28/2015	1709 Ronnette	roots & debris	200'	cable & wash
455	12/30/2016	904 W. Nutbush	debris	200'	cable & wash
456	1/4/2016	303 Oakland	roots & debris	375'	cable & wash
457	1/5/2016	Alpha & Mc Donald	debris	150'	cable & wash
458	1/5/2016	200 Barbee	Debris	550'	cable & wash
459	1/15/2016	522 S. Broadway	roots & debris	900'	cable & wash
460	1/20/2016	2632 New Copeland	roots & debris	125'	cable & wash
461	1/22/2016	3510 Woodhue	Grease & Roots	225'	cable & wash
462	1/25/2016	3327 Gail	debris	375'	cable & wash
463	1/27/2016	1228 Kennedy rd.	Grease & Roots	600'	cable & wash
464	1/29/2016	235 S. Saunders	Debris	150'	Cable
465	2/11/2016	515 E. Front	grease & debris	100'	cable & wash
466	2/15/2016	2716 Brentwood	Debris	850'	cable & wash
				284,615 Feet	
				53.9 Miles	

Appendix D

Appendix D

Gravity Sewer Line Condition Assessment and Remedial Measures Program

Gravity Sewer Line Condition Assessment and Remedial Measures Program

Mainline Sewer Inspection

Condition Assessment

Tyler shall CCTV all non-plastic pipes. For all other pipes, Tyler shall inspect using techniques such as:

- CCTV
- Pole camera
- Sewer Cleaning Findings
- Mechanical proofing
- Smoke testing
- Dye testing
- ScanJet
- Laser
- Sonar
- Other methods or technologies that are later approved by written agreement of the Parties pursuant to Section XX (Modification) of the Consent Decree)

Using a two-step process (PACP quick rating and Pipe Category priority ranking), Tyler shall review and prioritize all inspection data. Step 1 reviews shall be performed using PACP Quick Ratings with grade 5 and 4 defects evaluated first, followed by pipes with grade 3, 2, and 1 defect ratings. Step 2 analysis of inspection data shall consider the following factors:

- Frequency of SSOs
- Severity of structural defects
- Infiltration rate
- Historical O&M
- Access, environmental sensitive areas, surface restoration requirements,
- Criticality and public safety issues

Then, Tyler shall establish final condition ranking for each mainline as described on page 2:

Category A – Very Good Condition
Category B – Good Condition
Category C – Fair Condition
Category D – Poor Condition
Category E – Very Poor Condition

Condition Assessment Report

Remedial Measures Alternatives Analysis

Tyler shall establish most practical solution and timeframe for resolving structural and O&M defects that may include:

- Point Repair
- Pipe lining (HDPE, CIPP, etc.)
- Pipe replacement by open cut methods
- Pipe replacement by pipe bursting
- Other techniques or new technologies that are later approved by written agreement of the Parties pursuant to Section XX (Modification) of the Consent Decree
- Monitor or maintain in CMOM

Remedial Measures Plan

Tyler shall prioritize remedial measures and periodically evaluate priorities generally based on severity of defects, history of SSOs, maintenance history, age, material of construction, etc. The Plan will coordinate with the CIP as needed. All mainline sewers ranked D or E shall be remediated.

Condition Remedial Measures Report

Implement Remedial Measures Plan

Mainline Inspection Condition Rating Category

A = Very Good

Minor defects are mostly cosmetic in nature and do not impact system hydraulics nor contribute to significant infiltration/inflow. Non-displaced cracks or minor material degradation. No active infiltration. Likely outcome in remedial measures plan: Maintenance Analysis as part of CMOM Activities.

B = Good

No significant structural defects. Minor defects do not impact system hydraulics nor contribute to significant infiltration/inflow. No active infiltration. Minor defects may include less than 10% deformation, minor corrosion, slightly open non-displaced cracks. Likely outcome in remedial measures plan: Maintenance Analysis as part of CMOM Activities.

C = Fair

No significant structural defects although minor defects were noted during inspection. System hydraulics are good and no significant infiltration/inflow sources noted. Nominal defects may include less than 25% deformation from structural deterioration combined with displaced fractures, moderate corrosion with no reinforcement visible. Likely outcome in remedial measures plan: Ongoing Monitoring or Maintenance Analysis as Part of CMOM Activities.

D = Poor

Moderate structural defects that may include missing pipe material, broken pipe, severe corrosion with exposed wall reinforcement, pipe deformation exceeding 25% from structural deterioration, voids, hinge cracks/fractures, etc. Likely outcome in remedial measures plan: Alternatives Analysis and Remediation.

