



Sewer System Management Plan

WDID: 5SSO10921

Original Adoption Date: 8/21/12 Resolution 12-127

Second Adoption Date: 4/18/17 Resolution 17-038

Third Adoption Date: 6/28/22 Res 22--096



Paul H. Causey, P.E.

Date: July 7, 2022

Table of Contents

| | |
|---|-----------|
| Introduction | 1 |
| I.1 Definitions, Acronyms, and Abbreviations | 1 |
| I.2 Sanitary Sewer System Facilities..... | 6 |
| I.3 Critical Supporting Documents | 9 |
| Element I: SSMP Goals..... | 10 |
| I.1 SSMP Goals..... | 10 |
| I.2 Critical Supporting Documents | 10 |
| Element II: Organization | 11 |
| II.1 Organizational Structure | 11 |
| II.2 Authorized Representatives..... | 12 |
| II.3 Responsibility for SSMP Implementation and Maintenance..... | 14 |
| II.4 SSO Reporting Chain of Communication | 15 |
| II.5 Critical Supporting Documents | 16 |
| Element III: Legal Authority..... | 17 |
| III.1 Municipal Code | 17 |
| III.2 Agreements with Satellite Agencies..... | 18 |
| III.3 Critical Supporting Documents | 18 |
| Element IV: Operations and Maintenance Program | 19 |
| IV.1 Collection System Mapping | 19 |
| IV.2 Preventive Operation and Maintenance | 20 |
| IV.3 Rehabilitation and Replacement Program..... | 24 |
| IV.4 Training..... | 24 |
| IV.5 Equipment and Replacement Parts..... | 25 |
| IV.6 Critical Supporting Documents | 25 |
| IV.7 Supplements..... | 26 |
| IV.7.1 Supplement 1: Lift Station Condition Assessment Checklist..... | 26 |
| IV.7.2 Supplement 2: Sewer System Major Equipment Inventory | 29 |
| IV.7.3 Supplement 3: Critical Sewer System Replacement Parts Inventory..... | 30 |
| Element V: Design and Performance Provisions | 32 |
| V.1 Design Criteria for Installation, Rehabilitation and Repair..... | 32 |
| V.2 Inspection and Testing Criteria..... | 33 |
| V.3 Critical Supporting Documents | 35 |
| Element VI: Overflow Emergency Response Plan..... | 36 |
| VI.1 Purpose | 36 |
| VI.2 Policy | 36 |
| VI.3 Goals | 37 |

| | |
|---|------------|
| VI.4 Critical Supporting Documents | 37 |
| Element VII: Fats, Oils, and Grease (FOG) Control Program..... | 38 |
| VII.1 Nature and Extent of FOG Problem | 38 |
| VII.2 FOG Source Control Program - Reviews & Inspections | 39 |
| VII.3 Response to GWDR Requirements..... | 41 |
| VII.4 Critical Supporting Documents | 42 |
| Element VIII: System Evaluation and Capacity Assurance Plan..... | 43 |
| VIII.1 System Capacity Evaluation..... | 43 |
| VIII.2 Design Criteria | 44 |
| VIII.3 Capacity Enhancement Measures - Capital Improvement Program (CIP)..... | 44 |
| VIII.4 Critical Supporting Documents | 45 |
| Element IX: Monitoring, Measurement, and Program Modifications | 46 |
| IX.1 Performance Measures | 46 |
| IX.2 Baseline Performance | 46 |
| IX.3 Performance Monitoring and Program Changes..... | 53 |
| IX.4 Critical Supporting Document..... | 53 |
| Element X: SSMP Program Audits | 54 |
| X.1 Audits | 54 |
| X.2 SSMP Updates | 55 |
| X.3 Critical Supporting Documents | 55 |
| Element XI: Communication Program | 56 |
| XI.1 Communication during SSMP Development and Implementation | 56 |
| XI.2 Communication with Satellite Wastewater Collection Systems..... | 56 |
| XI.3 Critical Supporting Documents | 56 |
| Appendix A: Sewer System Management Plan Council Adoption Documents..... | 57 |
| Appendix B: Sewer System Management Plan Change Log..... | 59 |
| Appendix C: Sewer System Management Plan Audit Reports..... | 60 |
| Appendix D: Overflow Emergency Response Plan | 83 |
| Appendix E: Water Quality Monitoring Plan..... | 150 |
| Appendix F: Annual Performance Reports | 153 |

