

Investing in clean water resources

Capacity, Management, Operations, and Maintenance Plan

Submitted

Version 3.1

Submitted February 14, 2014



Prepared by **EVANSVILLE WATER & SEWER UTILITY** City-County Administration Building

1 NW Martin Luther King Blvd Evansville, Indiana 47708

SUBMITTAL AUTHORIZATION

Approved By:

ana

February 14, 2014

Jip Garrard, Director of Special Projects and Strategic Planning

Date

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my inquiry of those individuals immediately responsible for obtaining the information, that I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Document Reviewers

The following individuals have reviewed this document but are not required to sign it:

Name	Title
Harry Lawson	Wastewater Superintendent
Mike Labitzke	Deputy Director–Engineering
Jeff Merrick	Regulatory Compliance Officer
Travis Hildebrandt	Collection System Manager
Carl Gist	CSO Manager

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Table of Contents

Acronyms and	l Abbrevi	ationsXI
1 Introduction	1	
1.1	смом	l Version1-1
1.2	Utility	s Mission and Purpose of the CMOM Programs1-1
1.3	Report	Organization1-2
1.4	CMOM	Program Activities, Resources, and Enhancements1-3
1.5	Guidar	nce Documents and Industry Standards1-3
2 Organizatio	nal Struct	ture
2.1	Introdu	uction
2.2	Missio	n2-1
2.3	Purpos	e of the CMOM Programs2-1
2.4	Utility	Organization2-2
	2.4.1	Utility Leadership Team
	2.4.2	Operations Department
	2.4.3	Engineering Department
	2.4.4	Administration Department
	2.4.5	Regulatory Compliance Department
2.5	Applica	able Policies2-8
	2.5.1	Applicable Personnel Policies
	2.5.2	Staffing and Budgeting Policies 2-8
3 Utility Mana	gement	Program 3-1
3 Utility Mana 3.1	igement Introdi	Program
3 Utility Mana 3.1 3.2	igement Introdu Scope	Program
3 Utility Mana 3.1 3.2 3.3	igement Introdu Scope	Program
3 Utility Mana 3.1 3.2 3.3	Introdu Scope . Legal A 3 3 1	Program
3 Utility Mana 3.1 3.2 3.3	Introdu Introdu Scope Legal A 3.3.1 3.3.2	Program
3 Utility Mana 3.1 3.2 3.3	Introdu Scope - Legal A 3.3.1 3.3.2 3.3.3	Program 3-1 Juction 3-1 Suthority 3-1 Sewer Use Ordinance 3-1 Discharge Controls 3-2 Pretreatment Program 3-2
3 Utility Mana 3.1 3.2 3.3	agement Introdu Scope - Legal A 3.3.1 3.3.2 3.3.3 3.3.4	Program 3-1 Juction 3-1 Suthority 3-1 Sewer Use Ordinance 3-1 Discharge Controls 3-2 Pretreatment Program 3-2 Fats Oils and Grease Control 3-3
3 Utility Mana 3.1 3.2 3.3	gement Introdu Scope - Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5	Program3-1Juction3-1Suthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4
3 Utility Mana 3.1 3.2 3.3	Introdu Scope Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6	Program3-1Juction3-1Juction3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4
3 Utility Mana 3.1 3.2 3.3	agement Introdu Scope - Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7	Program3-1Juction3-1Juthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septage Haulers3-4
3 Utility Mana 3.1 3.2 3.3	agement Introdu Scope J Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8	Program3-1Juction3-1Juthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septage Haulers3-4Interiurisdictional Agreements3-4
3 Utility Mana 3.1 3.2 3.3	gement Introdu Scope . Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.9	Program3-1Jaction3-1Suthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Septage Haulers3-4Interjurisdictional Agreements3-4Fasements and Rights-of-Way3-5
3 Utility Mana 3.1 3.2 3.3	agement Introdu Scope J Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.9 3.3.10	Program3-1Juction3-1Juthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Septage Haulers3-4Interjurisdictional Agreements3-4Easements and Rights-of-Way3-5Enforcement Measures3-5
3 Utility Mana 3.1 3.2 3.3 3.3	gement Introdu Scope - Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.9 3.3.10 Financi	Program3-1Juction3-1Suthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Septage Haulers3-4Interjurisdictional Agreements3-4Enforcement Measures3-5Enforcement Measures3-5
3 Utility Mana 3.1 3.2 3.3 3.3	gement Introdu Scope . Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.9 3.3.10 Financi 3.4.1	Program3-1Jaction3-1Juthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Septage Haulers3-4Interjurisdictional Agreements3-4Enforcement Measures3-5G&M Budget3-6
3 Utility Mana 3.1 3.2 3.3 3.3	agement Introdu Scope J Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.9 3.3.10 Financi 3.4.1 3.4.2	Program3-1Juction3-1Juthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Septage Haulers3-4Interjurisdictional Agreements3-4Easements and Rights-of-Way3-5Enforcement Measures3-5O&M Budget3-6Rate Analysis3-6
3 Utility Mana 3.1 3.2 3.3 3.3 3.4 3.4	agement Introdu Scope - Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.9 3.3.10 Financi 3.4.1 3.4.2 Trainin	Program3-1Juction3-1Juthority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Interjurisdictional Agreements3-4Easements and Rights-of-Way3-5Enforcement Measures3-5O&M Budget3-6Rate Analysis3-6and Safety3-6
3 Utility Mana 3.1 3.2 3.3 3.4 3.4	gement Introdu Scope . Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.9 3.3.10 Financi 3.4.1 3.4.2 Trainin 3.5.1	Program3-1Juction3-1Juction3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Septage Haulers3-4Interjurisdictional Agreements3-4Easements and Rights-of-Way3-5Enforcement Measures3-5O&M Budget3-6Rate Analysis3-6Technical Training3-6
3 Utility Mana 3.1 3.2 3.3 3.3 3.4 3.4	agement Introdu Scope . Legal A 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7 3.3.8 3.3.7 3.3.8 3.3.9 3.3.10 Financi 3.4.1 3.4.2 Trainin 3.5.1 3.5.1 3.5.2	Program3-1Jaction3-1Juttority3-1Sewer Use Ordinance3-1Discharge Controls3-2Pretreatment Program3-2Fats, Oils, and Grease Control3-3Private Property Lateral Inspection3-4Septic Systems3-4Septage Haulers3-4Interjurisdictional Agreements3-5Enforcement Measures3-5Sial Management and Budgets3-6Rate Analysis3-6Technical Training3-6Safety Training3-7

	3.5.4	Performance Measurements and Evaluation	3-8		
3.6	Comm	Communication and Public Outreach			
	3.6.1	Public Education and Outreach	3-9		
	3.6.2	Internal Communication	3-10		
	3.6.3	Pollution Prevention and other Public Education	3-10		
	3.6.4	Web site Pollution Prevention Education	3-10		
	3.6.5	CSO/SSO Notification to the Public	3-10		
3.7	Custon	ner Service	3-10		
	3.7.1	Public Education	3-12		
	3.7.2	Service Connections	3-12		
3.8	Inform	ation Management			
	3.8.1	Geographic Information System	3-13		
	3.8.2	Engineering Records			
	3.8.3	Computerized Maintenance Management System			
2.0	3.8.4	Record Reeping and Reporting			
3.9	Equipn	nent and Supplies			
	3.9.1	Spare Parts Inventory	3-17		
2 10	3.9.2	venicies			
3.10	Engino	oring	0 1 C		
5.11	2 11 1	Dian Poviour	 3-10 2 10		
	2.11.1	Standard Design Criteria	2_10		
3 1 2	Constr	uction Inspection	3-19		
5.12	3 12 1		3-20		
	3 12 2	Canacity Assurance	3-20		
	3.12.3	Sanitary Sewer Evaluation Studies and Condition Assessment.			
3.13	System	Assessment and Rehabilitation			
	3.13.1	Assessment Process			
	3.13.2	Rehabilitation Plan	3-21		
4 Operational	l and Mai	ntenance Programs			
4.1	Introdu	JCtion			
4.2	Scope	of U&IVI Programs			
4.3		Scone	4-1		
	4.3.1	Scope			
	4.5.2	Standard Operating Procedures			
	4.3.3	Data Management			
4 4	Recurr	ing Blockage Cleaning and Inspection Program			
	4.4.1	Scone	4-3		
	4.4.2	Schedule and Resource Management.			
	4.4.3	Standard Operating Procedures			
	4.4.4	Data Management	4-4		
4.5	Overflo	ow Cause Determination Program	4-4		
	4.5.1	Scope	4-4		
	4.5.2	Schedule and Resource Management	4-5		
	4.5.3	Standard Operating Procedures	4-5		
	4.5.4	Data Management	4-5		

	4.5.5	Recurring Capacity-related SSOs	4-5
4.6	Constr	uction Program	4-8
	4.6.1	Scope	4-8
	4.6.2	Schedule and Resource Management	4-8
	4.6.3	Standard Operating Procedures	4-8
	4.6.4	Data Management	4-8
4.7	Lift Sta	ition O&M	4-8
	4.7.1	Scope	4-8
	4.7.2	Schedule and Resource Management	4-9
	4.7.3	Standard Operating Procedures	4-12
	4.7.4	Power Outage Response Plan	4-12
	4.7.5	Ten State Standards Evaluation and Compliance Action Plan	4-12
	4.7.6	Design and Record Drawings	4-13
	4.7.7	Data Management	4-13
4.8	FOG Pr	rogram	4-14
	4.8.1	Scope	4-14
	4.8.2	Resource Management	4-15
	4.8.3	Standard Operating Procedures	4-15
	4.8.4	Data Management	4-18
4.9	Root C	ontrol Program	4-18
	4.9.1	Scope	4-18
	4.9.2	Schedule and Resource Management	4-18
	4.9.3	Standard Operating Procedures	4-18
	4.9.4	Data Management	4-18
4.10	Backup	o Equipment Inventory	4-19
	4.10.1	Scope	4-19
	4.10.2	Schedule and Resource Management	4-19
	4.10.3	Standard Operating Procedures	4-19
	4.10.4	Data Management	4-19
4.11	Critica	l Components	4-19

Appendixes

- A Consent Decree Requirements
- B Organizational Charts
- C Sewer Use Ordinance
- D Evansville Water and Sewer Utility Sewer Handbook
- E Equipment List
- F Sewer C&I Schedule: 8-inch to 15-inch
- G Recurring Blockage C&I
- H Lift Station List
- I Lift Station Assessment Summary
- J Lift Station Inspection Route List
- K City of Evansville—Food Establishment Listing
- L Grease Trap Questionnaire
- M City of Evansville—Food Establishment Checklist
- N RootX
- O Critical Components

- P Lift Station Back Up Power Assessment and Vendor Inventory
- Q Sewer Cleaning Log
- R Manhole Inspection & Small-diameter C&I SOP
- S Construction Specification Examples
- T Lift Station Plan
- U Lift Station Timing Study Results Adequacy of Redundant Pumping Capacity
- V Identifying SSOs Included in the IOCP Technical Memorandum

List of Tables

Table 1-1. CMOM Plan Organization	1-2
Table 3-2. Sewer Utility Rate Increases	3-6

List of Figures

3-1	Street Sweeping Map	3-11
4-1	SSO Data Analysis	4-7
4-2	Collection System	4-10
4-3	Lift Station Inspection Map	4-11

Acronyms and Abbreviations

AMSA	Association of Metropolitan Sewerage Agencies
C&I	Cleaning and Inspection
CCTV	closed-circuit television
CIP	Capital Improvement Program
City	City of Evansville
CMMS	Computerized Maintenance Management System
СМОМ	Capacity Management, Operations, and Maintenance
CSO	combined sewer overflow
CSS	combined sewer system
ERP	Enforcement Response Plan
FOG	fats, oils, and grease
GIS	geographic information system
GPS	geographic positioning system
I/I	infiltration/inflow
IDEM	Indiana Department of Environmental Management
IOCP	Integrated Overflow Control Plan
IT	information technology
0&M	operation and maintenance
OCD	Overflow Cause Determination
NACWA	National Association of Clean Water Agencies
NPDES	National Pollutant Discharge Elimination System
RBC&I	Recurring Blockage Cleaning and Inspection
SCADA	supervisory control and data acquisition
SOP	standard operating procedure
SORP	Sewer Overflow Response Plan
SSES	Sanitary Sewer Evaluation Studies
SSO	sanitary sewer overflow

SSS	sanitary sewer system
SUO	Sewer Use Ordinance
ULT	Utility Leadership Team
USEPA	U.S. Environmental Protection Agency
Utility	City of Evansville Water and Sewer Utility
VCHD	Vanderburgh County Health Department
WEF	Water Environment Federation
WWTP	wastewater treatment plant

section 1 Introduction

The City of Evansville (City) Water and Sewer Utility (Utility) has prepared this document to describe its Capacity Management, Operations, and Maintenance (CMOM) Programs for the City's sewer systems. The Utility used the U.S. Environmental Protection Agency (USEPA) Guidance document, *Guide for Evaluating Capacity, Management, Operation and Maintenance Programs at Sanitary Sewer Collection System (2005)*, to guide development of the collection of programs specific to its work practices. Throughout this process, specific topic areas have been added or deleted based on the Utility's specific organization, responsibilities, and current status; and the programs will continue to evolve through time.

In March 2010, the Utility assumed direct control of management, operation, and maintenance of the wastewater treatment plants (WWTPs) and collection system after nearly 15 years of management oversight by a contract operator. During the transition to complete in-house control of management, operations, and maintenance, the Utility began formally developing its CMOM programs, and to date, has submitted two versions to the USEPA and the Indiana Department of Environmental Management (IDEM). The Utility submitted CMOM Version 1.1 on June 30, 2010.