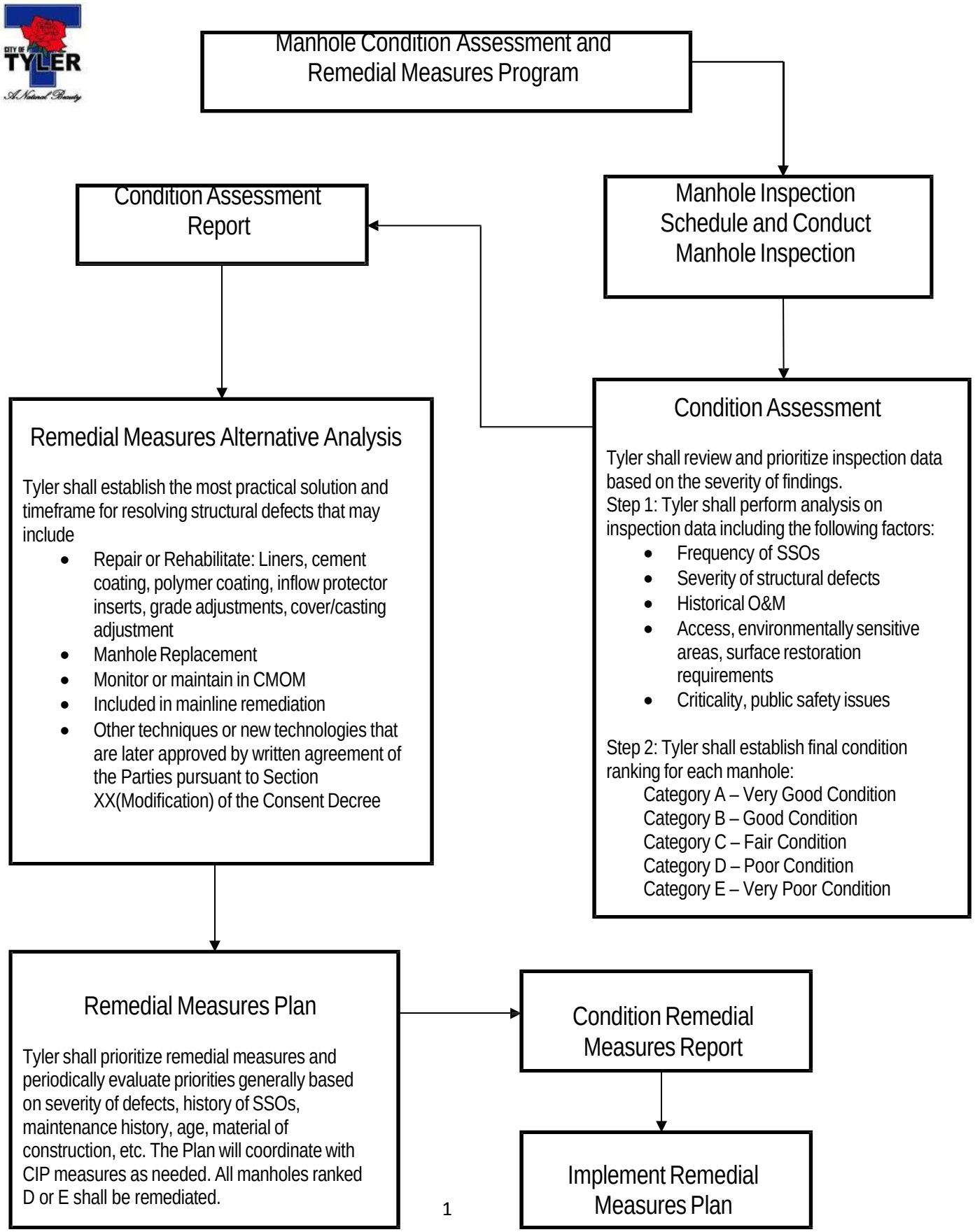
E = Very Poor

Severe structural defects that may include potential for structural failure, severe root intrusion, broken/missing pipe material, and other defects that may impact system hydraulics or contribute to significant infiltration/inflow. Structural collapse or defects likely to cause SSO is imminent. Likely outcome in remedial measures plan: Alternatives Analysis and Remediation.

Appendix E

Appendix E

Manhole Condition Assessment and Remedial Measures Program



Manhole Inspection Condition Rating Category

A = Very Good

Minor defects are mostly cosmetic in nature and do not impact system hydraulics nor contribute to significant infiltration/inflow. No active infiltration.

B = Good

Manhole has no significant structural defects. Minor defects do not impact system hydraulics nor contribute to significant infiltration/inflow. No active infiltration. Minor defects may include slightly loose casting, minor corrosion of metal surfaces, minor deterioration of concrete mortar between bricks, minor cracks, etc.

C = Fair

Manhole has no significant structural defects although minor defects were noted during inspection. System hydraulics are good and no significant infiltration/inflow sources noted. Light infiltration/inflow may be present. Nominal defects may include loose casting, nominal corrosion of metal surfaces, deterioration of concrete mortar between bricks or concrete walls, minor evidence of infiltration/inflow at precast joint sections, etc.

D = Poor

Manhole has moderate structural defects that may include cracks, loose bricks, separated casting, moderate root intrusion, broken cover and defects that may impact system hydraulics due to structural issues or contribute to significant infiltration/inflow. Some visible staining due to infiltration/inflow may be present. Active infiltration may have been observed. Moderate to severe defects may include loose casting, moderate to severe corrosion of metal surfaces, deterioration of concrete mortar between bricks, moderate to severe deterioration of precast wall sections and precast joint defects, etc. Manhole inspection was completed and the manhole will be addressed in the remediation plan.

E = Very Poor

Manhole may have severe structural defects that may include potential for structural failure, missing bricks, separated/broken casting, severe root intrusion, broken/missing cover and defects that may impact system hydraulics or contribute to significant infiltration/inflow. Visible staining due to infiltration/inflow may be present. Active infiltration may have been observed. Severe defects may include separated/broken casting/cover, severe corrosion of metal surfaces, missing mortar between bricks, etc. Manhole inspection was completed and the manhole will be addressed in the remediation plan or immediate repair may be warranted based on condition.

X = Additional Investigation Needed

Manhole inspection was not performed and additional follow-up is required. Manholes in this category will require additional efforts to facilitate inspection. This category of manholes includes those where access was denied by homeowner, no access due to locked gate, no access due to dog, homeowner would not return calls to gain access, obstacles over manhole preventing inspection, where property owner refused digging in yard, surcharged manholes that will require mainline cleaning, etc.

Manhole Form

Date:_____ **Project:**_____ **Basin:**_____ **Map No.**_____ **Crew:**_____

MH No.:_____ **Address:**_____

DS Length:_____ **Asset Type:** M CO EOL PS T **Status:** Y CNL CNO B LG D N S H

Lid Type: S V B O _____ **No. Vent Holes:**_____ **Asset Mat'l.:** B C F SB SC O_____

Grade: X A B **Inch:**_____ **Inflow Dish:** Y N Condition: __Good __Defective **Inflow Potential:** N L M S

Area Photo:_____ Internal Photo:_____ **Surface Cover:**____ **Surf. Mat'l.:** P—Asphalt —Concrete U__ **Debris**:___in.

GPS: _____ _____

MH Diameter:_____ Std.=48 inch

C.O. Diameter: _____ inch

Defects:

Def#	Photo	Loc	Type	Rate	Roots	I/I

General Comments:

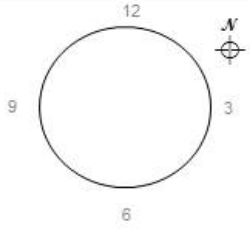
_____

_____

_____

_____

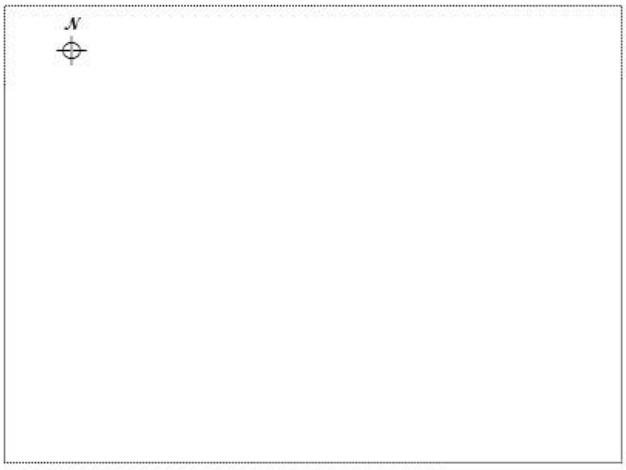
_____



Pipes:

Photo	In/Out	Size	Material	Clock	Depth	Drop	Surface Cov	Surface Mat'l	Debris	Connecting ID

Map Update



Definitions:
Asset Type: M=Manhole; CO=Cleanout; EOL= End of Line; PS=Pump Station; T=Tee Connection

Status: Y=Yes; CNL=Could Not Locate; CNO=Can Not Open; B=Buried; S=Surcharged; N=No Access; D=Dog; LG=Locked Gate; H=Homeowner

Lid Type: S=Solid; V=Vented; B=Bolted; OT=Other (specify/comment)

Asset Mat'l: B=Brick; C=Concrete; F=Fiberglass; SB=Sealed Brick; SC=Sealed Concrete; O=Other (specify/comment)

Grade: X=At grade; A=Above; B=Below

Defect Rate: Light, Moderate, Severe
Roots: Light, Moderate, Severe
I/I Potential: N=None; L=Light; M=Moderate; S=Severe

Surface Cover: ST=Street; GU=Gutter; AI=Alley; DW=Driveway; SW=Sidewalk; FD=Field; TW=Trees/Woods; PL=Parking Lot; SH=Road Shoulder; DD=Drainage Ditch; CR=Creek; WB=Within Building; YD=Yard; OT=Other

Surface Mat'l: P=Paved (designate Asphalt or Concrete); U=Unpaved

Defect Location: LD=Lid; FR=Frame; FS=Frame Seal; CH=Chimney; CO=Cone; WA=Wall; ST=Steps; BN=Bench; PS=Pipe Seal; IN=Invert; CAP=Cleanout Cap; COP=Cleanout Pipe

Defect Type: BPS=Bad Pipe Seal; BRK=Broken; CRK=Cracked; CCL=Collapsed; DET=Deteriorated; HOL=Hole; JNT=Joint; LOO=Loose; MBR=Missing Brick or Mortar; MIS=Missing

Category A

Category B

Category C

Category D

Category E

Category X

Digital Photographs

Digital photographs were taken during the inspection phases of the project. Figure 1 presents a summary of the types of photographs taken and the nomenclature used when naming the digital files. Information that can be gathered from the photographs includes right of way condition, surface cover, manhole grade, etc.