List of Tables

| | |
|---|----|
| Table 1: Gravity Sewer Size Distribution | 8 |
| Table 2: Gravity Sewer Materials of Construction | 8 |
| Table 3: Inventory of Gravity Sewer Lines by Pipe Age | 9 |
| Table 4: Roles and Responsibilities Defined..... | 12 |
| Table 5: Responsible Officials in Water Quality Chain of Communication | 14 |
| Table 6: GWDR Legal Authority..... | 17 |
| Table 7: Historical Sewer Line Cleaning Results | 21 |
| Table 8: Historical CCTV of Mains and Laterals | 21 |
| Table 9: Lift Station Locations and Descriptions..... | 22 |
| Table 10: Force Main Descriptions | 23 |
| Table 11: Historical Chemical Treatment of Laterals..... | 23 |
| Table 12: Sewer Capital Improvement Program (CIP) | 24 |
| Table 13: Acceptable Pipe Materials for New Gravity Sewers | 33 |
| Table 14: Historical FOG-Related SSOs in Main Lines | 38 |
| Table 15: Gravity Main Sewer, Lift Station, and Force Main SSOs by Year | 47 |
| Table 16: Mainline SSOs by Cause | 48 |
| Table 17: Mainline SSO Volumes | 49 |
| Table 18: Public Sewer Lateral SSOs by Cause | 50 |
| Table 19: Public Sewer Lateral SSO Volumes | 51 |

List of Figures

| | |
|---|----|
| Figure 1: City of Davis Wastewater Service Area..... | 7 |
| Figure 2: City of Davis Collection System Map..... | 7 |
| Figure 3: City of Davis Wastewater Division Organization Chart | 11 |
| Figure 4: SSO Reporting Flow Chart | 16 |
| Figure 5: Trend in Number of Gravity Sewer, Lift Station, and Force Main SSOs | 47 |
| Figure 6: Trend in Number of Lateral and Mainline SSOs..... | 48 |
| Figure 7: Trend in Gravity Sewer, Lift Station and Force Main SSOs by Cause | 49 |
| Figure 8: Trend in Volume of Mainline SSOs | 50 |
| Figure 9: Trend in Cause of Public Sewer Lateral SSOs..... | 51 |
| Figure 10: Trend in Volume of Public Sewer Lateral SSOs..... | 52 |
| Figure 11: Trend in Rate of SSOs per 100 miles per Year | 52 |
| Figure 12: Trend in SSOs by Overflow Category | 53 |

Introduction

This Sewer System Management Plan (SSMP) is a compendium of the policies, procedures, and activities that are included in the planning, management, operation, and maintenance of the City of Davis' (City's) sanitary sewer system.

The State Water Resources Control Board (SWRCB) has issued statewide waste discharge requirements for sanitary sewer systems, which include requirements for development of an SSMP. The SWRCB requirements are outlined in Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, dated May 2, 2006 (GWDR), and Order No. WQ-2008-0002-EXEC, dated February 20, 2008, which was amended by Order No. 2013-0058-EXEC, effective September 9, 2013, which changed the Monitoring and Reporting Program (MRP). The City currently operates under a Central Valley Regional Water Quality Control Board National Pollution Discharge Elimination System Permit (NPDES) No. CA0079049 issued by Order R5-2018-0086 issued December 7, 2019. The National Pollution Discharge Elimination System Permit NPDES Permit covers both the Davis Wastewater Treatment Plant (WWTP) and the collection system requirements. This SSMP is intended to update the City's existing SSMP, in continued compliance with the GWDR.

The structure (section numbering and nomenclature) of this SSMP follows the above referenced GWDR and MRP. This SSMP is organized by the SWRCB outline of elements; and contains language taken from the GWDR as at that beginning of each element. The GWDR uses the term "Enrollee" to mean each individual municipal wastewater agency that has completed and submitted the required application for coverage under the WDR (in this case, the Enrollee is the City). The City's waste discharger identification number in the California Integrated Water Quality System (CIWQS) is 5SSO10921.