The City and Utility negotiated and subsequently entered into a Consent Decree with the United States and State of Indiana (the Consent Decree) in June 2011. Article VI Section F of the Consent Decree requires the Utility to develop a CMOM program and implement measures to provide for the proper operation and maintenance of equipment while minimizing failures, malfunctions, and line blockages that could contribute to sanitary sewer overflows (SSOs) and combined sewer system (CSS) releases. The Consent Decree requires the Utility to develop its CMOM program fully by November 30, 2012.

The Utility submitted CMOM Version 2.0 on May 1, 2011, and received comments back from USEPA on July 28, 2011. The Utility provided responses to the USEPA comments on August 29, 2011, to demonstrate its progress with the CMOM program. The Utility subsequently submitted CMOM 2.1 on February 29, 2012, and CMOM 3.0 on November 30, 2012.

1.1 CMOM Version

This document is Version 3.1 and it replaces previous versions. It includes the requirements of CMOM 2.0, 2.1, and 3.0. The relevant part of the Consent Decree can be found in Appendix A, and Table A-1 lists the requirements and identifies to which CMOM version the requirements are addressed within.

1.2 Utility's Mission and Purpose of the CMOM Programs

As stated on its Web site, the Utility's mission is as follows: "...provide the Evansville metro area with high quality, safe, dependable water and sewer service at rates which encourage economic development. The Utility will manage land and water resources to ensure quality for future generations." The Utility's CMOM programs support this mission and the overall purpose is to

provide for the proper operation and maintenance (O&M) of its assets while minimizing failures, malfunctions, and line blockages that could contribute to SSOs and CSS releases.

The Utility currently has the majority of practices in use that meet basic CMOM expectations, and it continues to standardize and refine documentation and data related to its CMOM programs. Specific goals of the Utility's CMOM programs are to:

- Shift the emphasis of the Utility's CMOM practices to be more proactive.
- Reduce risks and costs associated with emergency repairs, emergency construction, insurance premiums, and/or liability from collection system releases.
- Meet the requirements contained in the Consent Decree.
- Improve communication and coordination.
- Implement cost-effective strategies to integrate, optimize, and leverage existing and future resources.
- Prioritize system rehabilitation projects.
- Improve performance measurement, evaluation, tracking, and reporting.

1.3 Report Organization

The report is organized as described in Table 1-1.

Table 1-1. CMOM Plan Organization

Plan Item	Goal Supported	Report Location
CMOM Introduction	Mission and Purpose, Report Organization	Section 1
Organizational Overview	Structure of Utility Organization, Program Purpose	Section 2
Utility Management Programs	Support of Utility Management part of CMOM Program	Section 3
Utility O&M Programs	Support of Utility O&M part of CMOM Program	Section 4

For each activity or individual program within the Utility's collection of CMOM programs, existing practices are documented. Each section contains the following:

- A brief description of the scope of each program, including activities identified based on USEPA guidance
- Existing practices, activities, and resources
- Data management used to measure and track performance
- Discussion of basic requirements, if applicable

1.4 CMOM Program Activities, Resources, and Enhancements

Existing practices, information, and resources were identified and used in the CMOM evaluation as follows:

- Interviews and discussions with key staff members
- Inspection of system assets
- Review of utility records, reports, and other documentation of O&M activities
- Overview of SSO history and detailed assessment of the causes of system releases and other system issues (private property overflows and other customer complaints)
- Review of information management, staffing, budgeting, and administration processes
- Review of process for identifying and funding Capital Improvement Program (CIP) projects, repair and rehabilitation needs, and other collection system improvements

1.5 Guidance Documents and Industry Standards

Specific resources were identified and other CMOM-related guidance documents and industry standards were used to identify best management practices for the City's CMOM Program that emphasize coordination, enhancement, and integration of existing utility practices. Sources reviewed for this CMOM Program evaluation included but were not limited to the following:

- 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.
- Technical Practice Update: Wastewater System Capacity Sizing Using a Risk Management Approach, Water Environment Federation (WEF) P07015E; May 2007.
- Guide to Managing Peak Wet Weather Flows in Municipal Wastewater Collection and Treatment Systems, WEF P06103E; 2008.
- Association of Metropolitan Sewerage Agencies (AMSA) Wet Weather Survey Report; May 2003.
- Strategic Recommendations Based on USEPA's 2004 Report to Congress on Combined and Sanitary Sewer Overflows, National Association of Clean Water Agencies (NACWA); 2006.
- AMSA Collection System Capacity-Setting Matrix; September 2003.
- USEPA Region 4 Guide to Collection and Transmission System Management, Operation, and Maintenance Programs, Version 1.0; September 2003.
- USEPA Region 4 Introduction to Conducting Evaluations of Municipal Wastewater Collection System Management, Operation, and Maintenance Programs; Version 1.0, September 2003.
- USEPA's SSO Toolbox, located online at <u>http://cfpub</u>.epa.gov/npdes/sso/toolbox.cfm.

SECTION 2

Organizational Structure

2.1 Introduction

Section 2 describes the Utility's mission and organizational structure including department descriptions and responsibilities. Information on the Utility's physical assets can be found in the Utility's initial System Characterization document, which is required by the Consent Decree and was submitted to USEPA and IDEM on November 30, 2011. That information will be included in this CMOM and future updates by reference.

2.2 Mission

As stated on its Web site, the Utility's mission is as follows: "...provide the Evansville metro area with high quality, safe, dependable water and sewer service at rates which encourage economic development. The Utility will manage land and water resources to ensure quality for future generations."

The authority for the Utility's roles and responsibilities regarding the sewer system is provided in the City of Evansville City Code as follows: *"The Department of Public Utilities shall be responsible for the waterworks system and sewers and sewage disposal and such other powers and duties as may be assigned by the Council"* (Evansville City Code: Acts 1987, Ch. 53, § 1). Additional detail on the Utility's legal authority is provided in Section 3.

2.3 Purpose of the CMOM Programs

The Utility's CMOM Programs support the mission and the overall purpose is to provide for the proper O&M of its assets while minimizing failures, malfunctions, and line blockages that could contribute to SSOs and CSS releases. The Utility currently has the majority of practices in use that meet basic CMOM expectations, and it continues to standardize and refine documentation and data related to its CMOM programs. Specific goals of the Utility's CMOM programs are to:

- Shift the emphasis of current CMOM practices to be more proactive.
- Reduce risks and costs associated with emergency repairs, emergency construction, insurance premiums, and/or potential liability from system releases.
- Meet the requirements contained in the Consent Decree.
- Improve communication and coordination.
- Implement cost-effective strategies to integrate, optimize, and leverage existing and future resources.
- Prioritize system rehabilitation projects.
- Improve performance measurement, evaluation, tracking, and reporting.

2.4 Utility Organization

The Utility's current organizational structure was developed to prepare during the transition to full in-house control of the Utility, and the Utility has been operating under this organizational structure since assuming full and direct control of management and O&M in March 2010. The organizational charts are in Appendix B. Since the submission of CMOM 3.0, the Utility has added several new positions, many focused on improved operation and maintenance and compliance with Consent Decree obligations. Specific Utility departments responsible for implementing the CMOM plan are described in the following subsections.

2.4.1 Utility Leadership Team

The Utility Leadership Team (ULT) is responsible for overall Utility leadership and management, and for implementing and conducting the Management Program elements described in Section 3. The ULT is led by the Director of Utilities and it is made up of the Deputy Directors that lead and manage each of the Utility's operating departments.

The ULT organizational chart is shown in Figure B-2 in Appendix B.

2.4.2 Operations Department

The Operations Department is responsible for implementing all O&M activities for the City's sewer and water systems, and for overseeing and conducting the Utility's safety program. The Operations Department is led by a Deputy Director of Operations and it is divided into the Wastewater and Water Departments, which are each led by Superintendents. CMOM-related activities performed by the Operations Department are described in Section 4. The Utility's safety program is described in Section 3.

The Operations Department organizational chart is shown in Figure B-3 in Appendix B, and the roles and responsibilities of key staff members within the Operations Department are described in the following subsections.

2.4.2.1 Department Leadership

The Wastewater Superintendent, in concert with the Deputy Director for Operations and Utility Director, will be responsible for the following:

- Preparing the annual O&M budget
- Coordinating additions and modifications to sewer and water facilities and infrastructure
- Interpreting local, state, and federal regulations related to the Utility's treatment facilities and operations
- Meeting with customers, customer representatives, governmental agencies, and other utilities in planning and directing the Utility's O&M activities
- Researching and presenting status reports to various government agencies

2.4.2.2 Wastewater Department

The Wastewater Department consists of the Wastewater Superintendent, Plant Managers for the East WWTP and West WWTP, including separate O&M crews, a Collection Systems

Manager, and separate supervisors and O&M crews for construction, collection system, and lift stations.

The Wastewater Superintendent is responsible for the following wastewater infrastructurerelated activities:

- Maintenance and repair of the sewer system wastewater trunk sewer and interceptor mains
- Planning, preparing reports, and evaluating wastewater quality laboratory data
- Maintaining records in compliance with local, state, and federal laws
- Long-range planning and oversight of operations, maintenance, regulatory compliance, and budget preparation for the Wastewater Department

The East and West WWTP Managers are responsible for supervising the personnel and the following operations of the WWTPs:

- Assisting in the development and training of plant operators
- Maintaining and operating the wastewater plant in compliance with local, state, and federal laws
- Preparing the annual WWTP budget
- Reviewing laboratory analyses of plant discharge
- Preparing and analyzing monthly and annual state and federal discharge and environmental compliance reports
- Working with the community to ensure good communication with and education of the public with regard to environmental concerns

The Collection System Manager is responsible for supervising the personnel and the following operations of the wastewater collection system:

- Maintaining and operating the wastewater collection system and its lift stations in compliance with local, state, and federal laws
- Assisting in the training and mentoring of collection system employees
- Preparing the annual collection system budget
- Collaborating with the plant operations support to ensure flow and to prevent system backups
- Responding as promptly as circumstances allow to all overflows and building/property backups
- Working with the community to ensure good communication and education of the public with regard to health and environmental compliance concerns
- Reviewing all job requirements and ensures implementation on collection system projects

The Collection System Manager's staff includes one administrative assistant who is responsible for work order distribution.

The Construction Maintenance Supervisor reports to the Collection System Manager, and his or her responsibilities include but are not limited to the following:

- Supervising a construction crew of 16 members for repairing existing sewer lines in the collection system
- Pre-inspecting job sites to determine the scope of work, and inspecting work while in progress and at completion
- Ensuring necessary construction and safety equipment is available for any construction maintenance projects
- Preparing an annual construction maintenance budget, as needed

The Collection System Maintenance Supervisor reports to the Collection System Manager, and his or her responsibilities include but are not limited to the following:

- Supervising the collection system maintenance crew of eight members
- Pre-inspecting job sites to determine the scope of work and inspect work while in progress and at completion
- Implementing Utility preventive cleaning maintenance practices
- Responding as promptly as circumstances allow to all overflows and building/property backups
- Ensuring necessary equipment is available for any routine or emergency repair projects
- Preparing the annual Collection System Maintenance budget as needed

The Lift Station Supervisor reports to the Collection System Manager, and his or her responsibilities include but are not limited to the following:

- Supervising a lift station crew of seven and one combined sewer overflow (CSO) maintenance crew member
- Scheduling and reviewing routine inspection and maintenance of the lift stations
- Implementing Utility preventive maintenance practices
- Reviewing all lift station and CSO maintenance job requirements
- Ensuring necessary equipment is available for any routine or emergency repair projects

2.4.3 Engineering Department

The Engineering Department is responsible for overall management of the planning, engineering, and construction activities for sewer and water capital projects. The Engineering Department is also responsible for updating and maintaining the Utility's geographic information system (GIS). The Engineering Department is led by the Deputy Director of Engineering. CMOM-related activities performed by the Engineering Department are described in Section 3.

The Engineering Department organizational chart is shown in Figure B-4 in Appendix B, and the roles and responsibilities of key staff members within the Operations Department are described in the following subsections.

2.4.3.1 Department Leadership

The Deputy Director for Engineering reports to the Utilities Director and is responsible for planning, organizing and managing the activities of the Utilities Engineering Department.

Responsibilities include but are not limited to the following:

- Project management and budget preparation for the Utility CIP
- Interpreting local, state, and federal regulations related to the Utility's facilities and infrastructure
- Prepares the annual budget for the Utilities Engineering Department
- Researches and presents technical engineering reports to various government agencies and the Director of Utilities as needed
- Assists the Director of Utilities with strategic planning for utility improvements

Coordinates annual inspection activities per the requirements of the Consent Decree

2.4.3.2 Planning and Development

The Planning and Development Managers report to the Deputy Director for Engineering and each supervises the Utility's location and drafting crew. Responsibilities include but are not limited to the following:

- Locating the municipal infrastructure (water or sewer) for underground excavation operations in compliance with local, state, and federal laws
- Working with the public, developers, and local contractors to ensure proper installation of water/sewer facilities
- Reviewing all plans submitted for water and wastewater and working with developers and contractors to resolve issues
- Monitoring work in progress and inspecting completed work

2.4.3.3 Capital Project Management

The Wastewater Capital Projects Manager reports to the Deputy Director for Engineering and assists with overall capital project planning, budgeting, and scheduling. Responsibilities include but are not limited to the following:

- Managing wastewater capital construction projects for the Utility
- Assisting in creating cost estimates for sewer and wastewater capital projects
- Developing, implementing, and modifying sewer and wastewater capital project schedules and processes
- Reporting project progress and status, and ensuring project completion on time
- Documenting all project activity and maintaining records, contracts, reports, and files related to capital projects

- Reviewing, analyzing, and processing CIP expenditure requests, including contract amendments and change orders, and approving payments to consultants and contractors
- Reviewing and approving completed work and facilitating project closeout, punch lists, records (as-built) drawings, and warranty issues

2.4.3.4 GIS

The GIS/Information Technology (IT) Coordinator reports to the Deputy Director for Engineering and manages the Utility's GIS operation. Responsibilities include but are not limited to the following:

- Coordinating the continuing development of the GIS and IT systems according to the Department's needs
- Evaluating new GIS technologies, products, and services and makes recommendations for purchases or upgrades
- Coordinating GIS projects, performing requested applications, spatial analyses, and queries
- Maintaining the Engineering Department's GIS system and components
- Developing and coordinating the GIS/IT budget process by forecasting expenditures, authorizing payments, and monitoring expenditures

2.4.4 Administration Department

The Utility Administration Department is responsible for overall management of the Utility's financial and administrative activities, and for management of the Utility's customer service function (which at this time only includes management of sewer and water taps and the Utility billing function). The Administration Department is led by the Chief Financial Officer—Utilities. CMOM-related activities performed by the Administration Department are described in Section 3.