Figure 1
Project Photographs

1. Area Photo = Manhole ID,A, Photo No.
   Example: 060150190A0029.jpg
   Manhole: 060150190
   A=Area Photo
   Photo No.0029
   (Note: Photo taken in direction outgoing pipe showing mainline pipe easement)

2. Internal Photo = Manhole ID, I, Photo No.
   Example: 0800305801 0021.jpg
   Manhole: 080030580
   I=Internal Photo
   Photo No. 0021 (Note: North to top of photo.)

3. Manhole Defect Photo = Manhole ID, M, Photo No.
   Example: 8539M027.jpg
   Manhole 8539
   M= Manhole Defect
   Photo No. 027

4. Smoke Photo = Manhole ID, S, Photo No.
   Example: 8539S0014.jpg
   Manhole 8539
   S=Smoke Defect
   Photo No. 0014

5. Pipe Photo = Manhole ID, S, Photo No.
   Example: 9301P0054.jpg
   Manhole 9301
   P=Pipe Photo
   Photo No. 0054

Appendix F

APPENDIX F

HYDRAULIC MODEL UPDATE

This Appendix details the hydraulic model update required under this Consent Decree. Terms appearing in this Appendix retain the definitions assigned under the Consent Decree.

BACKGROUND

Tyler shall update its existing hydraulic wastewater system model in order to analyze WCTS conveyance capacities and identify Potential Capacity Constraints. Tyler shall use the updated hydraulic model to assess and predict Potential Capacity Constraints for the purpose of eliminating SSOs. Using the updated hydraulic model, Tyler shall:

1. Develop a current, ten and twenty year field calibrated hydraulic model (*i.e.* developed using ten and twenty year planning horizons) that will be used to determine wastewater infrastructure modifications/improvements to ensure adequate collection system conveyance capacity;
2. Develop a management tool to improve decision making ability;
3. Generate a prioritized list of potential capacity constraint projects; and,
4. Integrate the model with the wastewater GIS database.

The City shall use the most current version of SewerGEMS SanitaryV8i developed by Bentley Software, as of the Effective Date, for analysis of the City of Tyler's WCTS. SewerGEMS is a fully dynamic sanitary sewer modeling program. The City of Tyler shall analyze the WCTS using built-in hydraulic and hydrology tools.

The model update shall include the requirements below.

1. *Data Collection and Review*

The City shall collect and review data associated with the WCTS including but not limited to the data shown below, and shall incorporate such data, as appropriate, into the updated hydraulic model:

- WFA model database, maps and output files;
- Existing wastewater system base maps;
- GIS files – collection lines, manholes, lift stations, supporting attribute database, service area boundaries, Light Detection and Radar (LIDAR), street centerlines, parcels, land use, overflow reports, if available;
- City GIS asset numbering system description;
- Most recent available aerial photos;
- Record drawings for lift stations;
- Lift station pump curves & control elevations (including variable speed information if applicable);

- Record drawings of force mains and ARV locations;
- Lift station meter and/or run time data– 12 months;
- SCADA recorded data;
- Wastewater treatment plant flow records – daily, average and peak wet weather – 12 months;
- Records of historical work orders – 5 years;
- Monthly water billing and consumption data by service area – 12 months;
- Location of large water users, wastewater % return and point(s) of entry – 12 months;
- Past comprehensive master plans and reports; and,
- Other boundary conditions – location of inverted siphons, control gates, weirs, and flow equalization structures, if applicable.

1.1. Existing Data Evaluation & Validation

The City shall compile, evaluate and review all available data collected in the previous task, and identify gaps, deficiencies and/or abnormal data that may require further investigation.

The City shall evaluate the GIS data in order to:

- Verify that each pipe and manhole has a meaningful, unique identifier that will be used to relate the model and the GIS databases;
- Review and determine if the GIS data is broken into pipe segments appropriate for modeling and the type/level of GIS identifier data to be preserved in the model's pipe segments;
- Verify that each pipe has an appropriate and associated asset I.D. at each end;
- Verify the hydraulic model connectivity (map pipe connections with manholes and ensure flow directions are correctly depicted in the model); and,
- Identify large volume water users who do not contribute to the wastewater system.

1.2. Wastewater Flows

The City shall develop wastewater flow estimates in the model for existing and future design years, as defined in Section 1.2.5 of this Appendix. The City shall develop water consumption data and GIS shapefiles for the entire City consisting of the average daily water demands for each customer over the previous 12 months.

1.2.1. Existing Average Daily Flows Estimate

The City shall review and confirm service area boundaries, compare the water consumption data with the dry weather plant flows, and calculate the wastewater loading factor within each service area in order to identify the theoretical average percentage of water use transferred to the wastewater system for each customer. The City shall then calculate average wastewater flows for each customer and confirm this

average using the flow monitoring data collected in other tasks required under this Appendix.

In conducting this analysis, the City shall utilize latest available Texas State Data Center census and GIS parcel data to establish population within each service area. The City shall review planning reports to determine representative rates for population per household, estimate current population and density, and calculate the average wastewater flows per person within each service area.

1.2.2. Flow Patterns

The City shall create diurnal flow patterns in order to ensure an accurate wastewater model. The City shall create standard patterns for residential and commercial customers based on the flow monitoring results. Customer specific patterns may be created for large wastewater customers depending on their water use. In general, these patterns will have 1-hour time steps. This model shall distribute the daily loads based on these curves and route the corresponding flows through the WCTS. This provides a more accurate representation of the peak flows throughout the system, taking into account the time lag of peaks originating at the furthermost sections of the system and the natural attenuation that occurs.

1.2.3. Existing Wet Weather Peak Flows

The City shall analyze the peak treatment plant flows and determine the relationship with the results from the flow monitoring and rain gauge data collected over the monitoring period. After calculating the percentage of rainfall entering the collection system, the City shall calculate the wet weather flows for a 5 year – 24 hour storm event. The results of this calculation shall define the Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)) event projected flows.

1.2.4. Aerial Investigation

The City shall review digital aerial photography to identify and confirm the areas of new development. The City shall identify any additional areas of new development not included in the aerial photo.

1.2.5. Wastewater Flow Projections

The City shall apply prorated population growth projections (from Texas State Data Center) based on anticipated regions of future development for respective design years.

The City shall combine the industrial/commercial and population growth projections to develop wastewater production projections for each basin for the ten and twenty year planning horizons.

1.3. Wastewater Flow and Rainfall Monitoring

The City shall use dry and wet weather wastewater flows to calibrate the hydraulic model, establish Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)) projected flows for system analysis, and establish priority ranking of monitored areas with regards to infiltration/inflow. To obtain dry and wet weather wastewater flow data, the City shall install a minimum of twenty (20) continuous recording wastewater flow meters and eight (8) continuously recording rainfall gauges within the City of Tyler WCTS. The City shall develop a wastewater flow

monitoring program to collect data that the City shall use for hydraulic model calibration, establish magnitude of wet weather inflow and prioritize sub-basins for future testing and rehabilitation. The City shall perform meter pre-calibration, prepare mounting rings for various pipe sizes, set-up meter database and project information.