I.1 Definitions, Acronyms, and Abbreviations

| | |
|-------------------------|---|
| BMP | Best Management Practices Refers to the procedures employed in commercial kitchens to minimize the quantity of grease that is discharged to the sanitary sewer system. Examples include scraping food scraps into a garbage can and dry wiping dishes and utensils prior to washing. |
| Building Lateral | See Private Sewer Lateral |
| CCTV | Closed Circuit Television Refers to the process and equipment that is used to internally inspect the condition of gravity sewers. |
| CIP | Capital Improvement Program |

| | |
|--------------------|--|
| | Refers to the document that identifies future capital improvements to the City's sanitary sewer system. |
| City | Refers to the City of Davis |
| CIWQS | California Integrated Water Quality System Refers to the State Water Resources Control Board online electronic reporting system that is used to report SSOs, certify completion of the SSMP, and provide information on the sanitary sewer system. |
| CMMS | Computerized Maintenance Management System Refers to the computerized maintenance management system that is used by the City to plan, dispatch, and record the work on its sanitary sewer system. Lucity™ is the propriety software the City uses for CMMS. |
| CSA | County Service Area Areas of Yolo County serviced by the City through agreement. The two areas are El Mercado and North Davis Meadows. |
| CWEA | California Water Environment Association |
| CY | Calendar Year |
| DIP | Ductile Iron Pipe |
| DS | Data Submitters |
| FOG | Fats, Oils, and Grease Refers to fats, oils, and grease typically associated with food preparation and cooking activities that can cause blockages in the sanitary sewer system. |
| FY | Fiscal Year Refers to the 12-month periods beginning July 1st and ending June 30th. |
| FSE | Food Service Establishment Refers to commercial or industrial facilities where food is handled/prepared/served that discharge to the sanitary sewer system. |
| GWDR or WDR | General Waste Discharge Requirements Refers to the State Water Resources Control Board Order No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, dated May 2, 2006. |

| | |
|-------------------------|---|
| GIS | Geographical Information System Refers to the City’s system that is used to capture, store, analyze, and manage geospatial data associated with the City’s sanitary sewer system assets. |
| GRD | Grease Removal Device Refers to grease traps and grease interceptors that are installed to remove FOG from the wastewater flow at food service establishments. |
| Green Book | Refers to the Standard Specifications for Public Works Construction (2012 or most current version). |
| I/I | Infiltration/Inflow Refers to water that enters the sanitary sewer system from storm water and groundwater. Infiltration enters through defects in the sanitary sewer system after flowing through the soil. Inflow enters the sanitary sewer without flowing through the soil. Typical points of inflow are holes in manhole lids and direct connections to the sanitary sewer (e.g., storm drains, area drains, and roof leaders). |
| Lateral | See Private Sewer Lateral |
| Lower Lateral | The lateral from the private property line to the public sewer main. |
| LRO | Legally Responsible Official Refers to person(s) formally designated by an agency to be responsible for formal reporting and certifying of all reports submitted to the CIWQS. |
| Lucity™ | Refers to the software used by the City for computerized maintenance management (CMMS). |
| MH | Manhole Refers to an engineered structure that is intended to provide access to a sanitary sewer for maintenance and inspection. |
| Mainline Sewer | Refers to City wastewater collection system piping that is not a private lateral connection to a user. |
| Maintenance Hole | See Manhole |
| MMPM | Monitoring, Measurement, and Plan Modifications |
| MRP | Monitoring and Reporting Program |

State Water Resources Control Board Executive Order WQ 2013-0058-EXEC effective September 9, 2013.

| | |
|-------------------------------|---|
| NPDES | National Pollution Discharge Elimination System Permit |
| Notification of an SSO | Refers to the time at which the City becomes aware of an SSO event through observation or notification by the public or other source. |
| OES | Office of Emergency Services Refers to the California State Office of Emergency Services. |
| O&M | Operations and Maintenance |
| OERP | Overflow Emergency Response Plan |
| PM | Preventive Maintenance Refers to maintenance activities intended to prevent failures of the sanitary sewer system facilities (e.g. cleaning, CCTV, repair, etc.). |
| Private Sewer Lateral | Refers to the portion of a private property's building sewer as defined by the plumbing code, and is further defined as the piping of a drainage system that extends from the end of the building drain to the public sewer which includes the connection to the public sewer. This is also referred to as the upper lateral |
| PS | Pump Station A facility that transmits and lifts sewage into the City gravity sanitary sewer collection system |
| PVC | Polyvinylchloride Pipe |
| RWQCB | Regional Water Quality Control Board Refers to the Central Valley Regional Water Quality Control Board. |
| SSO | Sanitary Sewer Overflows Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include: Overflows or releases of untreated or partially treated wastewater that reach waters of the United States; Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system. |