The Administration Department organizational chart is shown in Figure B-5 in Appendix B.

2.4.5 Regulatory Compliance Department

The Regulatory Compliance Department is responsible for monitoring the Utility treatment plants for compliance with environmental regulations and submits compliance reports to regulatory agencies and works with the community and industry to ensure good communication and education of the public and industry with regard to environmental compliance concerns. The department also oversees the Utilities pretreatment program and is responsible for the Utility's FOG program.

The Regulatory Compliance Department organizational chart is shown in Figure B-6 in Appendix B. The roles and responsibilities of key staff members within the Regulatory Compliance Department are described in the following subsections.

2.4.5.1 Department Leadership

The Regulatory Compliance Officer supervises the personnel and manages the operation of the Regulatory Compliance Department. Responsibilities include but are not limited to the following:

- Briefing the Director of Utilities on environmental concerns and providing information required for decision making in compliance with local, state, and federal laws
- Reviewing and/or proposing new ordinances and standards and providing comments on possible impacts of new regulations
- Managing the training and mentoring of Regulatory Compliance Department employees and other sewer department personnel, as necessary

2.4.5.2 Combined Sewer Overflows

The CSO Manager reports to the Regulatory Compliance Officer and maintains compliance with local, state, and federal laws. Responsibilities include but are not limited to the following:

- Preparing the annual CSO budget
- Responding immediately to CSOs to prevent environmental contamination
- Inspecting CSO sites to determine the scope and strategy of work, and ensuring proper safety and disinfection procedures are used to minimize exposure to hazardous materials
- Notifying the proper environmental regulating authorities, preparing and submitting CSO reports in the required timely manner, and implementing preventative measures
- Maintaining safety and emergency response training logs for Sewer Department and Treatment Plant personnel, as necessary
- Preparation of the Semi-Annual Report and monitoring SORP compliance

2.4.5.3 Wastewater Laboratory and Pretreatment

The Wastewater Laboratory and Pretreatment Department Manager reports to the Regulatory Compliance Officer and supervises the operations of three laboratory technicians and one Laboratory Pretreatment Manager of the WWTP. Responsibilities include but are not limited to the following:

- Reviewing laboratory analyses of plant discharge and preparing and analyzing monthly and annual state and federal discharge and environmental compliance reports
- Working with the community to ensure good communication and education of the public with regard to environmental concerns
- Assisting in the development and training of plant operators

The Pretreatment Coordinator reports to the Regulatory Compliance Officer and Pretreatment Manager and schedules the workload of the pretreatment program and supervises the Pretreatment Sampler. Responsibilities include but are not limited to the following:

- Scheduling the inspection of commercial and industrial facilities for compliance with local, state, and federal wastewater discharge laws and the collection and delivery of wastewater samples to the Wastewater Laboratory
- Reviewing industrial reports and issuing Notices of Violation
- Investigating customer complaints with regard to health and environmental compliance concerns to resolve problems and promote customer satisfaction

- Investigating instances of illegal discharges and misuse of the sewerage system
- Ensuring that local, state, and federal pretreatment reports are completed and submitted to the Wastewater Laboratory
- Assisting in training and mentoring of the Pretreatment Sampler

2.4.5.4 Fog Program

The Utility's FOG program provides monitoring and ensures the compliance of restaurants to properly dispose of fats, oils and grease. The FOG program is described in Sections 3.3.4 and 4.8.

2.5 Applicable Policies

2.5.1 Applicable Personnel Policies

The Utility's employees are managed using the Utility's personnel system and in close coordination with the City's Human Resources Department. Union employees are managed consistent with City policies and union contract requirements, and any changes to the CMOM program that affect the union contracts must be implemented with sensitivity to the current requirements.

2.5.2 Staffing and Budgeting Policies

The Utility's organization and staffing positions are reviewed as part of the annual budget review and allocation process submitted and approved by the City Council each year. Managers are responsible for identifying and initiating staffing requests and for managing staff positions in their areas of responsibility. The Utility Regulatory Compliance Officer and City Human Resources department maintain up-to-date job descriptions that delineate responsibilities and authority for City, Utility, and union personnel positions.

Union staff members are hired using bid sheets, prioritized by seniority. Staff members are interviewed and positioned 30 days on the job during the initial trial period. Union staff members are dedicated to their areas of responsibility, and are not responsible for any other duties (such as water systems and road repair). The same crews maintain both the CSS and sanitary sewer system (SSS).

SECTION 3 Utility Management Program

3.1 Introduction

Management of a utility's organization, human resources, information database, finances, and assets has a direct impact on the utility's operational efficiency and financial status. The levels of service that a utility provides to its customers, and the effectiveness of the utility as a whole are determined by the policies and management practices of the utility. Section 3 discusses the management program elements managed and directed by the ULT.

3.2 Scope

The Utility's management program is organized and implemented by the ULT. Elements to be managed include:

- Legal authority
- Financial management and budgets
- Training and Safety
- Communication and public outreach
- Customer service
- Information management
- Equipment and supplies
- Overflow tracking and prevention
- Engineering

3.3 Legal Authority

The Utility's legal authority allows it to establish, guide, and support the authority needed for it to provide wastewater services, and to comply with the National Pollutant Discharge Elimination System (NPDES) permits and the Clean Water Act.

3.3.1 Sewer Use Ordinance

The primary legal authority for the Utility is granted in the City's Sewer Use Ordinance (SUO) (Appendix C). The provisions can be found in **Chapter 13.05 Sewers** under **Title 13 Public Utilities and Services** of the **City of Evansville Municipal Code** on the City's Web site: <u>http://www.codepublishing.com/in/evansville/</u>.

The SUO contains definitions, restrictions, and requirements for the following:

- Sewer use
- Industrial wastes
- Sewer connections and construction
- Rates and charges
- Violations and penalties

The SUO contains 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. It also contains procedures and enforcement actions for controlling fats, oils, and grease (FOG), infiltration/inflow (I/I), building structures over the sewer lines, stormwater connections to sanitary lines, defects in service laterals located on private property, and sump pumps. The SUO also contains procedures for inspection standards, pretreatment requirements, building/sewer permitting.

The Utility is primarily responsible for developing and updating the SUO, and it meets the basic requirements of the NPDES permit.

3.3.2 Discharge Controls

Section 13.05.070 of the SUO, Storm or Industrial Wastewaters, prohibits discharges into the SSS of the following:

- Stormwater
- Surface water
- Ground water
- Roof runoff
- Sub surface drainage
- Cooling water
- Unpolluted industrial process water

This section specifically states that these types of discharge cannot be made into the SSS from downspouts, cellar drains, or foundation drains.

In **Chapter 13.25 (Stormwater Illicit Discharge Detection and Elimination)** are provisions for compliance and legal authority regarding illicit discharges to the City of Evansville municipal separate storm sewer system (MS4). Under **Chapter 13.25** of the SUO, the City of Evansville has the legal authority to carry out all inspections, surveillance, and monitoring procedures necessary to ensure compliance with the general prohibition of illicit discharges or connection to the MS4 system.

These sections of the SUO are intended to ensure that the sanitary system is not burdened with clear water and that the MS4 system, which flows directly to receiving waters, is not carrying sewage or industrial waste. Another section of the SUO, **Chapter 13.15 (Water)**, protects the drinking water system from cross-connections with other sources of water or processed water used for any purpose whatsoever which jeopardizes the safety of the drinking water supply.

3.3.3 Pretreatment Program

The Utility's Pretreatment Program is required by the NPDES permits and USEPA/IDEM regulations. The Pretreatment Program is described on the City's Web site at http://www.evansvillegov.org/

Elements of the Pretreatment Program include the following:

- Inspection and analytical services
- Reporting
- Enforcement
- Systemic surveillance
- Administrative services

The Utility's SUO Wastewater Discharge Regulations detailed in **Chapter 13.20** contains user restrictions, requirements and the authority to regulate, test, and validate industrial discharges.

IDEM periodically reviews the pretreatment program consistent with state responsibility delegated to the state by USEPA. The Utility continually works with IDEM to improve the program.

3.3.4 Fats, Oils, and Grease Control

3.3.4.1 Authority

The Utility has developed a FOG inspection program in coordination with the Vanderburgh County Health Department (VCHD) to ensure that all food establishments are notified of requirements for grease trap design, installation, and maintenance. An overview of the Utility's FOG inspection program is located in Section 4.8.

The Utility's SUO Section 13.05.090 (Grease, Oil, or Sand Traps) provides provisions for building sewers that have or had the potential to discharge grease, oil, sand or similar substances into the sewer system. Furthermore, additional discharge provisions are contained in Section 13.20.020 (Wastewater Discharge Regulations)

Section 13.05.130 (Notice of Violations–Liability) provides the Utility with authority to issue a Notice of Violation for noncompliance and Section 13.05.340 (Penalty) provides the Utility with the authority to assess penalties.

3.3.4.2 Grease Trap Installation Requirements

The Utility sends a Grease Trap Questionnaire to all facilities in order to determine the sizing of the grease traps. The City's Municipal code **Section 13.05.090** contains requirements for Grease, oil or sand traps.

Interior grease trap installation falls under the jurisdiction of the Building Commission Plumbing Inspector to inspect the connections. The Utility inspects exterior grease trap installations.

3.3.4.3 Data Management

The Utility implemented a Grease Trap Maintenance Log (Appendix L-11) that must be kept by the food establishment and be available to both the Utility inspector and the VCHD inspector upon request. The grease maintenance log includes the following information:

- Name and address of the food establishment
- Date cleaned
- Name of company or individual that performed the cleaning
- Whether the grease is pumped (yes, no, or NA)
- Location where the pumped waste was disposed
- Whether the sink trap was cleaned (yes, no, or NA)
- Location where sink trap waste was disposed
- An estimated total volume of grease disposed

The Utility's Pretreatment Department in conjunction with the VCHD is responsible for monitoring food establishments grease maintenance logs.

3.3.5 Private Property Lateral Inspection

The Sewer Handbook (Appendix D) requires that all new freestanding structures including residential, industrial and institutional must construct a private sewer lateral to tap into the public sewer. The Sewer Handbook provides construction and inspection provisions for a service line off a main sewer line to the premises to be served (lateral). Before physically tapping in, an application must first be made along with a payment or tap-in fee. The City's Engineering Department reviews the application and submits the application to the Utility Board for approval. After the tap-in is made, it must be inspected and accepted by the Utility. Upon approval, the sewer can be used. After approval of the sewer connection by the Utility, all new sewer connections between the sewer main and property line cleanout become the responsibility of the Utility and the cost of any repair, including street and sidewalk removal and replacement, will be borne by the Utility.

According to the Sewer Handbook, any alterations of property use in combined sewer areas must be reviewed by the Utility's Engineering Department and inspected by the Utility or Building Commission to verify that no additional stormwater will be discharged into the combined sewer. Stormwater drainage and detention must meet the criteria as set by Utility and City Engineering Departments.

3.3.6 Septic Systems

SUO Section 13.05.050 (Privy Vaults, Septic Tanks, Cesspools Prohibited) prohibits construction and maintenance of septic systems or other storage facilities for the disposal of sewage and Section 13.10.110 (Connection to Combined or Sanitary Sewer) requires abandonment of any septic tanks, seepage pits, outhouses, privy pits, and similar sewage disposal devices within 90 days upon written notice from the Utility when approved combined or sanitary sewers are available for connection.

3.3.7 Septage Haulers

Industrial users and liquid waste haulers are subjected to notification, discharge and pretreatment permitting. The provisions are found in **Section 13.20.120 General Permits**.

The Utility requires that septage be disposed of at the East WWTP by licensed septic haulers and the Utility monitors this program to prevent WWTP upset and interference. An open inlet at the East WWTP is used as the septage receiving point and flow and pollutant loadings are currently controlled by denying septage haulers entry to dump waste. As a part of the alternatives analysis and East WWTP facility planning effort conducted during Integrated Overflow Control Plan (IOCP) development, the Utility will evaluate options to protect the facility proactively from pass-through and interference.

3.3.7.1 Data Management

Septage is sampled and the manifests are monitored by the Utility's Pretreatment Staff at the time of disposal to verify that the septage discharges meet pretreatment requirements for both conventional and nonconventional pollutants.

3.3.8 Interjurisdictional Agreements

Interjurisdictional agreements are in place with satellite communities, including Warrick County, unincorporated areas of Vanderburgh County, Warrick Industrial Park, and the Town of Darmstadt.

The City has enacted policies, codes, ordinances, and plans to comply with the law.

Satellite communities must enter into an agreement that includes the requirements listed in the City's SUO. Agreements have a date of termination and allow for renewal under different terms. The City's SUO does not specifically address the satellite communities. The City has interjurisdictional, or intermunicipal, agreements with the satellite communities, except for unincorporated Vanderburgh County and areas in Warrick County near Newburgh.