1.3.1. Conduct Field Inspections

The City shall field inspect proposed flow meter sites in order to verify wastewater flows, line sizes, debris levels, flow hydraulics, and access. The City shall prepare site inspection reports based on these field observations. Based on the results of the flow meter site inspections, the City shall finalize flow meter sites or establish new alternative sites. Where the proposed site has poor hydraulic characteristics, the City shall inspect the manholes upstream and/or downstream to determine if, by relocating the meter site, better flow hydraulics (that will result in a higher quality of collected data) can be achieved. Upon completion of the field inspections, the City shall install the flow meters. The City shall prepare tabular listings of meter site locations and a corresponding map displaying the final installed locations of wastewater flow meter and rainfall gauges.

1.3.2. Conduct Flow and Rainfall Monitoring for a Minimum of 60 Days

The City shall utilize the installed flow meters to establish wastewater flows during dry and wet weather conditions. Flow metering equipment shall be capable of recording flow under surcharged conditions and shall be synchronized to the same clock used for rain gauges. The duration of monitoring shall be a minimum of 60 days.

The City shall field calibrate each flow meter as part of installation. Calibration of each meter shall consist of an independent verification of the flow depth and velocity. The City shall log flow data at uniform time intervals not exceeding 15 minutes.

The City shall install continuously recording rainfall gauges in order to obtain each storm event intensity and duration across the study area. Each rainfall gauge shall be installed and calibrated to ensure proper operation and recording. Rainfall gauges shall be of the tipping bucket type and accurately record rainfall to 0.01 inches. Using the collection system maps in association with GIS, the City shall conduct a rainfall distribution analysis for each major storm event. For each metered sub-area, the volume of rainfall that fell over the surface shall be determined using GIS spatial analysis and compared to the discrete wet weather infiltration/inflow recorded by the flow meter. The volume of rainfall dependent infiltration/inflow shall be analyzed for selected storm events recorded during the monitoring period.

1.3.3. Data Collection from Flow Meters

The City shall undertake routine maintenance and service to confirm normal meter operation. The City shall generate peak, minimum and average flow depths and rates to assist in data analysis.

1.3.4. Confirmation of Adequate Wet Weather Data

The City shall undertake flow monitoring to obtain adequate hydraulic information for dry

and wet weather conditions. At least three (3) storm events of varying rainfall intensities but not less than 0.5" in 6 hours nor more than the Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)) are required to evaluate wet weather flows for hydraulic model calibration. The City shall review the dry and wet weather data, identify the number of storm events recorded and determine if adequate data has been obtained or if the metering period needs to be extended. Should adequate rainfall not occur within the 60 day minimum monitoring period, the City shall obtain the data required by Section 3 (Model Calibration) of this Appendix as expeditiously as possible. The City shall use wet weather flow data information to establish rainfall dependent infiltration/inflow (RDII). The City shall evaluate both cumulative and discrete flows.

1.3.5. Flow Data Analysis

The City shall analyze and develop tabular and graphical summaries of the gathered flow metering and rainfall data. Comparisons with any historical flow meter data from previous I/I Analyses and Sewer System Evaluation Surveys shall be summarized and evaluated. The City shall evaluate the impacts of silt, debris, backwater conditions, and other hydraulic constraints. The City shall use the data and information obtained during the monitoring period to determine the following for each meter site:

A. Dry weather average daily flow: A typical dry weather week shall be established that is not impacted by rainfall. Velocity data shall be compared to debris levels to analyze the scouring velocity necessary to prevent deposition in the lines. Discrete flows from each metered sub-basin shall be calculated.

B. Dry weather peak flow: Peak flows during dry weather shall be determined from the recorded meter site data.

C. Wet weather average daily flow: Wet weather flows for each rainfall event shall be analyzed to determine the percentage of rainfall that enters the WCTS (also known as the leakiness factor). The City shall establish the RDII by comparing the storm event flow with the dry weather flows. This value will vary for each storm duration and intensity. The City shall determine the RDII for each sub-basin. The City shall prioritize each sub-basin based on the severity of RDII for that basin.

D. Wet weather peak flow: Peak flow rates during wet weather are critical to the capacity analysis. Peaking ratios (Peak flow rate to average dry weather flow) shall be compared for dry and wet weather.

E. Peak inflow rates: Peak inflow rates shall be calculated by observing peak flow during wet weather events.

F. Total I/I volume: The area under each storm event curve shall be evaluated to establish the volume of rainfall induced infiltration/inflow. These values can then be normalized to establish the volume of RDII per inch of rainfall. Projections can then be made to accurately determine the impact of RDII during a normal year.

2. Model Development & Data Conversion

2.1. Existing Model Development

2.1.1. Infrastructure

The City shall integrate all existing Gravity Sewer Line, manhole, Force Main, I/I, and Lift Station GIS data to develop the dynamic hydraulic model of each of the City's WCTS service areas within the hydraulic model. At a minimum, the following database information shall be incorporated into the model:

- Manholes: rim elevation, rim to invert depths, flow lines, type, and elevation source;
- Gravity Sewer Lines & Force Mains: diameter, material, roughness; and
- Lift Stations: flow lines, diameter, depth, slab elevation, water level elevations for pumps "on" and pumps "off."

The updated model shall be an "all pipes model". All Gravity Sewer Lines 10-inch in diameter and greater shall be modeled with survey elevation data collected during other tasks. The City shall field survey critical locations on pipes less than 10-inch, including but not limited to locations of Wet-Weather Related SSOs, and Lift Station discharge points downstream to pipelines of 10 inch or larger.

As much as possible, all Gravity Sewer lines smaller than 10-inch shall be included in the model using assumed slopes, flow lines and rim elevations where available. The City shall use LIDAR data or topographic data for non-surveyed rim elevations. The hydraulic model shall incorporate a unique identifier for each asset, which the City shall link with the City's existing GIS mapping and data storage.

The updated model shall be used to analyze: all Gravity Sewer Lines 10-inches in diameter and larger; all additional Gravity Sewer Lines acting as collector sewers; all Gravity Sewer Lines for distances of at least 1000 feet upstream of manholes and Lift Stations that have experienced a Wet-Weather Related SSO within three (3) years preceding the start date of the field survey of such pipes as required above; all Lift Stations; all Force Mains; and all active and passive flow control devices.

2.1.2. Manhole Depth Surveys

The City shall undertake manhole depth surveys during the hydraulic model update. Manholes surveyed as part of the manhole depth survey shall include at a minimum those manholes on: all Gravity Sewer Lines 10-inches in diameter and larger; all additional Gravity Sewer Lines acting as collector sewers; all Gravity Sewer Lines for distances of at least 1000 feet upstream of manholes and Lift Stations that have experienced Wet-Weather Related SSO(s), and all active and passive flow control devices.) Depth survey data shall be used to both verify the rim to invert distance, pipe size, drop manholes, connectivity, and map update for these manhole assets. The condition assessment report shall be used by the City to update the existing GIS maps for all manholes inspected, generate the rim to invert distance for the hydraulic model and prepare a remedial measures plan to address those manholes in need of rehabilitation. Modeling of smaller diameter sewers (<10 inches) may require elevation data based on known capacity concerns or Wet Weather Related SSO(s). The City estimates that approximately 1,600 of the nearly 8,241 manholes may be on 10 inch or larger pipes and/or other critical sewers.