SSOs that include multiple appearance points resulting from a single cause will be considered one SSO for documentation and reporting purposes in CIWQS.

Note: Wastewater backups into buildings caused by a blockage or other malfunction of a building lateral that is privately owned are not SSOs.

SSO Categories:

Category 1: Discharge of untreated or partially treated wastewater of any volume resulting from a sanitary sewer system failure or flow condition that either:

- Reaches surface water and/or drainage channel tributary to a surface water; or
- Reached a Municipal Separate Storm Sewer System (MS4) and was not fully captured and returned to the sanitary sewer system or otherwise captured and disposed of properly.

Category 2: Discharge of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from a sanitary sewer system failure or flow condition that either:

- Does not reach surface water, a drainage channel, or an MS4, or
- The entire SSO discharged to the storm drain system was fully recovered and disposed of properly.

Category 3: All other discharges of untreated or partially treated wastewater resulting from a sanitary sewer system failure or flow condition.

Sanitary Sewer System or Sewer System

Refers to the sanitary sewer facilities that are owned and operated by the City of Davis.

SSMP

Sewer System Management Plan

SOP

Standard Operating Procedures

Refers to written procedures that pertain to specific activities employed in the operation and maintenance of the Sanitary Sewer System.

Standard Specifications

See “Green Book” above

SWRCB

State Water Resources Control Board

Refers to the California Environmental Protection Agency, State Water Resources Control Board.

Note: The State Board is a separate entity from the Central Valley Regional Water Quality Control Board, although the two agencies are closely connected.

| | |
|---------------------------|---|
| SCADA | Supervisory Control and Data Acquisition Refers to the system that is employed by the City to monitor the performance of its lift stations and to notify the operating staff when there is an alarm condition that requires attention. |
| SECAP | System Evaluation and Capacity Assurance Plan |
| Upper Lateral | See private lateral |
| VCP | Vitrified Clay Pipe |
| Water of the State | Refers to “any surface water or groundwater, including saline waters, within the boundaries of the state.” (California Water Code § 13050(e)). |
| WWTP | Wastewater Treatment Plant |

I.2 Sanitary Sewer System Facilities

The City operates a sanitary sewer system that serves a population of approximately 70,717 in a 10.5 square mile service area. The City’s wastewater service area, shown on Figure 1, includes two Yolo County Service Areas, North Davis Meadows and El Macero. The sewer system serves 15,229 residential connections and 552 commercial, industrial and institutional customers as of 2021.¹ Figure 2 contains an overview map of the City’s sanitary sewer system. The system consists of 164 miles of gravity sewers (approximately 3,100 line segments), 3224 manholes, 6 pump stations and 6.5 miles of force mains ranging in size from four to 14 inches. The sewer mains range in size from six to 48 inches in diameter. Approximately 20 percent of the sewer mains are located in easements granted to the City. The City also provides service to two extraterritorial service areas, Teichert Construction Corporation Yard and the Davis Creek (formerly Royal Oaks) Mobile Home Park, by individual agreements. Wastewater generated in the Yolo County service areas of El Macero, North Davis Meadows, Davis Creek Mobile Home Park and the Teichert Construction Complex are also treated by the Davis Wastewater Treatment Plant.² The City is responsible for 134 miles of lower laterals connecting to the public sewer lines following a lateral overflow. The private property owner is responsible for the operations, maintenance, repair and replacement of the upper sewer lateral.