Standards, inspections, and approval for new connections are documented in the SUO. The standards are detailed in the Sewer Handbook (Appendix D). While not formally documented in the SUO, interlocal agreements require satellite communities to adopt discharge limits (same industrial and commercial regulator discharge limits as the owner) to comply with the City's NPDES permits. The interlocal agreements require satellite communities to adopt the same inspection and sampling schedules as required by the pretreatment ordinance. The agreements state that satellite communities must comply with the ordinance regarding pollutants and wastewater strength. Satellite communities (owners and operators) are required to issue control permits for significant industrial users.

3.3.9 Easements and Rights-of-Way

Easements and rights-of-way are managed by individual owners, such as utilities, private owners, commercial owners, and State and local transportation authorities. Areas that coincide with sanitary sewer assets are primarily in developed and paved areas owned and maintained by the City's Department of Public Works. Right-of-way must be maintained to protect trunk lines and large lines from root intrusion and identify cave-ins.

3.3.10 Enforcement Measures

SUO **Section 13.05.340–Penalty** provides for penalties associated with violations of the Sewer Chapter of the SUO. The penalties range from not less than \$100 or no more than \$2,500 for each violation, including costs, expenses, damages, attorney fees, and remedies.

Enforcement of the pretreatment program/industrial wastewater discharge under **Chapter 13.20, Wastewater Discharge Regulations,** of the SUO is based on the Enforcement Response Plan (ERP), which starts with a Notification of Violation. The ERP can include compliance orders, requirement of remedial actions, administrative fines, emergency suspensions, and even judicial remedies and injunctive relief, if necessary. The ERP is located at the wastewater laboratory and Regulatory Compliance offices.

3.4 Financial Management and Budgets

The Utility operates as an enterprise fund and generates revenue through water and wastewater system connection and usage fees based on cost of service criteria. Collection system enterprise funds are not used for non-enterprise fund activities. The budget program element includes discussion of the annual fiscal year CIP, operational budgeting processes including expenditure budgets, revenue budgets, and procurement processes. Department fees and charges are reviewed annually, modified where appropriate, and adopted annually as part of the City's budget process. Like many utilities, the Utility has been affected by the current economic situation, but overall the Utility has a history of setting rates in a manner that budgetary requirements and statutory obligations are met.

3.4.1 O&M Budget

The annual O&M budget estimates are prepared using the previous year's spending and input from staff for the year's projected needs. Budgets are divided by line item, including but not limited to labor, repairs and maintenance, uniform rental, IT, fleet, utilities, telecommunications, lease/rent of equipment and building, travel and training, supplies, replacements, and other operating costs. The nondepartmental budget includes expenses for bond expenditures, depreciation, leave compensation, risk management, reimbursements, and other expenses related to other City Departments' support to the Utility.

Costs for collection system O&M are separated from other utility services, such as the water and stormwater treatment plants.

The budgets for fiscal year 2011 through 2014, show a significantly increased commitment to the management of the sewer utility from the previous year's expenditures.

3.4.2 Rate Analysis

The current rate schedule is established by user classification, use, and meter size. User rates are calculated based on debt service, O&M costs, and bond issues for new capital projects. User charges are evaluated yearly based on the yearly financial status (during long-term CIP planning) and adjusted based on that evaluation. A cost of service study was performed in 2012. Customers outside the city limits pay a 35% surcharge. Rates and rate changes for 2014 through 2016 are in Table 3-2.

Date	Percent Increase in Avg. Monthly Residential Sewer Bills	Avg. Monthly Residential Sewer Bill Inside City	Avg. Monthly Residential Sewer Bill Outside City
January 2013	N/A	\$27.12	\$36.60
January 2014	32 percent	\$35.83	\$48.37
January 2015	8 percent	\$38.74	\$52.24
January 2016	18 percent	\$45.72	\$61.66

Table 3-2. Sewer Utility Rate Increases

^a Based on average usage of 4,500 gallons

3.5 Training and Safety

The purpose and goal 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 purpose and goal of the safety program is to define principles under which work is accomplished, to make employees aware of safe working procedures, and to establish and enforce specific regulations and procedures. Ultimately, the goal of the safety program is to have zero safety incidents.

3.5.1 Technical Training

Training is provided in the following areas:

- Safety
- Confined space entry

- Pipe repair
- Trenching and shoring
- SSO/emergency response
- Record keeping
- Electrical and instrumentation

The following programs have formal curriculums: safety, trenching and shoring, confined space, Emergency Response Plan, and SSO/emergency response (now the Sewer Overflow Response Plan [SORP] training).

Maintenance skills are primarily learned through on-the-job training. Eighty-five to 90 percent of the staff have been at Utility for many years and have long-term experience in their job functions. On-the-job training is not documented, and no mandatory collection system training is required in Indiana. Commercial driver licenses are required to operate dump trucks and combination trucks.

The Utility Department Managers will provide in-house training that addresses line maintenance procedures and safety.

3.5.2 Safety Training

A documented safety program exists and is supported by the ULT. The Utility provides safety training to all staff, including City union staff, such as confined space training. The Utility's Department managers conduct safety training for their respective departments. The Department mangers maintain paper copy certificates and records of their staff safety training activities and provide copies of training records to the Regulatory Compliance Manager. Sign-in sheets are maintained in hard copy files, and a safety questionnaire is completed and documented.

There are written procedures for the following:

- Lockout/tagout
- Material safety data sheet
- Chemical handling
- Confined spaces permit program
- Trenching and excavations
- Blood borne pathogens
- Traffic control and work site safety
- Electrical and mechanical systems ¹
- Pneumatic and hydraulic systems safety¹

A permit is required for confined space entry procedure for manholes and wet wells. Confined spaces are clearly marked.

The following equipment is available and in adequate supply:

- Rubber/disposable gloves
- Confined space ventilation equipment
- Hard hats, safety glasses, and rubber boots

¹ The Utility outsources training

- Antibacterial soap and first-aid kits
- Tripods or non-entry rescue equipment
- Fire extinguishers
- Equipment to enter manholes
- Portable crane/hoist
- Atmospheric testing equipment and gas detectors
- Oxygen sensors
- Hydrogen sulfide monitors
- Full body harnesses
- Protective clothing
- Traffic/public access control equipment
- Safety buoy at activated sludge plants
- Fiberglass or wooden ladders for electrical work
- Respirators and self-contained breathing apparatus
- Gas lower explosive level metering

There are no 5-minute escape breathing devices, nor is there a methane gas or organic vapor analyzer. Safety monitors are clearly identified.

Administration also communicates with affected field personnel on safety procedures through memorandums and direct communication. A safety meeting with O&M staff is conducted monthly. The Collection System Maintenance and Construction Managers conduct tailgate safety meetings monthly and an emergency drill once per year.

3.5.3 Other Training

The Utility provides training in new employee orientation, customer service conflict resolution and communication, and an Emergency Response Plan. Most employees are trained in computer software (such as Microsoft Word and Excel) and specific software requirements of their department. Each department is responsible for providing specific training requirements of a particular position. In addition, each department is responsible for monitoring and enforcing safety compliance.

3.5.4 Performance Measurements and Evaluation

Safety and compliance records are maintained by the respective departments, and copies of safety training records are provided to the Regulatory Compliance Manager.

3.6 Communication and Public Outreach

The Utility's customer service support staff responds to questions about sewer service fee bills; questions about operations of the collection and treatment system; and transfers service calls related to sewage release from the sewers or lift stations to Collection System staff. The SORP provides details on customer service and response to releases from the sewer collection system. The SORP document is a separate document available to all Utility personnel and stored at the Utility's Operation and Maintenance Facility.

The Utility also recently completed and submitted a Public Involvement Work Plan that will guide activities and approaches during IOCP development and as the Utility revises and refines the CMOM program.

3.6.1 Public Education and Outreach

Public education and outreach programs regarding user rates include advertisement in newspapers, local news, press releases, City government and the Utility's Web sites, mailings to customers, and public and industry meetings. Communication programs include those of local governments, industry groups, community groups, and the media.

The public is notified of major construction or maintenance work by door hangers, knocking on doors, and press releases to local media. Homeowners are notified before construction occurs that their properties may be affected.

Information is provided to residents on cleanup procedures following basement backups and overflows, if they occur. It is understood by employees of the Utility and the union that the Utility's managers are the designated spokespersons for media events.

The Utility's staff has participated in local Earth Day and River Sweep events and distributes information on the utility and FOG issues. In addition, customer education has been attempted through mailers to homeowners on FOG best practices.

The Utility's staff has also participated in presentations to local schools concerning the City's Rain Barrel decorating contest, the importance of water conservation, and the benefits of keeping storm water out of the combination sewer system.

A "Helping the Rain to the Drain" public relations campaign was initiated to help customers understand the importance of inlet cleaning and keeping trash out of the storm sewer system.

Additionally, the Mayor in Evansville has a monthly traveling town hall meeting in locations throughout the city in which the public is welcome to comment or question members of city government about any issue, including sewer issues. During the initial LTCP development, a diverse and large Citizen's Advisory Committee (CAC) was created, and as detailed in the City's LTCP, several CAC meetings were held. This CAC is continuing to meet during the revisions and later implementation of the LTCP.

In May 2013, the Utility hosted a series of six public forums throughout Evansville to educate the public on the impacts of sewer overflows, the Utility's proposed plan to address overflows and the associated costs of a comprehensive program. Additionally, the Renew Evansville website, www.renewevansville.com, includes comprehensive information about combined sewer overflows, including short videos describing the CSO problem and Evansville and proposed solutions. Lastly, in September 2013 the Utility hosted a live call-in show on local public television station WNIN to discuss sewer overflows, their impacts on the Evansville community and the associated cost of addressing overflows.

Other Communications

Not all members of the public have computers or use them to obtain information. The Utility's public information strategy includes other methods for communicating with the public about its sewer system. For example, Evansville sends a letter each year to residents adjacent to waterbodies that may be affected by CSO discharges explaining that heavy rains will potentially cause CSO discharges. The letters warn against contact with the water, Ohio River, and Pigeon Creek after rains.

3.6.2 Internal Communication

Staff communication occurs through regular meetings and bulletin boards. Communication with other municipal departments occurs regularly. The Utility conducts structured meetings among its managers as needed during the year. Communication among the managers is conducted primarily through e-mail.

3.6.3 Pollution Prevention and other Public Education

Pollution prevention occurs throughout the City to eliminate or reduce the possibility potential contaminants getting into the combined sewer system. The Utility's street sweeping program is part of the program. The City contracts with Republic Services for street cleaning services, and street cleaning is performed according to a specific schedule included in Figure 3-1.

The City also maintains public education programs such as illegal dumping prohibition, recycling, and solid household hazardous waste programs. The programs and other public education programs are detailed in the Utility's CSO Operation Plan.

Public Education programs can encourage the proper disposal of items. Utility staff conducts WWTP tours for grade schools, high schools, universities, and other interested groups to teach about wastewater's link with the natural hydrologic cycle. In addition, the Utility participates in community projects that give young people an awareness of issues such as water conservation, water pollution, and the importance of water to our society. The Vanderburgh County Solid Waste Management District develops and distributes educational materials to citizens and businesses on waste reduction and recycling, composting, hazardous waste, improper waste disposal, and other issues. In addition, it also carries out many other activities, such as agricultural pesticide container recycling and the household battery recycling program.

3.6.4 Web site Pollution Prevention Education

Evansville has made improvements to the Web site to engage the public on pollution prevention. There is a specific page, called Helping, under the Sewer Department's CSO Notification section of the City's Web site, <u>http://evansville.in.gov/index.aspx?page=2064</u>. The page contains short but to-the-point descriptions of vehicle use and maintenance, garden and lawn care, and home repairs. The content urges the public to take simple steps to keep pollutants from the combined system and storm drains.

3.6.5 CSO/SSO Notification to the Public

Public notification of sewer overflows is an important CMOM element. CSO notification is conducted pursuant to the CSO Public Notification Plan, which is included as an appendix to the City's CSO Operational Plan. This allows for notification, as outlined in the plan, when CSO discharges occur. The Utility has developed a CSO, SSO, and Release Web site that can provide customers with real-time notification. Customers can also sign up to receive CSO e-mail notifications at http://cso.evansvillegis.com/.

3.7 Customer Service

The Utility's Customer Service and Billing is located in the City and County Administration Building, otherwise known as the Civic Center Complex at 1 NW Martin Luther King, Jr. Blvd. The Customer Service and Billing Department is managed by a Customer Service Supervisor who



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oversees eight Customer Service Clerks. The Customer Service and Billing Department is responsible for handling the billing and initiating service connections.

3.7.1 Public Education

The following literature related to customer service is available to customers:

- A customer information brochure that contains general information about the water and sewer utility.
- A revised schedule of sewer charges effective as of January 1, 2012, can be found on the City of Evansville Web site at http://www.evansvillegov.org/.
- Flyers in the front office include information on medications and substation information for billing purposes.
- The Web site includes runoff information and the Homeowner's Guide to Septic Tanks.
- A direct mailer on backflow preventers.

3.7.2 Service Connections

Customer Service processes new service connection requests and service removal requests. New connections to City sewer require review and approval of plans by the Utility Engineering Department.

3.8 Information Management

An integral component of the CMOM program is managing day-to-day activities and the information gathered to document activities.

The Information Management Program Element includes tools and processes the Utility uses to manage asset information and the work performed on its assets.

These activities include use of a computerized maintenance management system, mapping, GIS, record drawings, information technology, and reports. GIS, an electronic document management system, and hard copy maps are used for system mapping and inventory.

The Utility information management tools and processes have the following purposes:

- Maintain an inventory of the collection system components and their relevant attributes to facilitate engineering decisions.
- Maintain up-to-date engineering records of maps of the collection system, and provide efficient means of recording changes from field personnel and incorporating into the mapping program.
- Use a computerized maintenance management system (CMMS), CityWorks, and GIS tools to provide real-time, visual information for planning and maintenance.
- Meet all NPDES and other regulatory records keeping requirements.