The City shall use digital cameras on all manholes subject to depth surveys. All photographs that the City takes shall be included in the field inspection computer database so that a permanent electronic record can be maintained. During the manhole depth surveys, each of the following types of information shall be obtained:

- Basin Designation
- Manhole/Cleanout ID
- Inspection Status
- Address
- Surface cover, grade, type of cover (paved, yard, etc.)
- Material of construction – brick, concrete, etc.
- Area and Internal photo of manhole
- All incoming and outgoing pipe depths from rim to invert
- Pipe size
- All incoming and outgoing pipe digital photographs
- All incoming and outgoing pipe diameters and material of construction
- Outgoing pipe length
- Debris depth
- I/I Defects: Active, Evidence or No I/I, with digital photographs
- Field corrections to collection system map

The City shall attempt to locate all manholes to obtain the information for use in the modeling effort. Where manholes are buried under asphalt or concrete and require grade adjustments, the City shall expose and raise those critical manholes.

2.1.3. Manhole Elevation Survey

Following manhole inspection, and during model construction, the City shall perform the necessary rim elevation survey on all manholes to be inspected for the model update. Pipe slopes shall be calculated using the rim elevation data and rim to invert distance from the manhole inspection phase of work. The City shall coordinate the survey datum with City staff and tie the datum into the City control monument system. Using GPS equipment, where possible, the City shall tie the horizontal location and vertical elevation of the Gravity Sewer Line (to 0.1 feet) and pump station control elevations. The hydraulic model shall utilize the manhole rim to invert depth measured during manhole inspection. The City must conduct an elevation survey on the following manhole rims and Lift Stations:

1. Manhole rim elevation survey: Approximately 1,600 each
2. Lift Station control elevations: 22 lift stations

The City shall initiate the elevation survey following the manhole depth survey in order for survey crews to have updated maps and locations of assets. Performing the

manhole inspections prior to the field surveying will optimize the field survey by identifying those manholes that are buried (and will need to be raised) and those assets that could not be located by metal detector. The rim elevations from the survey along with the rim-to-invert distance from the manhole inspections shall be used to establish invert (flow line) elevations and pipe slopes. The data obtained during the Manhole Depth Survey and the Manhole Elevation Survey may be used to meet the requirements of V.B Condition Assessment and Remedial Measures Program.

2.1.4. Operational Parameters

The City shall incorporate into the model the information collected in previous tasks, all pump curves, and lift station control elevations, for each of the Lift Stations incorporated into the model. The City shall field verify the firm capacities of at least the largest four largest Lift Stations. The float/control elevations shall be based on record drawings or survey. VFD curves shall also be created where applicable.

2.1.5. Flow Patterns

The City shall input into the model diurnal flow patterns determined from the city-wide flow monitoring.

2.2. Allocate Existing Wastewater Flows

The City shall allocate and distribute residential and commercial wastewater flows within the service area and assign to the appropriate manholes using the water billing data and point shapefile linked to the parcel base maps.

2.3. Infiltration and Inflow

The City shall develop an I/I modeling strategy best suited to the available data based on the modeler's engineering analysis and in accordance with the practices recommended by the developer of the modeling software selected by the City. The modeling strategy shall be described in the Hydraulic Model Update Report which shall be sealed by a registered professional engineer licensed to practice in the State of Texas. The City shall compare the dry weather flows and wet weather flows with the gauged rain data to establish the relationship between rainfall and I/I and to determine the best method for estimating these flows in the model.

The City shall simulate I/I in the model through the actual flow monitoring data based on service area and diurnal contributions. The effects of precipitation on wastewater flow rates via rapid inflow or gradual infiltration shall also be modeled. The actual level of detail used in the simulations will be dependent upon the quality of data obtained in the flow-monitoring program. Infiltration shall be defined on a service area basis with set rates used for dry and wet flow conditions for all sections of a given line.

2.4. Large Wastewater Customers

The City shall evaluate major water users identified in the model database and update model based on water usage records provided by the City. The City shall directly connect large volume wastewater customers to the model where appropriate. The City shall develop a GIS point database detailing the approximate Water Meter Account

service locations with the associated billing data for a 12 month period.

3. Model Calibration

Model calibration and validation shall use the dry and wet weather criteria presented in the Water Environment Federation Manual of Practice No. FD-17, Third Edition, 2011, Table 5.2.

3.1. Calibration

The City shall perform calibration runs to match the flow monitoring data to the simulation results for average and peak flows at flow meter locations in each service area. The calibration runs shall also include matching the initial response time to known rainfall until the computer calculated flows and travel times (hydrographs) are in agreement with monitored data. The City shall make adjustments to the input data (flow rates, diurnal flow patterns, I/I values, pipe roughness, pump curves, pipe deficiencies, rainfall response characteristics, etc.) to calibrate the results to the flow data. The City shall use in the hydraulic model defined diurnal curves for each flow metering sub-basins and, if necessary, land use, for effective calibration. The City's model shall calculate the resulting hydrographs at points in the system that can then be compared with the monitoring data.

3.2. Sensitivity Analysis

As part of the calibration process, the City shall investigate the sensitivity of the modeling results to changes in various parameters. These parameters shall be varied for a range of typical values and the City shall analyze the effects this variation has on the modeling results. The City shall use the results of this analysis to guide the calibration process.

4. *Existing System Analysis*

The City shall use the calibrated model to determine the existing system flow capacities and identify Potential Capacity Constraints during the Assessment Storm (defined in Appendix G (Capacity Assessment and Remedial Measures Program)). The City shall compare Wet-Weather SSO's with model predictions and verify capacity related SSOs.

The City shall prioritize Potential Capacity Constraints based on analysis of modeling results and historical records. The City shall prepare a field verification plan that will field investigate by priority Potential Capacity Constraints to better define the site specific hydraulics and/or provide additional localized model calibration points.

The City shall use field investigation techniques that are most appropriate for each identified Potential Capacity Constraint, pursuant to Appendix G (Capacity Assessment and Remedial Measures Program). At a minimum, the City shall conduct rainfall monitoring at the original rain gauge locations. The City shall perform the selected field investigation technique to gather system response during wet weather. The City shall compare data recorded to model predictions to verify model results. The City shall consider those Potential Capacity Constraints that are field verified to be confirmed Capacity Constraints that shall undergo a remedial measures alternative analysis followed by inclusion in the Capacity Remedial Measures Plan, in accordance with the requirements set forth in Paragraphs 52-55 of the Consent Decree and Appendix G

(Capacity Assessment and Remedial Measures Program).

5. *Future System Analysis*

The updated hydraulic model may serve as the basis for development of the future system scenario analyses and, if developed, shall account for land use loadings and diurnal response. The City shall make appropriate assumptions for the hydraulic model with respect to future I/I. For any future system scenarios analyzed, the City shall extend service to the anticipated land uses and service area boundaries identified previously, and integrate options for future alternatives.

5.1. Proposed Future Developments

The City shall incorporate other future system improvements into model. The City shall conduct model validation following the addition of proposed new development. Scenario modeling shall include the infrastructure proposed in identified future new developments. Prior to starting this task, the City shall review the future model database for accuracy.

5.2. Allocate Future Flows and Create Scenarios

The City shall properly distribute and allocate to the updated hydraulic model the proposed wastewater flows previously developed for the ten and twenty year planning horizons. The City shall create the dry and wet weather flow scenarios for each of these planning years.

5.3. Future System Analysis

The City shall analyze design year models to the twenty year planning horizon. Identify potential capacity deficient segments/regions within the existing collection system for each design year model.