¹ City of Davis. 2022 Wastewater Rate Study, Draft Financial Plan & Cost of Service Report, December 10, 2021, Bartle Wells Associates

² City of Davis Wastewater Utility Review, November 20, 2020, Utilities Commission

Figure 1: City of Davis Wastewater Service Area

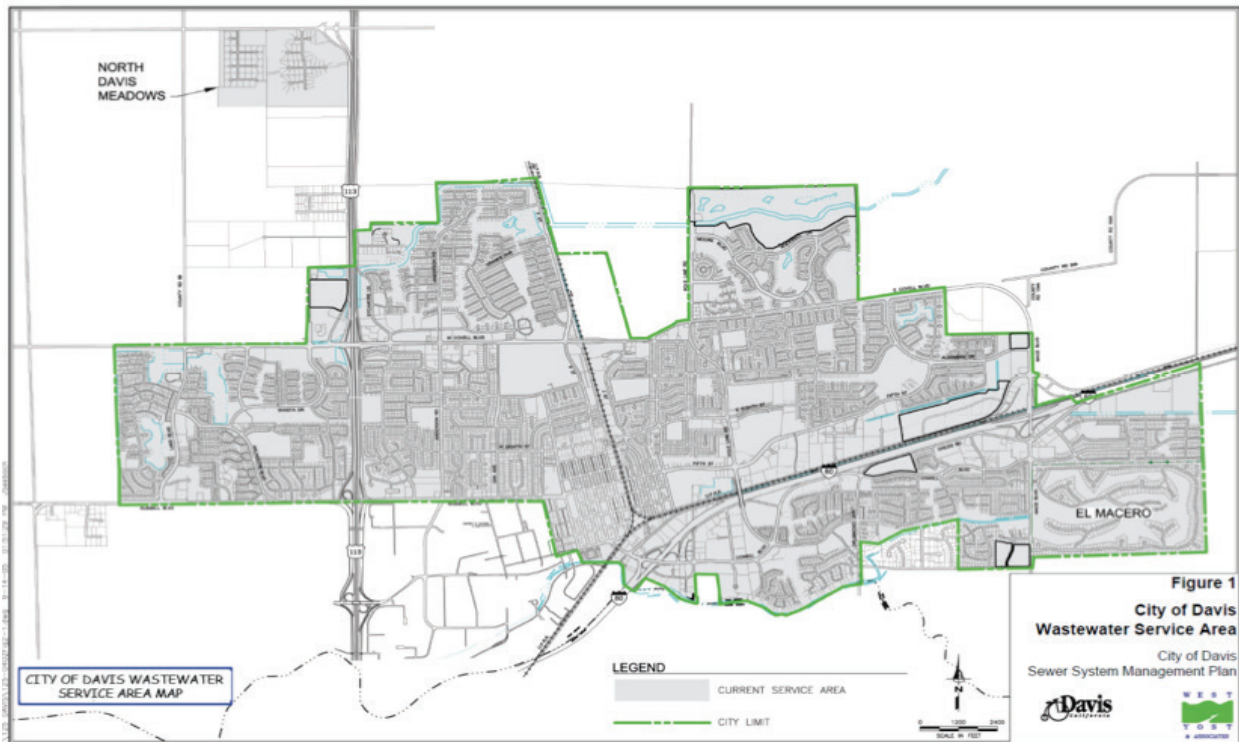


Figure 2: City of Davis Collection System Map

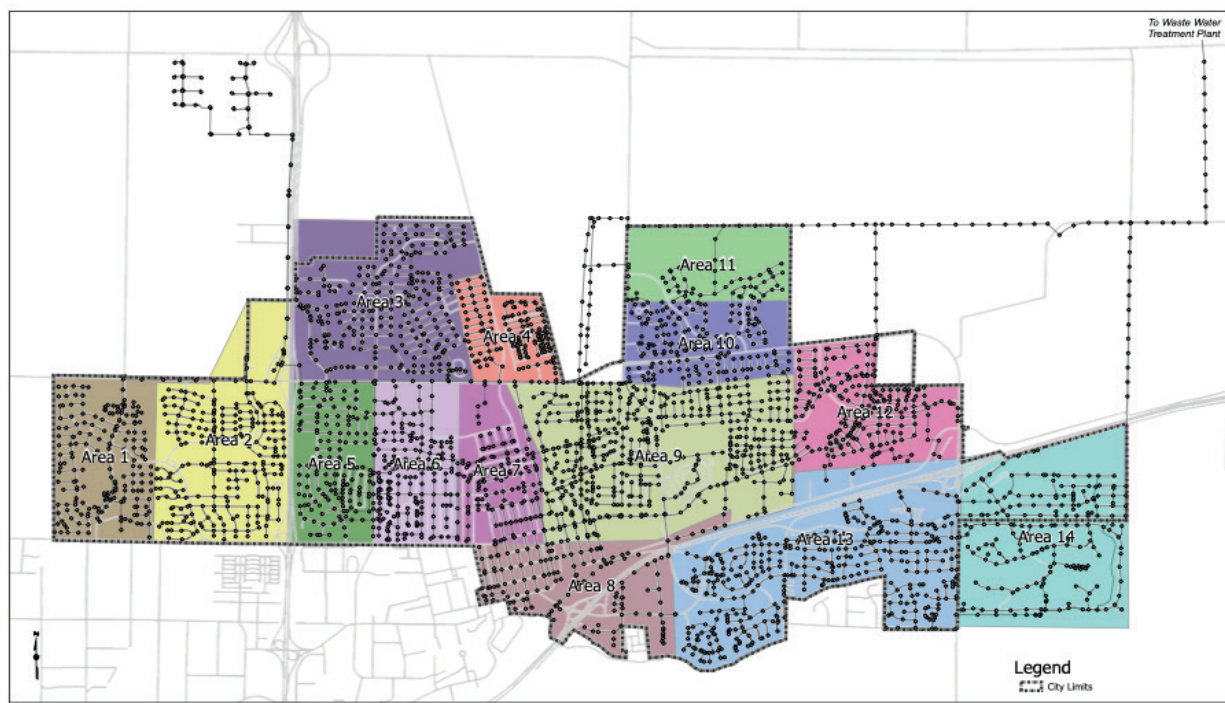


Table 1 and 2 provide the composition of the sewer piping by size and material of construction, and Table 3 provides the installation age distribution of the City’s collection system.

Table 1: Gravity Sewer Size Distribution

| Diameter, inches | Number of Line Segments | Pipe Length, linear feet | Portion of Sewer System, % (by length) |
|------------------|-------------------------|--------------------------|--|
| 6 | 1,272 | 320,071 | 37.0% |
| 8 | 1,070 | 310,126 | 35.8% |
| 10 | 266 | 73,656 | 8.5% |
| 12 | 132 | 36,515 | 4.2% |
| 15 | 80 | 25,822 | 3.0% |
| 18 | 33 | 10,550 | 1.2% |
| 21 | 39 | 14,982 | 1.7% |
| 24 | 31 | 12,153 | 1.4% |