3.8.1 Geographic Information System

The Utility uses GIS to allow for a more precise system inventory. The system allows the Utility to consolidate all of the system information into a single source. Furthermore, the Utility incorporates system data such as preventive maintenance, customer complaints, basement backups and overflows allowing for more detailed analysis of the system, its operation and maintenance.

The Utility uses ESRI ArcGIS SDE v10 software. The water and sewer geodatabases were developed by ESRI using its standard water and sewer data models.

The Utility's GIS includes current information on the CSS (sewer sizes, composition, manholes, elevations, etc.), and new information is integrated as it is obtained. Sewer attributes recorded include size, shape, material, invert elevation, and separate or combined sewer.

There is a systematic numbering and identification method established to identify sewer system manhole, sewer lines, and other assets (pump stations, etc.) in GIS. Manholes are identified by numbers, pump stations by names, and sewer lines by segments. CSOs and SSOs are located based on coordinates provided from a geographic positioning system (GPS) survey of the assets.

Management layers are an integral facet of the GIS including a subbasin based cleaning and inspection layer, inlet cleaning layer, and street sweeping layer. The layers enhance schedules and support document record keeping showing that these activities have been completed. The Utility also uses the GIS system to pinpoint areas that should be targeted for more intensive maintenance, and/or televising activities, and related investigative evaluation.

3.8.2 Engineering Records

All engineering records, including plan sheets, maps and specifications, are maintained at the Allens Lane facility. Past sewer construction project hard copies are archived in the Engineering Department. Past sewer plans have also been scanned and are indexed electronically. They are available through a SharePoint system.

As-built plans (record drawings) and quarter section maps are available for use by the staff. Quarter section maps show the date the map was drafted and the date of the last revision. Field crews' record changes observed in the field and submit edits or changes to the GIS Manager for updates to the GIS.

Quarter section sewer line maps include the following:

- Scale
- North arrow
- Date the map was drafted
- Date of the last revision
- Service area boundaries
- Property lines
- Other landmarks
- Manhole and other access points
- Location of building laterals
- Street names
- SSOs/CSOs
- Force mains

- Pump stations
- Interceptor sewers
- Pipe material
- Pipe diameter
- Installation project
- Manhole rim elevation
- Manhole invert elevation
- Distance between manholes

Hard copy files of projects are stored in file folders and by project name and are maintained in the Allen Lane Facility in the Map Room. The files have no connection to the GIS.

3.8.3 Computerized Maintenance Management System

The Utility currently manages service request and work order information using CityWorks, Microsoft Access, and Microsoft Excel and maintains hard copy files.

The Utility converted from Datastream7i to CityWorks during 2012 for more efficient characterization, work flow, and problem area analysis.

3.8.3.1 Service Requests

Service requests can be generated either through customer calls, or by calls or requests from within the Utility or from other City departments. All customer calls are routed and received at the Allen Lane facility. Calls are taken 24 hours per days, 7 days per week by the Collection Systems Administrative Assistant on day shift from 6:30 a.m. to 3:30 p.m. and by Dispatch (operated by the Water Department) for all other hours.

The Collection Systems Administrative Assistant enters caller information directly into the CityWorks database during the day shift. For all other hours, Dispatch records caller information on a Work and Complaint form and contacts the on call manager for further investigation of the request for service.

Information recorded on the Work and Complaint form includes the following:

- Date and time of call
- Caller's name, address and phone number
- The on-call manager who determines the handling of the service request
- Documenting the category of service request (for instance, Emergency Call, Sewer Complaint, Odor Complaint)

This method has proven adequate in engaging the on-call manager to determine the correct course of action in responding to the service request.

3.8.3.2 Sewer System Work Orders

The sewer department maintenance group issues a work order that specifies the maintenance crews assigned to projects or work orders. The schedule identifies the operator and truck driver to a crew.

When the work is complete, the work order is brought back to Allens Lane for data entry by the Collection System Administrative Assistant.

The Collection System Maintenance Manager reviews and signs off on all completed work orders.

3.8.3.3 Lift Station Work Orders

At this time, no lift station activities are tracked using CityWorks unless a customer complaint regarding a lift station is reported. Lift station operations use in-house generated lift station inspection forms.

The inspection forms are used to record routine lift station inspections including but not limited to the following:

- Outer perimeter surroundings and general appearance
- Telemetry and controls
- Wet well/dry well condition and floats
- Equipment such as pumps, valves, flow monitors

The inspection checklists are returned daily to the Lift Station Manager who is responsible to compile the checklists and review the results of the inspections. Reactive work orders are then generated based on the Lift Station Manager's evaluation and prioritization of the inspection results. The inspection results are stored electronically on a standalone system.

The Lift Station Manager distributes works orders each morning. Lift station crew members record on a paper form equipment involved parts, labor, outcome, and when the work order was closed. The completed work order form is returned for data entry into the custom work order system and scanned for electronic storage.

3.8.4 Record Keeping and Reporting

There are standard forms for managing and tracking the following information: sewer department work and complaint forms, scheduled work orders, customer service, scheduled preventive maintenance, scheduled inspections, sewer system inventory, safety incidents, scheduled monitoring and sampling, compliance and overflow tracking, equipment and tools tracking, and parts inventory.

Crew time is tracked through an automated system with personnel documenting time in and time out. In addition, maintenance managers track staff time.

The collection system's administrative assistant enters requests for service immediately into CityWorks, which can print out a summary of work orders in a Microsoft Excel file. Analyzing customer complaint data to identify systemic issues was tedious and inefficient with the previous system because of the manner in which data were collected and stored. Analyzing complaint data is improving with the transition to the new CMMS system.

The Utility currently tracks the preventive maintenance program through CityWorks (which is exportable into an Excel spreadsheet). Assets in the GIS are linked to the work orders in Cityworks. A newly created position of CMOM Planner will oversee and coordinate the Utility's preventative maintenance activities and ensure compliance with CMOM-related Consent Decree obligations.

3.8.4.1 Record Keeping

The Collection System Department maintains records in electronic or hard copy format. Documentation includes but is not limited to the following:

- Operations Department activity, including but not limited to staff flow charts, summary statements, and maintenance activities
- Construction activity records including but not limited to service requests, work orders remediation work, smoke testing, and televised sewer line segment results
- Public relations, tort claims, and yearly safety records
- Communication regarding changes in regulatory requirements
- Communication with IDEM, USEPA, and the U.S. Occupational Safety and Health Association
- Work and complaint forms, requests for service, and sanitary system work orders.
- Sewer bypass or overflow reporting on-call managers' contact numbers
- Daily operating resources with the following: cost of labor, equipment, and material; Sewer Department work schedule; and list of sewer maintenance equipment
- Sewer line cleaning, roots preventive maintenance, and grease preventive maintenance field data
- Manhole inspection forms
- Combination storm inlet cleaning data forms and spreadsheets of inlet cleaning work orders with date, description, status, and problem code.

3.8.4.2 Overflow Data Reports

The Consent Decree requires the Utility to accurately report SSOs, CSS releases, and building/property backups that occur within the sewer system. The Utility's SORP describes the Utility's processes for identifying, responding to, mitigating, reporting, categorizing, and tracking SSOs, CSS releases, and building/property backup events and the locations where they occur.

Customer notifications regarding sewer overflow are managed in accordance with the SORP. The SORP is a separate document available to all Utility staff and is maintained at the Utility's O&M facility.

3.8.4.3 Cleaning and Inspection Reports

The Utility tracks sewer line cleaning and inspection field data and preventive maintenance for roots and grease in CityWorks. The cleaning and inspection data will be included in the Utility's Semi-Annual Reports required by the Consent Decree.

3.9 Equipment and Supplies

The purpose of equipment and supplies management is to manage spare parts, equipment and tools, and vehicle for timely completion of repairs, operations, and maintenance activities. The goal is to have the necessary motorized vehicles, equipment, and supplies available to address the routine and anticipated emergency system needs in the sewer system. CityWorks is also used to produce work orders for vehicle maintenance.

3.9.1 Spare Parts Inventory

The Utility solicits pricing from local vendors every six months to select a vendor that will supply spare parts for the collection system. The inventory needs are developed by Utility staff based upon historical use/consumption and expected demand. The inventory is checked and restocked weekly by the vendor selected to supply parts. Items that are not frequently used by the Utility that are not stocked at Allens Lane are provided by the supply vendor as needed and when needed by the Utility, including during after-hours/emergency situations. Appendix E-1 is a list of inventory spare parts items maintained at Allens Lane as provided by the local vendor.

Spare parts for the treatment plants are kept on site. The inventory is checked on a monthly basis and many replacement parts are re-ordered upon usage. On an annual basis, the Utility assesses plant inventory needs and adjusts inventory levels accordingly. Spare parts inventories for the West and East WWTPs are located in Appendixes E-2 and E-3, respectively.

Tools and small pieces of equipment are stored in the Maintenance Garage or the Allens Lane facility. The Collection System Manager is responsible for maintaining an inventory of tools and small equipment. Tools are ordered as necessary. A list of the Utility's large equipment and vehicles, including emergency backup equipment, is located in Appendix E-5.

3.9.2 Vehicles

Vehicles are tracked manually on spreadsheets and maintained by the Utility. The Utility is responsible for the purchase, maintenance, and repair of Utility vehicles, and construction equipment. CityWorks is used to produce work orders for vehicle maintenance.

Part of the annual operating budget is allocated for vehicle purchase. Budget is calculated based on monthly vehicles and equipment maintenance and repairs.

If the Utility needs an additional vehicle or construction equipment item, the purchase will be included in the annual operating budget in the future.

Utility hourly employees perform general maintenance to vehicles and construction equipment, but if major repairs are required, they will contact and coordinate the repairs with the manufacturers. In addition, they manage preventive maintenance schedules of the vehicles, which are tied generally to mileage or operating hours.

Each Maintenance Crew operates a combination vacuum flusher (vac/flusher) truck; there are two trucks available for each shift (two trucks on day shift and two on second shift). Vac/flusher trucks are repaired by an outside company.

- One vac/flusher truck is dedicated to inlet cleaning in the combined sewer system.
- Two vac/flusher trucks are dedicated to general cleaning focusing on completing the 7-year cycle (by subbasin or formerly by quarters).
- One vac/flusher truck for preventive maintenance of hot spots and inlet cleaning.
- The Utility has purchased as easement line cleaning machine to ensure lines in otherwise inaccessible areas are routinely cleaned.
- The Utility also intends to buy a second easement machine and three additional trucks in 2014.

- The Utility has two closed-circuit television (CCTV) truck. The Utility purchased the second CCTV truck tin 2012, and it is used by the Engineering Department exclusively for proactive sewer line inspection.
- In 2013, the Engineering Department added a Sewer Line Rapid Assessment Tool, using acoustic technologies, to its inspection capabilities.

A listing of the Utility's vehicle inventory, including the division to where a vehicle is assigned, is provided in Appendix E-4.

3.10 Overflow Tracking and Prevention

The Utility's SORP and overflow tracking and prevention SOPs are in continuous review by the Utility. The SORP is a separate document available to all employees and maintained at the O&M facility.

3.11 Engineering

The Engineering program element describes the engineering processes and responsibilities for managing the design and construction standards, new connections, flow acceptance, plan reviews, capacity assurance, and acquisitions. The Engineering Department provides inspection and record keeping for new development and CIP projects.

The overall purpose of the Engineering Department is to manage system capacity and the quality of new infrastructure. Goals include providing document reviews in a timely manner, tracking development progress, managing project documentation, and managing staff resources.

The Engineering Department is responsible for project management, sewer reviews, water tap applications, developer site plan reviews, construction inspection, and for coordination with the other City Departments. The Utility generally uses outside engineering consulting firms for capital projects.

3.11.1 Plan Reviews

The Utility's Engineering Department performs two types of plan reviews: private development and public capital projects. Each review consists of a slightly different process outlined as follows; in both cases, the Engineering Department leads the effort.

3.11.1.1 City Planning Process

Previously, the Coordinator of Planning and Development, as part of the Utility's Engineering Department, was responsible for the review of new sewer plans. As part of this transition, the Utility Engineering Department will oversee the review of new sewer plans.

A customer or developer will initiate the request for a permit (as found in the Sewer Handbook). The Engineering Department reviews all plans and specifications. Vanderburgh County has a one-stop commercial center permit review through the planning commission. The commission meets once a week and includes staff from the Sewer, Water, Fire, Building Commission, Planning, and City/County Engineering Departments.

3.11.1.2 CIP Plan Reviews

The Engineering Departments conducts plan reviews for CIP projects, and Utility staff members typically participate in the process. The Engineering Department relies on its CIP project consultants to incorporate the required standards into the project design. The Engineering Department provides review and oversight of the design drawings and specifications before construction, and then provides bidding services and construction inspection services as necessary.

Lift station design review is performed by the Engineering Department.

After reviews are completed and approved by the Engineering Department, and final project approval authority is recommended to the Utility Board.

The Engineering Department also reviews conflicts with Indiana Department of Transportation highway projects, as well as City and County roadway improvements.

3.11.2 Standard Design Criteria

The goals of Standard Design Criteria are as follows:

- Streamline designs and reduce operation costs
- Avoid long-term problems through better designs

Both CIP and private development projects must comply with the Utility's Sewer Handbook. Compliance includes acceptable materials, equipment, and installation methods. The Sewer Handbook details these design criteria and standard construction details, and is included in Appendix D.

Life-cycle cost analysis is not required as part of the design process for private development.