5.4. Develop System Improvement Alternatives

The City shall develop various system improvement alternatives, in accordance with the requirements of Paragraph 54 of the Consent Decree, to remediate Confirmed Capacity Constraints. Such alternatives shall include but not be limited to direct removal and replacement of capacity deficient Gravity Sewer Lines, I/I reduction, upsizing, pipe slope adjustment, paralleling deficient lines, addition of Lift Stations, service area transfers, and in-line and/or off-line storage options.

All Confirmed Capacity Constraints and the recommended system improvements shall be documented by the City.

Appendix G

Appendix G
Capacity Assessment and Remediation Program

This appendix details the process the City will follow to implement the Capacity Assessment and Remedial Measures Program required under this Consent Decree. Terms appearing in this appendix retain the definitions assigned under the Consent Decree. The below process tree visually depicts the steps that the City shall follow when utilizing the updated hydraulic model to assess Potential Capacity Constraints and a field verification process to determine if Potential Capacity Constraints are Confirmed Capacity Constraints and, if so, to develop and implement appropriate remedial measures. The following is a detailed narrative process tree that sets forth the requirements and procedures that the City shall follow for each process level that is summarily depicted in Figure 1.

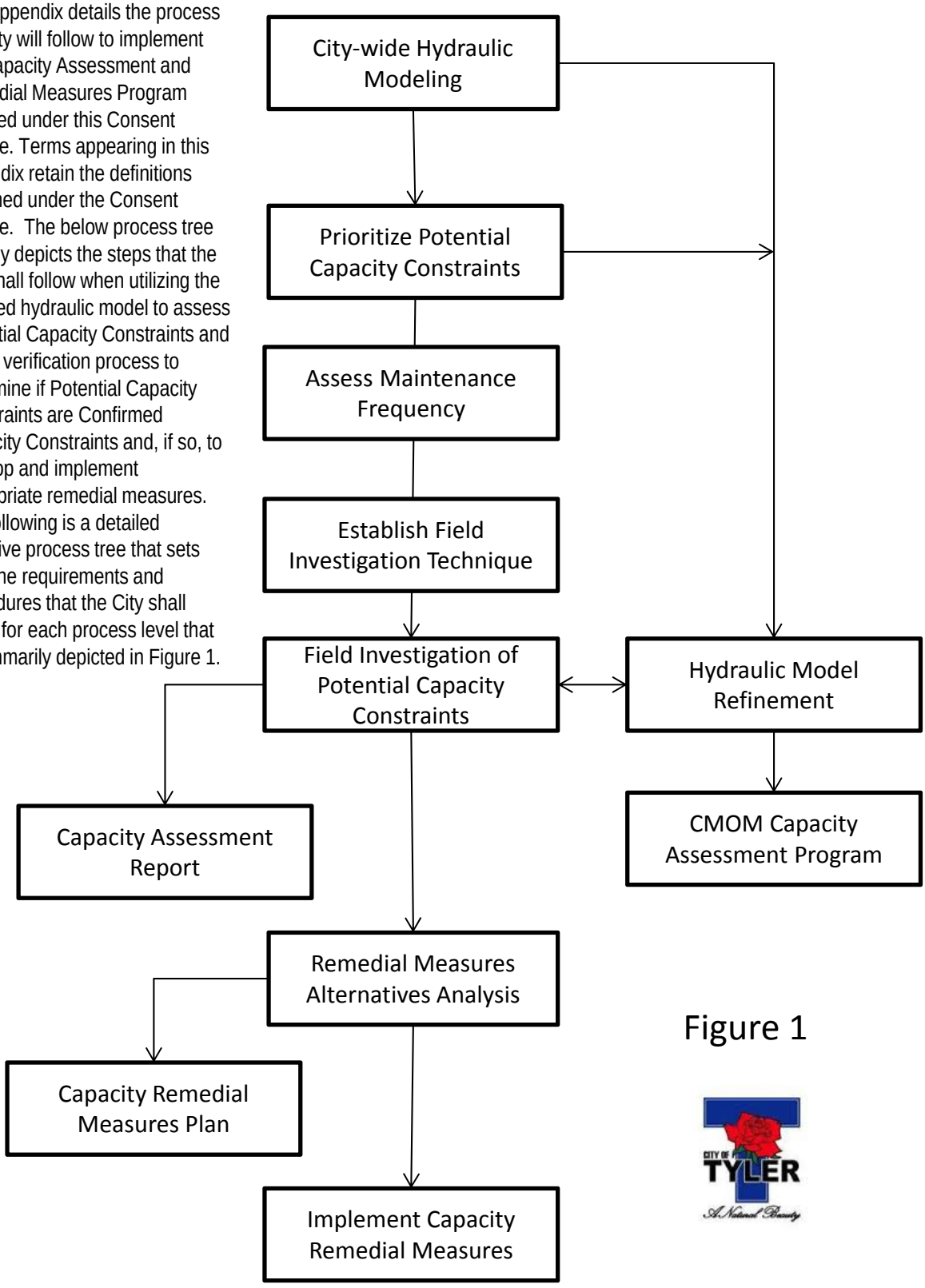
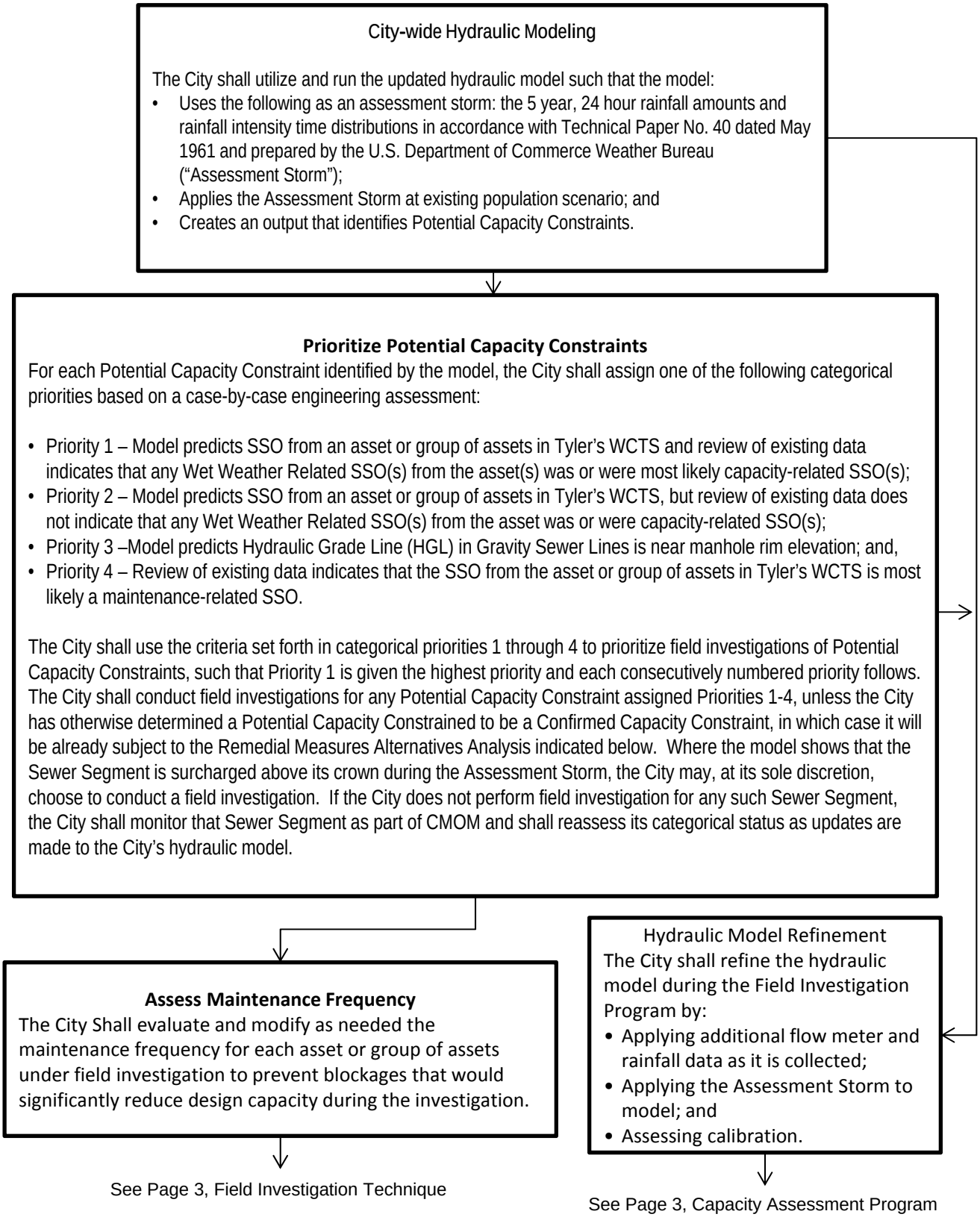


Figure 1

Appendix G
Capacity Assessment and Remediation Program



See Page 3, Field Investigation Technique

See Page 3, Capacity Assessment Program

Appendix G

Capacity Assessment and Remediation Program

From Page 2

Determine Field Investigation Technique

For each field investigation that the City conducts pursuant to this Appendix, the City shall determine the field investigation technique(s) most appropriate for each Potential Capacity Constraint. The City shall use one or more of the following field investigation techniques for each investigation:

- Flow Metering (Generally for Priority 1 or 2 constraints);
- Smart Covers (Generally for Priority 1 or 2 constraints);
- Chalking (Generally for Priorities 3 or 4 constraints);
- Visual Inspection (As needed for Priorities 1-4 constraints);
- Rainfall monitoring (Generally for Priority 1, 2, and 3 constraints);
- Other techniques as determined by the City to be necessary

From Page 2

Hydraulic Model Refinement

See Consent Decree Section V. C. 54 - Capacity Remedial Measures Plan

Field Investigation of Potential Capacity Constraints

For each field investigation that the City conducts pursuant to this Appendix, the City shall implement selected field investigation technique(s) at each location until a "significant wet weather event "is experienced. A significant wet weather event shall be a storm event of not less than 0.5 inches in 6 hours or more than the Assessment Storm that causes a noticeable system response.

The City shall evaluate Potential Capacity Constraints during field investigation using the following criteria:

- For wet weather events less than 1 inch over 24 hours, where the HGL in the Gravity Sewer Lines is near manhole rim elevation, the City shall identify the Potential Capacity Constraint as a Confirmed Capacity Constraint.

- For wet weather events that exceed 1 inch over 24 hours and are less than the Assessment Storm, the City shall apply the observed storm to the model, determine the predicted HGL at the Potential Capacity Constraint location, and compare the predicted HGL in the Gravity Sewer Lines from the model to observed HGL at the observed storm. If the observed HGL is:
  - at or above the model predicted HGL in the Gravity Sewer Lines at the observed storm, then:
    - for any priority 1, 2 or 3 Potential Capacity Constraint, the City shall identify as a Confirmed Capacity Constraint; and
    - for any priority 4 Potential Capacity Constraint, the City shall evaluate on a case-by-case basis to determine if there is a Confirmed Capacity Constraint.
  - less than the model predicted HGL in the Gravity Sewer Lines and is not near manhole rim elevation at the observed storm, then:
    - for any priority 1, 2, or 3 Potential Capacity Constraint, the City shall:
      i. evaluate the Potential Capacity Constraint on a case-by-case case basis to determine if there is a Confirmed Capacity Constraint, if the model predicts an SSO at the Assessment Storm; or
      ii. remove the Potential Capacity Constraint location from the field investigation program and monitor it as part of CMOM, if model does not predict an SSO at the Assessment Storm;
    - for any priority 4 Potential Capacity Constraint, the City shall remove the Potential Capacity Constraint from the field investigation program and monitor it in the future under CMOM.
- For a wet weather event that is approximately equal to or exceeds the Assessment Storm:
  - if an SSO does not occur, the City shall evaluate the intensity of the actual storm event to determine if a Confirmed Capacity Constraint exists;
  - If there is not a significant wet weather response, the City shall remove the Potential Capacity Constraint from the field investigation program.

CMOM Capacity Assessment Program

See Consent Decree Section V. A. CMOM Program

See Page 4, Remedial Measures Alternative Analysis

Capacity Assessment Report

See Consent Decree Section V. C. 53 - Capacity Assessment Report

Appendix G
Capacity Assessment and Remediation Program

From Page 3

Remedial Measures Alternatives Analysis

The City shall conduct a remedial measures alternatives analysis pursuant to this Appendix for each Confirmed Capacity Constraint, to select a remedial measures plan for the location. As part of this alternatives analysis the City shall collect necessary additional field data, such as:

- Smoke Testing;
- Dye Testing;
- Flow Metering;
- CCTV;
- Utility conflicts; and/or
- Other data as needed.

The City shall use engineering analyses to determine which remedial measures solution is most likely to resolve the Confirmed Capacity Constraint. Alternative remedial measures solutions to be considered include but are not limited to:

- Re-routing a portion of upstream wastewater flows;
- reducing flows entering the WCTS from customers;
- reducing inflow and/or infiltration;
- increasing conveyance capacity of WCTS;
- installing upstream flow detention facilities;
- continued monitoring of the location if appropriate; and/or,
- implementing other engineering solutions.

The City shall apply the Assessment Storm and twenty year population growth projection to determine appropriate asset sizing as needed for Confirmed Capacity Constraints.

Capacity Remedial Measures Plan

See Consent Decree Section V. C. 54. Capacity Remedial Measures Plan

Plan and Implement Capacity Remedial Measures

For each remedial measures solution selected by the remedial measures alternatives analysis, the City shall create a plan for implementing the remedial measure. The City shall prioritize remedial measures and periodically evaluate these priorities by reviewing:

- the severity of Confirmed Capacity Constraints identified during inspections;
- the frequency and history of capacity- related SSOs;
- the pipe size, age, material, and maintenance history;
- the, relationship of Capacity Constraint areas of the WCTS to growth-related improvements and/or condition related improvements; and,
- other criteria the City determines appropriate.

For each remedial measures solution selected, the City shall also:

- Coordinate the implementation of the capacity-related remedial measures solution with any condition remedial measures, as needed;
- Allocate its budget to account for the planned remedial measures;
- Prepare design documents for bidding and construction, as needed;
- Implement the planned remedial measures; and,
- Monitor growth and development:
    - Where the model predicts a capacity constraint caused by projected twenty year population growth,Tyler shall monitor actual population growth compared with growth projected in the hydraulic model and shall construct capacity projects as needed to accommodate actual rate of growth.