3.12 Construction Inspection

The goals of the Construction Inspection activities are as follows:

- Inspect and assure proper construction of sewer facilities in conformance with the approved plans
- Coordinate new sewer connections and pump stations startups in a manner that does not adversely affect wastewater system operations
- Maintain system integrity and efficiency, as new and rehabilitated sewers become part of the operating wastewater system

Once a CIP or Development project is underway, inspections are provided by the Engineering staff. Engineering staff witnesses and conducts all inspections and testing for private development and most CIP projects, as well as grease trap inspections. Consultant inspectors are used to provide the day-to-day services on large projects, including plumbing taps and the force mains. Engineering staff also document the results and findings. Inspection logs and checklists are used by Engineering Department staff to facilitate their reviews.

Paragraph 25.e of the Consent Decree requires:

Procedures for testing or otherwise ensuring that new or recently rehabilitated Sewer Segments and connections are properly designed and constructed to prevent misalignments or other physical impediments to flow that would cause or contribute to SSOs, CSS Releases, and/or new connections of storm water inflow;

As stated above, the Sewer Handbook details the design criteria and standard construction details, which provides for misalignments and any other physical impediments that could cause or contribute to SSOs, CSS Releases, and/or new connections of stormwater inflow. In addition, the Utility has language in its standard construction contracts that governs testing and quality control requirements, and construction projects are inspected by the Engineering Department during construction. Testing and quality control documentation is reviewed prior to acceptance of projects and release of final contractor payments. Appendix S provides examples of the construction specifications that provide this requirement.

3.12.1 Acquisitions

The City assumes ownership of sewer systems built by private developers when it is determined to pass the final inspection including sewer mandrel and air test, and manhole vacuum tests. Record drawing submission is also required as part of the acceptance process. CCTV inspection of all lines before final acceptance is not done routinely at this time.

3.12.2 Capacity Assurance

The Utility has identified capacity assurance to be a major focus area and has developed a formal capacity assurance plan in conjunction with a rehabilitation program, which is set forth below in Section 3.13.2

3.12.3 Sanitary Sewer Evaluation Studies and Condition Assessment

The Utility submitted a Sanitary Sewer Evaluation Studies (SSES) Work Plan in November 2010 and initiated the activities in February 2011. The Utility contracted the SSES and condition assessment activities to others so that the Utility could focus on day-to-day operation and maintenance of the system. The SSES activities consisted of the following:

- Manhole inspections
- Smoke testing
- Pipeline inspection using both QuickView cameras and CCTV

Trunk line segments (15- to 24-inch-diameter) and manholes in the SSS were evaluated beginning February 2011 with a majority of the work completed between March and June 2011. Assessment of (8- to 12–inch-diameter) sewer line in the SSS was initiated in June 2011, and the work was completed in December 2011.

A Sewer System Assessment Report that includes an SSES Report and condition assessment contained the results of the inspections. The Sewer System Assessment Report was submitted March 31, 2012, as a Consent Decree requirement.

3.13 System Assessment and Rehabilitation

The purpose of a System Assessment and Rehabilitation Program is to provide a mechanism for the ongoing rehabilitation and long-term sustainability of the City's sewer infrastructure. The goal of the program is to ensure the operational integrity of the system and preserve adequate capacity. The Utility has been performing and evaluating its ongoing sewer assessment program as a part of IOCP development.

3.13.1 Assessment Process

As part of the Utility's preventive maintenance program, sewers were identified for continued cleaning or for rehabilitation. Rehabilitation of a sewer is recommended when a line has a history of problems or sewer failure is presumed to be imminent. Inspection of small diameter pipes in performed by staff in the Engineering department and overseen by the newly created CMOM Planner position.

The Engineering Department also added a Sewer Line Rapid Assessment Tool, using sonar technologies, to its inspection capabilities which also includes a push camera and pole-cam.

3.13.2 Rehabilitation Plan

The City is planning and moving forward with prioritizing areas for rehabilitation based on the Draft IOCP submitted July 31, 2012 and also through a renewed focus on Utility-driven, proactive sewer assessment using in-house resources. The Utility has historically contracted out CIP rehabilitation projects such as sewer lining and manhole rehabilitation, depending on specifications entailed. The Utility has worked and will continue to work with the City in establishing specification requirements. The Engineering Department will lead that initiative.

The Utility is using its annual inspection work per the Consent Decree to assess individual subbasins that comprise the remaining 80% of the system that were not evaluated as part of the initial SSES. In addition to sewer and manhole inspections, the Engineering Department has equipment for smoke testing and has recently trained staff to complete sump pump inspections. In 2014, an annual on-call contract will be in place for sewer modelling and calibration. With the combination of the consultant modelling, deploying the 32 Utility owned flow meters, and Engineering Department staff, the Utility intends to begin evaluations of sub-basins in a methodical approach based on modeled R-values from the original modeling SSRMP effort.

As inflow and infiltration locations are identified through Engineering Department efforts in the remaining 80% of the system, the CMOM Planner will develop rehabilitation projects to address the issues most cost beneficial to the Utility. An asset management approach has been adopted by the Engineering Department. GIS attributes have been assigned values for: capacity and risk of failure/criticality. Once a condition assessment is achieved via CCTV, the asset is ranked and prioritized amongst all assets with all three asset criteria established (capacity, risk of failure/criticality and condition assessment). The CMOM Planner then uses the asset management ranking, along with logical proximity, to determine what rehabilitation projects will be developed for implementation. After rehabilitation work is complete and recalibration has taken place, future capacity projects will be identified through the CMOM Planner and modelling consultant. All upgrades will be funded by the CMOM Annual Capital Budget Line Item.

SECTION 4

Operational and Maintenance Programs

4.1 Introduction

Section 4 describes the Utility's O&M programs that the Utility developed and implemented at the time of the CMOM Version 2.0 submittal to meet the requirements of the Consent Decree.

4.2 Scope of O&M Programs

The Utility's Wastewater Department organizes and implements O&M programs in the collection system and at both WWTPs. The Collection System Manager is responsible for overall O&M program implementation. The collection system O&M programs include the following:

- Small-diameter Cleaning and Inspection (this inspection encompasses largely reactive inspection work. Routine inspections are performed by Engineering staff)
- Manhole Inspection
- Recurring Blockage Cleaning and Inspection
- Overflow Cause Determination
- Construction
- Lift Station O&M
- FOG Control
- Root Cutting
- Backup Equipment Inventory

The programs are described in detail in the following sections. Each O&M program is organized with the following elements to provide further details:

- Scope
- Schedule and Resource Management
- Applicable Standard Operating Procedures
- Data Management

4.3 Small-diameter Cleaning and Inspection Program

4.3.1 Scope

The Utility's Small-diameter Cleaning and Inspection (C&I) Program has been developed to comply with Section F, Paragraph 23.j of the Consent Decree, which requires the Utility to develop provisions for cleaning and inspecting sewer pipes. The Utility's Small-diameter C&I Program includes the following:

- Conducting routine, proactive cleaning and inspection of all 8-inch through 15-inch gravity sewers
- Conducting manhole inspections during C&I activities to identify obvious structural defects and prioritizing repair of any major structural defects found

The Utility has implemented its proactive C&I and manhole inspection program to meet the performance requirements outlined in the Decree. Follow-up video inspections and/or repairs will be requested as needed by the Collection System Supervisor or CMOM Planner.

The initial C&I cycle will be completed by the end of 2017, with 70 percent of 8-inch through 15-inch pipes being cleaned and inspected by the end of 2015.

The Consent Decree also requires the Utility to develop a follow-up C&I program conducted on 10-year cycles after the initial cycle is completed. A minimum of 75 miles of pipeline will be cleaned and inspected annually throughout the entire program.

4.3.2 Schedule and Resource Management

The C&I Program discontinued the use of the sewer quarter section maps and instead uses a subbasin-based approach based on the Utility's subbasin GIS layer. The System Evaluation Work Plan submitted to USEPA and IDEM in November 2010 described the approach the Utility used to delineate subbasin areas and prioritize those areas for further investigation and assessment. The same prioritization approach was used to develop the C&I Program.

The Utility dedicates two cleaning crews full time to the initial proactive cleaning cycle. Each crew consists of a truck driver and a laborer, and one combination truck. The Collection System Maintenance Supervisor is responsible for overall cleaning program implementation, which includes planning, scheduling, and data management. Additionally, a crew of three employees operates the easement cleaning machine prioritizing their work in areas that are otherwise difficult to access.

Appendix F contains the planned subbasin C&I schedule by crew. As the Utility continues to collect and analyze data logged during proactive and preventative cleaning, this will help to adjust and optimize sewer cleaning.

Inspection activities will be conducted using Sewer Line Rapid Assessment Tool (SL-RAT), employing acoustic technology to identify blockages, QuickView cameras, or CCTV cameras depending upon pipeline size and condition. The Engineering Department will be responsible for determining the inspection methods and engaging with consultants as necessary to complete this effort.

In 2012, The Engineering Department reallocated staff to complete QuickView and CCTV work. Nine union members were trained in NAASCO PACP and MACP inspection methodologies. The Engineering Department also has a CCTV truck to use exclusively on proactive CCTV sewer pipe inspection. Over 75 miles of pipe inspection were completed by in-house Utility staff in 2012 and over 85 miles in 2013.

4.3.3 Standard Operating Procedures

Maintenance crews use the following standard operating procedures (SOPs) and a daily tracking log to conduct C&I activities:

- Manhole inspection and small diameter C&I
- Traffic control
- GIS subbasin area map
- Sewer line cleaning, roots preventive maintenance, and grease preventive maintenance log

An important aspect of the Utility's C&I program is to record cleaning and inspection field results. Maintenance crew members obtain subbasin maps from the Sewer Maintenance Supervisor or GIS/IT Coordinator or can print them from a dedicated computer in the maintenance barn at the Allen Lane facility. During cleaning and inspection activities, the crew will use a sewer cleaning log (Appendix Q) to record attributes such as address, system, sewer line segment, upstream and downstream manhole ID, pipe size, pipe material, pipe length cleaned, start time, end time, date, and any deviation or unusual condition encountered preventing cleaning and inspection in the comments section. Crew members will follow the Manhole Inspection and Small-diameter C&I SOP for cleaning and inspection work (Appendix R).

Crews will also notate or highlight the areas cleaned and redline the hard copy subbasin maps to note any deviation(s) from the GIS map to the sewer line and manhole locations found in the field. At the end of the day, the crew returns the daily log to the maintenance supervisor. All subbasin maps used by the crews are returned to Sewer Maintenance management for review with the GIS/IT Coordinator.

4.3.4 Data Management

The C&I program is managed using the C&I schedule and subbasin map to plan the crews' work, and CityWorks for work tracking and reporting. CityWorks is used to create work orders for follow-up repair or rehabilitation, CCTV inspection, or other investigations. The Manhole Inspection and Small-diameter C&I SOP contains the specific steps used to manage C&I data.

For tracking and reporting, all C&I data will be stored electronically and tabulated into monthly reports as required for inclusion with the Utility's Semi-Annual Report.

4.4 Recurring Blockage Cleaning and Inspection Program

4.4.1 Scope

The Utility's Recurring Blockage Cleaning and Inspection (RBC&I) Program has been developed to comply with Section F, Paragraph 23.j of the Decree, which requires the Utility to develop a program to clean and inspect pipeline segments where blockages have occurred repeatedly. The Utility's RBC&I Program works in conjunction with the Root Control program in Section 4.9. The aim of the RBC&I program is to identify sewer segments for rehabilitation before failure. Highlights include the following:

- Identifying specific pipeline segments where blockages have occurred on a repeat basis
- Conducting frequent cleaning of the segments
- Conducting visual inspections of sewer segments and using other techniques such as SL-Rat, QuickView camera and CCTV of the segments
- Review the inspection results to prioritize cleaning, and to prioritize sewer lines that require rehabilitation work such as relining, patch lining, or replacement

4.4.2 Schedule and Resource Management

The Utility's preventive maintenance currently includes sewer segments where grease and roots have repeatedly caused blockages in the past. Sewer segments addressed by the RBC&I program will be listed in Appendix G. Segments are targeted based upon data presented within the Utility's Semi-Annual Report(s). The Utility continues to target and conduct cleaning for segments with repeated blockages and will use the data collected to develop the cleaning schedules.

The RBC&I program list is cleaned and inspected semi-annually as part of the regular cleaning crew duties. The CSO Manager in coordination with the CMOM Planner will initiate the program and coordinate activities amongst the Engineering Division and Collection System Maintenance crews. The RBC&I program includes planning, scheduling the crew's work, and data management, which includes ensuring the work is tracked in the Utility's database system.

4.4.3 Standard Operating Procedures

The following SOPs are used to conduct C&I activities:

- Manhole Inspection and Small-diameter C&I
- Traffic Control

4.4.4 Data Management

CityWorks is be used to create work orders for the RBC&I program including follow-up repair or rehabilitation, CCTV inspection, or other investigations. The Manhole Inspection and Small-diameter C&I SOP will be followed for cleaning, inspection, and data collecting.

For tracking and reporting, all RBC&I data will be stored electronically and tabulated into monthly reports as required for inclusion with the Utility's Semi-Annual Report.

4.5 **Overflow Cause Determination Program**

The Utility's Overflow Cause Determination (OCD) Program has been developed to comply with Section F, Paragraph 23.j of the Consent Decree, which requires the Utility to develop a program to investigate the cause of overflows if the cause is not readily apparent.

This program will primarily work in conjunction with the Utility's SORP overflow analysis investigation to identify the root causes of the SSOs, CSS releases, or building property backups and define the corrective action(s) needed to reduce or eliminate the potential for recurrence.

The product of the OCD program should be the determination of the root cause and the identification of corrective actions. Ongoing data collected from the OCD program will assist in the Utility's effort to enhance preventive and predictive maintenance.

4.5.1 Scope

The Utility's OCD Program scope includes the following:

- Reactive work in conjunction with SORP overflow analysis investigation by conducting CCTV inspection of sewer segments within 10 days of an event if the root cause is not readily apparent
- Identify the specific sewer system pipeline segments where overflows have occurred

- Conduct CCTV inspections of these segments within 10 days of the event to determine the condition of the line segment and identify corrective actions if the cause of the overflow is not readily apparent
- Review video from CCTV inspections
- Determine the root cause; identify and document corrective actions
- Work in conjunction with the Construction Program
- Conduct a follow up SL-Rat inspection of an overflow location six months after the initial overflow event and a subsequent CCTV inspection as necessary

4.5.2 Schedule and Resource Management

The CSO Manager in coordination with the CMOM planner will oversee the OCD program and implementation, which includes planning, scheduling, and data management activities in coordination with Engineering and Collection System Maintenance. A sewer maintenance crew will primarily conduct the OCD Program, and the crew will consist of an On-call Manager along with a truck driver, lead man, and laborer as needed. Equipment required for the OCP program include a CCTV truck and combination truck(s) if cleaning is required. A Sewer Maintenance Crew consisting of a truck driver and laborer and a combination truck will be mobilized if cleaning is required.

4.5.3 Standard Operating Procedures

The Utility's SORP describes the Utility's processes for identifying, responding to, mitigating, reporting, categorizing, and tracking SSOs, CSS releases, and building/property backup events and the locations where they occur. The OCD Program is conducted in accordance with the procedures outlined in the SORP.

4.5.4 Data Management

The SORP describes the process used to manage overflow event data and regulatory reporting requirements. The SORP contains the appropriate forms and SOPs for completing reporting requirements.

For tracking, all OCD data will be stored electronically and tabulated into reports as required for inclusion with the Utility's Semi-Annual Report. For reporting, all OCD data will be reported following the SORP.

4.5.5 Recurring Capacity-related SSOs

Where the OCD program reveals, or the Utility otherwise determines, that an SSO is the result of a capacity limitation or the system is surcharging due to wet weather events, the SSO will be reported and recorded as such. Capacity-related SSOs are documented in the Utility's semi-annual report to regulators.

During the Utility's assessment of overflow data to identify remedial projects in the proposed IOCP, the primary data used in this analysis included the cumulative list of overflows reported in the September 2012 Semi-Annual Report (the SAR 2012-2 List), and the locations where the SSS models project SSOs to occur during a 2-year storm and for existing flow conditions (the Modeled SSOs), and the 2010 list of possible SSO locations identified by EPA from 2003-2008

data created by former private operator, EMC. The technical memorandum that details the analysis can be found at Appendix V.

The following priorities were given to each of the SSO locations with corresponding proposed actions to address the locations:

- **Priority A:** If a SAR 2012-2 recurring location is included in all three of the lists then it will be included in the SSRMP and the Utility will commit to projects and a schedule for SSO elimination to the recommended level of control.
- **Priority B:** If a SAR 2012-2 single-overflow location is included in all three of the lists then it will be evaluated for inclusion in the SSRMP once system rehabilitation projects have been completed.
- **Priority C:** If a SAR 2012-2 single-overflow location is on the Modeled List but not on the 2010 List then it will be evaluated for inclusion in the SSRMP once system rehabilitation projects have been completed.
- **Priority D:** If a SAR 2012-2 single-overflow location is on the 2010 Lists but not on the Modeled SSO list then it will be monitored through the CMOM program and the area in which it occurs will be identified to be evaluated through the ongoing sewer assessment as a higher priority and with more frequent monitoring than areas without SSOs.
- **Priority E:** If a location is on the 2010 and Modeled SSO lists but not on the SAR 2012-2 List then it will be monitored through the CMOM program and the area in which it occurs will be identified to be evaluated through the ongoing sewer assessment as a higher priority and with more frequent monitoring than areas without SSOs.
- **Priorities F, G, H:** If a location appears on only one of the lists then it will be monitored through the Utility's CMOM program and the area in which it occurs will be identified to be evaluated through the ongoing sewer assessment as a higher priority and with more frequent monitoring than areas without SSOs.

Where capacity-related SSOs are identified in priority A, B, or C areas, the overflow location, the priority level and the corresponding size of the wet-weather event, if applicable, will be specifically identified in the semi-annual report. As projects are implemented and an adaptive management approach to address capacity issues is undertaken by the Utility, this designation in the semi-annual report will aid in determining the effectiveness of remedial capital projects and the need for future remedial projects in the areas. Specifically identifying SSOs in priority areas in the semi-annual report will continue until there are five consecutive years without a capacity-related SSO in the areas up to a two-year storm event.

Special attention is given to all SSO locations, including capacity-related releases in all priority areas, via the process set forth above. An initial cause determination is made within ten days of a release and six months after the release a follow up inspection of the overflow location is made. Where the release is determined to be capacity-related or occurs during a wet weather event that is not in excess of a two-year storm event and remedial measures to remove inflow and infiltration from the system have not proven successful, the location will be assessed for a capital project by the Engineering Department.



4.6 Construction Program

4.6.1 Scope

The Utility's Construction Program was developed to inspect and repair defects found through the OCD or other inspection activities that have indicated a potential for contributing or causing SSOs and/or building/property backups. The program also works to support the City's ongoing rehabilitation program by proactively identifying problem lines and manholes through inspection and repair work. The Utility's Construction Program includes the following:

- Repairs to collapsed or caved in sewers
- Force main repairs
- Inlet repair
- CCTV work

4.6.2 Schedule and Resource Management

The Collection System Construction Supervisor is responsible for construction program implementation, which includes planning, scheduling, and data management. The Utility will dedicate one or more crews as needed to conduct repair and rehabilitation work determined by the Utility's C&I and OCD programs. The crews will consist of the Collection System Construction Supervisor along with truck drivers, lead operators, and laborers as needed.

Additionally, the CMOM Planner will oversee a dedicated CCTV truck primarily focused on proactive work in conjunction with the Utility's cleaning and inspection program. In this approach, a construction crew and CCTV truck will be mobilized to inspect and investigate sewer lines as part of their ongoing condition assessment to identify and forecast rehabilitation and replacement projects. The proactive work will continue on for many years into the future.

4.6.3 Standard Operating Procedures

- Tailgate sessions (safety)
- Traffic control
- CCTV training and operation

4.6.4 Data Management

The Collection System Administrative Assistant will use CityWorks to create work orders for follow-up repair or rehabilitation, CCTV inspection, or planning and prioritizing for CIP.

For tracking and reporting, all construction work orders will be stored in CityWorks. For and reporting, all construction field data will be collected, stored electronically, and tabulated into monthly reports as required for inclusion in the Utility's Semi-Annual Report.

4.7 Lift Station O&M

4.7.1 Scope

The Utility's Lift Station O&M Program complies with Section F, Paragraphs 23.f and 23.g of the Consent Decree, which requires the Utility to describe procedures for periodic inspections and maintenance of lift station equipment to ensure that all necessary parts are in good working

order. For CMOM 3.0, the Utility is required to do the following for the remaining 25 percent of the lift stations in the system:

- Provide an inventory of the Utility's lift stations, including design, equipment and O&M procedures, and redundancy of pumps and electrical power supply.
- Conduct an assessment of the adequacy of the lift stations' compliance with the Ten State Standards.
- Provide an action plan for the lift stations to achieve compliance and a schedule to implement the actions if any lift stations do not comply with Ten State Standards.
- Provide a power outage response consistent with Ten State Standards sufficient to operate the lift station at its rated capacity as well as all ancillary equipment and instrumentation necessary to prevent releases.

Appendix H lists the Utility's lift stations. Lift station locations are shown on the Collection System Map Figure 4-2. The lift station assessment for stations evaluated as part of CMOM 3.0 is located in Appendix I.

The results of the fieldwork are included in a separate document titled *Evansville Sanitary Sewer Pump Assessment (CMOM 3.0)*, and a copy of the document is kept with the Engineering Department at the Utility's O&M Facility, 1931 Allens Lane, Evansville Indiana. A CD of the CMOM 3.0 lift station assessment document is attached provided with this document.

4.7.2 Schedule and Resource Management

The Lift Station Supervisor is responsible for the lift station inspection, operation and maintenance program implementation, which includes planning, scheduling, and data management. Six staff members form three crews; each crew deploys to one of three routes for inspection, operation, and maintenance throughout the collection system.

Lift Station inspections generally begin at the first of the week on Monday and Tuesday. Each crew follows a planned route list to complete lift station inspection. The lift station routes by crew are shown in Appendix J. Figure 4-3 shows the lift station inspection areas that are also maintained in the Utility's GIS.

Inspecting lift stations once per week requires each crew to inspect 15 stations per day, which equates to 90 lift stations inspected in 2 days. Wednesday through Friday are generally the days used for maintenance and non-emergency repairs. The Utility dedicates one staff member to daily inspection, operation and maintenance for the Weinbach and Seventh Avenue lift stations, the largest lift stations in the system.

The lift station inspection process includes but is not limited to the following: telemetry connection check, observe alarm faults, pump and sump pump lubrication and connections, valve operation, control mechanisms, wet well cleaning, and general housekeeping. Equipment is repaired or modified as required.

Shift hours typically run from 7:00 a.m. until 3:00 p.m., Monday through Friday. Night and weekend standby duty responsibilities are assigned by the Lift Station Manager. All lift station crews are on call 24 hours per day, 7 days per week to respond to complaints and alarms. For round-the-clock coverage involving lift station citizen complaints and telemetry system alarms,



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on-call management rotates every 4 weeks and includes the East and West WWTP Manager, Wastewater Superintendent, and Lift Station Manager.

4.7.3 Standard Operating Procedures

The following SOPs are used to conduct C&I activities:

- Lift Station Inspection Checklist
 - Daily inspections for Weinbach, Seventh Avenue, and Ohio Street lift stations
 - Weekly inspections for the remaining 89 lift stations
- Lift Station Maintenance (Dry Pit)
- Lift Station Maintenance (Seventh Avenue)
- Lift Station Maintenance (Submersible)
- Lift Station Maintenance (Weinbach)
- Power outage response
- Traffic Control

4.7.4 Power Outage Response Plan

The Utility has developed a general response plan that provides emergency response for the loss of power for the 25 percent lift stations evaluated as part of CMOM 3.0. The plan addresses the following:

- Lift station operations during power outages to prevent the discharge of SSOs.
- A summary of key information for the 22 lift stations with this document, including key contacts and equipment
- A typical bypass pumping process flow
- Bypass pumping process flow for individual stations without onsite generators

The power outage plan for the lift stations is located in Appendix P.

4.7.5 Ten State Standards Evaluation and Compliance Action Plan

The Utility has completed the evaluation of all of its lift stations in accordance with Paragraph 25.f of the Consent Decree. Reports were submitted with CMOM versions 2.0 and 2.1 on 25% and 50% of the lift stations, respectively, and the evaluation of the remaining 25% of the lift stations was submitted in CMOM 3.0. The report containing the individual lift station assessments can be found in Appendix P.

The process of developing an action plan for correcting deficiencies found during the assessment included an initial screening of the Ten States Standards requirements to identify the highest priorities or most significant items related to lift station reliability, redundancy, capacity, backup power or pumping, accessibility, and O&M documentation. The results of this assessment can be found in Appendix T in Table T-1.

A review of CMOM 3.0, Appendix H, Lift Stations, shows that only five lift stations do not have redundant pumping capabilities: Iroquois Garden, Joan Avenue, Ohio Street, Sandy Acres, and Tieman. The Ohio Street station will be remedied via the proposed IOCP. The four remaining lift stations are included in Appendix T-3 for planned upgrades to make the stations compliant with Ten State Standards.

The lift stations identified in CMOM versions 2.0, 2.1 and 3.0 as not being able to handle the design peak hourly flow with one unit out of service were identified based on a theoretical calculation established at the time the Ten State Standards lift station compliance evaluations were initiated. Since that time, the Utility has completed timing studies at the lift stations to evaluate actual peak hour flows. Appendix H lists and provides information regarding the Utility's lift stations. Appendix U, Lift Station Timing Study Results – Adequacy of Redundant Pumping Capacity, presents the subset of timing studies data for the lift stations without redundant pumping capacity. The flow data indicate that each of the lift stations listed provide sufficient capacity to handle peak hour flows with the largest unit out of service. Based on this information, upgrades at these lift stations are not necessary at this time.

The Utility also has processes in place which will help ensure compliance with the Ten States standard should future growth and flows occur. The utility reviews applications for future development, and in the event that proposed flows may exceed the lift station firm pumping capacity, the Utility may deny the development or increase the capacity of the lift station at that time. Pump station upgrades will, therefore, be included as capital projects if and when needed.

Tables T-2 and T-3 are the summary and details for the Utility's Ten States Standards Compliance Action Plan. Each of the corrective action items noted in Table T-3 have been assigned one of the following categories in accordance with the analysis included in Table T-1:

- Accessibility improvements or modifications are needed to improve or provide accessibility during dry- and wet-weather for routine O&M and emergency operations.
- Backup improvements or modifications are needed to provide or enhance backup power or pumping capability.
- Capacity improvements or modifications are needed to provide additional pumping capacity.
- O&M Manual additional or enhanced documentation is needed that describes emergency operations specific to that lift station, or O&M requirements for the lift station's backup equipment.
- Redundancy installation of redundant equipment is needed.
- Reliability improvements or modifications are needed to increase lift station reliability.

Tables T-2 and T-3 include the year each of the corrective actions will be completed. The corrective actions will be completed by December 31 of the year noted, and proof of completion will be included in the semi-annual report submitted in the March following each of the years.

4.7.6 Design and Record Drawings

Design standards and technical specifications for lift stations can be found in the Sewer Handbook in Appendix D.

Hard copy record drawings for lift stations and appurtenant facilities are available for viewing at the Utility's Engineering Division office located at the O&M Facility.