Appendix H

APPENDIX H

Historic Constructed SSO Locations and Inspection Results				
	Manhole Name	**Manhole Address**	**Action Taken as Reported by City**	**Date Inspected by City**
1	MH-M16C32	429 W. Mockingbird	Plugged inlet with concrete and outlet with concrete and plastic stopper.	3/13/2013
2	MH-O16A13	1000 Blackwell Ave	EPA present during inspection. Confirmed no bypass exists. Subject pipe remnant did not connect to sewer system. Plugged anyway.	3/1/2013
3	MH-N22D20	520 Princeton Dr	Plugged inlet and outlet with concrete.	3/13/2013
4	MH-N13E16	1503 N. Winona Ave	Confirmed no bypass exists. Subject line is a 6"service line to a house.	3/12/2013
5	MH-N18H08	3715 Fry Ave	Plugged both inlet and outlet with concrete	3/13/2013
6	MH-M14I60	600 Ferguson Ave	Confirmed no bypass exists. Ductile iron pipe passing through manhole without bypass is sanitary sewer line. Other opening on manhole is from storm drain.	3/14/2013
7	MH-N15G17	823 Donnybrook Ave	Confirmed no bypass exists. Subject pipe connects to another manhole.	3/14/2013
8	MH-M14E06	500 N. Palace Ave	Confirmed no bypass. Subject pipe is a sewer main extension stub-out that was already plugged on the outlet side. Plugged pipe inside MH as a precaution.	3/14/2013
9	MH-N15E18	509 W. Douglas	EPA present during inspection. Subject pipe appeared to have been plugged on outlet side previously but pipe had broken beyond manhole, probably due to erosion along creek bank. Plugged both pipe opening in manhole and remnant of pipe that exits the manhole with concrete.	3/1/2013
10	MH-N17C06	Beckham/Troup Hwy	Actual location is behind 2109 Redbud. Confirmed no bypass exists. See photo.	3/14/2013

Appendix I

Appendix I
Consolidated Listing of *United States et. al v. City of Tyler* Consent Decree Deliverables and Consent Decree Reports[1]

Table 1. Consent Decree Deliverables

Name of Deliverable	Main Ref. in Consent Decree	Due Date for Deliverable (and for Any Associated Work)	Deliverable Subject to EPA Review and Approval or Review and Comment	Agencies to Receive Copies
Interim CMOM Program	V.A.	Interim CMOM Program must be submitted no later than 180 Days following the CD Effective Date.	EPA Review and Comment	EPA and TCEQ
Final CMOM Program[2]	V.A.	The Final CMOM Program must be submitted no later than 1 Year after the CD Effective Date.	EPA Review and Approval	EPA and TCEQ
Hydraulic Model Update Summary	V.B.	Within 30 Days after completion of the Updated Hydraulic Model.[3]	EPA Review and Comment	EPA and TCEQ
Capacity Remedial Measures Plan	V.C.	Within 42 months after the CD Effective Date.	EPA Review and Approval	EPA and TCEQ
Annual Condition Remedial Measures Plan	V.D.	July 1st of each Year following the completion of the previous Year's Condition Assessment.	EPA Review and Approval	EPA and TCEQ
Lift Station Improvement Plan	V.E.	Within 18 Months of the CD Effective Date; to be submitted concurrently with the Lift Station Assessment Report	EPA Review and Approval	EPA and TCEQ

[1] This Appendix I is provided for the convenience of the Parties and is intended by the Parties for use as a reference document. In the event of any discrepancy between the provisions of Sections V (Compliance Requirements) and IX (Reporting Requirements) and this Appendix I, the provisions of Sections V (Compliance Requirements) and IX (Reporting Requirements) shall control. Capitalized terms shall maintain the definitions provided for in Section IV (Definitions) of the Consent Decree.

[2] The Final CMOM Program shall contain written descriptions of all CMOM Program components specified in Subsections A.1) (Training Program) through A.11) (Information Management System) of Section V as well as a schedule including deadlines for implementation of each Final CMOM Program component.

[3] The Updated Hydraulic Model must be completed within 2 years of the CD Effective Date as required by Paragraph 50.

Table 2. Consent Decree Reports

Name of Report	Main Ref. in Consent Decree	Due Date for Report (and Reference for Associated Content)	Report Submitted To	Agencies to Receive Copies
Quarterly Reports	IX Para. 87.	Quarterly Reports are due no later than 1 Month after the expiration of the applicable quarterly reporting period.[4] The Quarterly Reports shall include information required by Paragraph 87 of the Consent Decree.	EPA and TCEQ for Review	EPA and TCEQ
Annual Reports	IX. Para. 88	Annual Reports are due no later than March 1st of each Calendar Year after the CD Effective Date. The Annual Reports shall include information required by Paragraph 88 of the Consent Decree. Additionally, the Annual Reports shall include reported information as required in the following CMOM Program components: 1) Reports on the Employee Training Program as required by Paragraph 19 2) Reports on the SSO Reporting and Documentation Procedures as required by Paragraphs 24.c and 25	EPA and TCEQ for Review	EPA and TCEQ

[4] Quarterly reporting periods within any Calendar Year are: January 1st through March 31st (Quarter 1); April 1st through June 30th (Quarter 2); July 1st through September 30th (Quarter 3); and October 1st through December 31st (Quarter 4). For the first Quarterly Report after the Effective Date only, the applicable reporting period shall be that portion of the applicable quarter between the Effective Date and the end of that quarter. For the first Calendar Year after the Effective Date only, Tyler shall only submit Quarterly Reports for the quarters that occur between the Effective Date and the end of the Calendar Year.

Name of Report	Main Ref. in Consent Decree	Due Date for Report (and Reference for Associated Content)	Report Submitted To	Agencies to Receive Copies
		3) Reports on the System-Wide Routine Cleaning Program as required by Paragraph 30 4) Reports on the Revised High Frequency Cleaning Program as required by Paragraph 33 5) Reports on the Root Control Activities as required by Paragraph 43 Additionally, the Annual Reports shall include: 1) Reports on the Completion of Condition Assessment Activities as required by Paragraph 60 2) Reports on the FOG Enforcement Program as required by Paragraph 40.j 3) Reports on the completion of Capacity Remedial Measures as required by Paragraph 56 4) Reports on the completion of Condition Remedial Measures work as required by Paragraph 63 5) Reports on the completion of Lift Station Remedial Measures as required by Paragraph 69 6) Reports on the completion of Force Main Remedial Measures work as required by Paragraph 74		

Name of Report	**Main Ref. in Consent Decree**	**Due Date for Report (and Reference for Associated Content)**	**Report Submitted To**	**Agencies to Receive Copies**
		7) Reports on Additional Constructed SSO Locations discovered as required by Paragraph 77		
Capacity Assessment Report	V.C.	Within 42 months after the CD Effective Date as required by Paragraph 53	EPA and TCEQ for Review	EPA and TCEQ
Lift Station Assessment Report	V.E.	Within 18 months of the CD Effective Date as required by Paragraph 66 to be submitted concurrently with the Lift Station Improvement Plan	EPA and TCEQ for Review	EPA and TCEQ
Force Main Assessment Program Report	V.F.	Within 18 Months after the CD Effective Date as required by Paragraph 74	EPA and TCEQ for Review	EPA and TCEQ
Additional Constructed SSO Locations Report	V.G.	If Tyler discovers or is notified of additional Constructed SSO locations, no later than 2 business days after discovery or notification of these locations as required by Paragraph 75	United States and Texas for Review	United States and Texas
Removal of Additional Constructed SSO Locations Report	V.G.	Within 7 Days after completing the removal of the Additional Constructed SSO Location(s) as required by Paragraph 76	United States and Texas for Review	United States and Texas