4.7.7 Data Management

Design standards and technical specifications for lift stations can be found in the Sewer Handbook in Appendix D.

Hard copy record drawings for lift stations and appurtenant facilities are available for viewing at the Utility's Engineering Division office located at the Operations and Maintenance Facility, 1931 Allens Lane, Evansville Indiana.

The Lift Station inspection program will be managed using the route schedules and map to plan the crews' work. The Lift Station Supervisor is responsible for scheduling, and data management. Currently, the Utility uses a standalone work order software package to submit monthly bar screen inspections and semiannual inspection and maintenance of pump u-joints and drive shafts for the Seventh Avenue Lift Station.

For tracking and reporting, all lift station work orders and inspection results will be stored electronically and tabulated as required into monthly reports for inclusion with the Utility's Semi-Annual Report.

4.8 FOG Program

The Utility's FOG Program complies with Section F, Paragraph 23.d, and Paragraphs 25. b-d of the Consent Decree, which requires the Utility to develop a program to control FOG in the sewer system.

The Utility and the Vanderburgh County Health Department (VCHD) work jointly to enhance the Utility's FOG program. At the beginning of 2011, the VCHD focused on educating food establishments on best management practices for controlling FOG and distributed grease trap questionnaires (Appendix L-1) to gather information to update their records of food establishments that are sources or potential sources of FOG.

4.8.1 Scope

The Utility's FOG Program includes:

- A Sewer Use Ordinance which prohibits the discharge of mineral-based oils and greases into the sewer system and mandates that a grease trap be installed in all restaurants and food-preparation establishments that have the potential to discharge waste containing grease (the section of the Evansville Municipal Code requiring prohibiting the discharge of grease is attached as Appendix C)
- Repeat cleaning of pipeline segments where grease buildup or blockages have occurred in the past (identification of sewer segments impacted by FOG and cleaning are covered by the RBC&I Program described above)
- Establishing and maintaining the database of Food Establishments that are sources of FOG
- Notification procedures for new Food Establishments to control FOG, including a grease trap questionnaire and a grease trap sizing worksheet (Appendix L-2)
- Periodic and random inspections of food-preparation establishments' grease control measures at least once every five years with at least 40% of establishments inspected every two consecutive years (An SOP followed by the VCHD and Utility staff is attached as Appendix L-3)
- Enforcement of the FOG control provisions and issuance of Notices of Violation containing corrective measures and time frame for completion, including the issuance of fines [See Appendixes: Notice of Violation letter (Appendix L-4), violation fine structure (Appendix L-5)

violation fine structure for not-for-profit entities (Appendix L-6), and fine invoice (Appendix L-7)]

• Food Establishments that do not maintain their grease trap are posted in the Sunday newspaper by the VCHD weekly. They are listed two different ways: noncritical violations and critical violations. The noncritical violations stem from an establishment not maintaining its grease trap. The critical violations are generated if after a repeat visit by the VCHD the establishment has still not cleaned the trap.

4.8.2 Resource Management

As mentioned above, FOG cleaning is conducted by the Collection System Maintenance crews through the Utility's RBC&I Program, and the FOG Program will be managed by the Utility's Regulatory Compliance Department.

The Collection System Maintenance Supervisor will:

- Implement the RBC&I program with regard to FOG
- Ensure results of FOG cleaning and communicate results with the Utility's FOG Coordinator

The inspection of food establishments to ensure the proper installation of grease traps is conducted by the Building Commissioner's Plumbing Inspector and Utility Engineering Division. Inspection activities are coordinated by the Laboratory Pretreatment Manager and FOG Coordinator, who are also informed of the results of inspection activities.

The inspection of food establishments for proper operation and maintenance of grease traps and compliance with the Sewer Use Ordinance is performed by the VCHD and Utility Staff. To enhance inspection activities, the Utility added a FOG Inspector position in 2014. Inspection activities are coordinated by the FOG Coordinator, who is also informed of the results of inspection activities.

The Regulatory Compliance Officer will:

- Ensure that the overall FOG program is being implemented
- Ensure that FOG provisions required by the SUO are enforced

4.8.3 Standard Operating Procedures

The Utility will adhere to the SOPs detailed in the following subsections.

4.8.3.1 List of Food Establishments

The VCHD regulates all food establishments and, in conjunction with the Pretreatment Department, maintains the official list of all food establishments in an electronic database. The VCHD provides electronic updates of the official database to the Utility at least twice per year so it can track areas that may be susceptible to FOG problems.

In addition to receiving updates from the VCHD to track new food establishments, the Utility attends the regular County Planning Department site review public meeting when the agenda indicates that a food establishment is requesting approval, and the Utility will send out a Grease Trap Questionnaire (Appendix L-1) if the food establishment is approved. The information provided to the Utility by the questionnaire begins the process of regulating a food establishment for FOG.

4.8.3.2 Grease Trap Inspections

The Utility initiated grease trap inspections in March 2011 in conjunction with the VCHD for existing food establishments and will be responsible for non-compliance enforcement with the SUO. When the VCHD conducts annual inspections of food establishments, it also inspects the grease records of the establishment to ensure the proper cleaning and disposal of grease. The Grease Trap Inspector will conduct physical inspections of grease traps to ensure proper working condition and provide the results to the Fog Coordinator. Food establishment traps are inspected at least every five years with at least 40% of food establishments inspected every two consecutive years. Inspection results are provided to the Laboratory Pretreatment Manager.

The Building Commissioner's Plumbing Inspector inspects all newly installed interior grease traps. The Utility's Engineering Division, in conjunction with the Laboratory Pretreatment Manager, inspects exterior grease traps during construction of new food establishments to ensure that the interceptors are installed correctly. Food establishments that have not complied with the Sewer Use Ordinance requirement to install a proper grease trap will be denied appropriate operating and occupancy permits. A grease trap schematic diagram is attached as Appendix L-8).

4.8.3.3 FOG Inspections

The Utility's goal is to inspect food establishments on a regular and recurring basis for compliance with the Sewer Use Ordinance. This includes assuring that establishments' grease control measures are inspected at least once every five years with at least 40% of establishments inspected every two consecutive years.

As part of the VCHD's regular duties to inspect food establishments for proper food handling and cleanliness, per an agreement with the Utility (Appendix L-9) the VCHD also inspects food establishments' grease maintenance logs (L-10). If the grease maintenance log is not current, not available or does not show a recent cleaning of the grease trap, then the VCHD will contact the Utility's Laboratory Pretreatment Manager. Additionally, if the Utility's instrumentation technicians inspect a trap that is not in proper working condition, they will contact the Laboratory Pretreatment Manager. After being alerted by the VCHD or Utility staff about a grease trap issue, the Laboratory Pretreatment Manager will inspect the food establishment as promptly as circumstances allow and take appropriate action to ensure compliance with the Sewer Use Ordinance.

When the Utility's crews are inspecting sewers and excessive grease is noted during the inspection, or if the Utility's cleaning crew brings up excessive grease, the Collection System Maintenance Supervisor notifies the Laboratory Pretreatment Manager. When the Laboratory Pretreatment Manager is alerted to a problem area the surrounding food establishments' traps are inspected. An Inspection Checklist (Appendix M) will be used by the Laboratory Pretreatment Manager to track consistent inspection data from each food establishment.

In addition to physical inspection, the FOG Coordinator may review an establishment's grease maintenance log from all inspected locations. The grease maintenance logs, manifests and inspection checklists are logged appropriately and stored by the Utility in order to maintain consistency with the food establishment list.

4.8.3.4 Enforcement Action

When Code violations are found at any food establishment the Utility will take enforcement action to correct the issue. Violations may be identified as a result of onsite inspections by

Utility or VCHD personnel, general complaints, consumer tips, or notices of collection system problems discovered by the Utility's sewer maintenance department personnel during sewer cleaning and inspection.

Establishments found to be violating any section of Municipal Code will be generally sent a Notice of Violation that will outline corrective measures that need to be taken along with a timeframe in which they are to act. Failure to address the issue, failure to respond or failure to meet the stipulated timeframe(s) will be recourse for further enforcement consistent with the approved ERP. The Utility's Pretreatment Department is responsible for enforcement correspondence with food establishments.

The fine structure for food establishments, excluding not-for-profit entities, will be as follows:

- First notice of violation subjects the violator to a civil penalty of \$250 if the agency fails to act upon a corrective recommendation within 10 working days. The 10 working days referenced here may be reduced when significant water quality degradation has occurred or there is a high potential for such degradation to occur if left uncorrected.
- 2. Second notice of violation means the determination that after the expiration of the time period for correction established in subsection (1) of this section as outlined in the notification of a violation, the condition or conditions constituting a violation in the first notice of violation remain uncorrected or otherwise not compliant with the requirements, provisions, or regulations of this code. The violator shall be subject to a civil penalty of \$500 if the agency fails to act upon a corrective recommendation within 10 working days. The 10 working days referenced here may be reduced when significant water quality degradation has occurred or there is a high potential for such degradation to occur if left uncorrected.
- 3. Third notice of violation means the determination that at any time after 10 working days period for the correction of a second notice of violation has elapsed; the condition or conditions constituting the violation remain uncorrected or otherwise not compliant with the requirements, provisions, or regulations of the code. Upon ascertaining and documenting the occurrence of a continuing violation after a third notice of violation at an agency, the violator will be subject to a civil penalty of **\$2,500**.
- 4. Any further noncompliance will result in a daily fine of \$250 per day to the appropriate individual or individuals responsible for correcting the violating condition or conditions, together with a notice that the agency is subject immediately to a stop work order issued by the Evansville Water & Sewer Utility.

With the approval of the Regulatory Compliance Manager, the Utility's Pretreatment Laboratory will issue the original Notice of Violation and issue notification of any subsequent fines that are assessed. They will also alert the Utility Board to any fines that have been levied or any further civil action that may be needed for failure of the establishment to comply or submit payment. Payments will be collected by the Utility Administrative offices. The fine structure for not-for-profit entities is similar to the above, but allows additional time for compliance (see Appendix L-6).

4.8.3.5 Grease Disposal

Currently, the grease removed is taken to Griffin Industries, a grease rendering facility in Henderson, Kentucky, for proper disposal. Each food establishment is provided this disposal

information. The grease rendering facility is regulated by the State of Kentucky. Griffin Industries has been in business for many years and is familiar with proper hauling manifests.

4.8.4 Data Management

The Utility's pretreatment staff will be responsible for keeping track of grease trap inspections. The Utility has implemented Linko Data Systems FOG software in conjunction with the VCHD to characterize all food establishments and to schedule and manage trap inspections.

4.9 Root Control Program

4.9.1 Scope

The Utility's Root Control Program has been developed to comply with Section F, Paragraph 23.e, of the Consent Decree, which requires the Utility to develop a program to control roots in the sewer system. The Utility's Root Control Program works in conjunction with the RBC&I program and includes the following activities:

- Repeat cleaning of pipeline segments where roots blockages have occurred in the past (identification of sewer segments impacted by roots and cleaning are covered by the RBC&I Program described above).
- Establishing and maintaining a list of segments that are sources of root blockages and conducting inspections of these segments to develop and maintain prioritized cleaning, or to prioritize repair or rehabilitation.
- Recording treatment method types and the frequency of treatment. Typical root treatments include the following:
 - Root cutting
 - Chemical Control and inhibitor (RootX)

4.9.2 Schedule and Resource Management

As stated above, root cleaning is conducted through the Utility's RBC&I Program, so the CMOM Planner and Collection System Maintenance Supervisor are responsible for implementing the root control program, including planning, scheduling, and data management.

4.9.3 Standard Operating Procedures

The Utility uses two approaches to removing roots:

- 1. Cutting the roots with a saw
- 2. Chemical application RootX to kill the roots and treat the pipe to inhibit root growth.

The following SOPs are used to conduct root control activities:

- RootX (The protocol for RootX application is found in Appendix N.)
- Traffic control

4.9.4 Data Management

The data management of the RBC&I program above is again used to plan and schedule the crew's work, and CityWorks for work tracking and reporting. CityWorks will also be used to create work orders for follow-up repair or rehabilitation, CCTV inspection, for root blockages.

For tracking and reporting, all root blockage field data will be stored electronically and tabulated into monthly reports as required for inclusion in the Utility's Semi-Annual Report.

4.10 Backup Equipment Inventory

4.10.1 Scope

The Utility's Backup Equipment Inventory list complies with Section F, Paragraph 23.c, of the Decree, which requires the Utility to maintain an accessible and updated inventory of backup equipment or spare parts.

The Utility owns and operates sewer maintenance equipment that is stored at the O&M facility and WWTPs. The Utility's equipment list, including redundant portable backup pumps and generators, can be found in Appendix E.

4.10.2 Schedule and Resource Management

The Collection System Manager is responsible for managing the equipment and vehicles used in conjunction with maintenance of the collection system. Two combination trucks are available for each shift (two trucks on day shift and two trucks on second shift). Maintenance for the Combination trucks is performed by an outside contracted company.

4.10.3 Standard Operating Procedures

- Traffic control
- Tailgate vehicle safety sessions

4.10.4 Data Management

The Utility performs regularly scheduled equipment maintenance with assigned work order numbers including but not limited to equipment asset number and description, maintenance, or repair condition, date reported and date completed. Maintenance records are maintained by the Collection Systems Administrative Assistant and stored in CityWorks.

4.11 Critical Components

The Utility has prepared a narrative of critical components (Appendix O) for the WWTPs and collection systems and has submitted a plan for obtaining and maintaining redundancy or backups of the Utility's lift stations and other key components of the system. The Utility's system characterization coupled with the Utility's implementation of a new CMMS, CityWorks, will provide the tools and data necessary to better manage its critical assets.

APPENDIX V Identifying SSOs Included in the IOCP Technical Memorandum