| 27 | 4 | 2,265 | 0.3% |
| 30 | 11 | 5,092 | 0.6% |
| 36 | 3 | 867 | 0.1% |
| 42 | 56 | 25,889 | 2.9% |
| 48 | 14 | 7,103 | 0.8% |
| Unknown | 108 | 20,197 | 2.3% |
| Total | 3,119 | 865,288 | 100.0% |

Source: City Lucity™ CMMS Program, Updated February 2022

Table 2: Gravity Sewer Materials of Construction

| Material | Pipe Length, LF | Pipe Length, miles | Percent of Sewer System |
|----------|-----------------|--------------------|-------------------------|
| VCP | 835,447 | 158.2 | 96.6% |
| RCP | 30 | 0.0 | 0.0% |
| SDR 26 | 27901 | 5.28 | 3.2 |
| Unknown | 1,910 | 0.4 | 0.2% |
| Total | 865,288 | 163.8 | 100.0% |

Source: City Lucity™ CMMS Program, Updated February 2022

Table 3: Inventory of Gravity Sewer Lines by Pipe Age

| Age in Years | Construction Period | Percent of Sewer System | Pipe Length, LF |
|--------------------------|---------------------|-------------------------|-----------------|
| 0-15 | 2000 - current | 12.1 | 104,968 |
| 16 – 35 | 1980 – 1999 | 43.9 | 380,160 |
| 36 – 55 | 1960 – 1979 | 24.4 | 211,200 |
| 56 – 75 | 1940 – 1959 | 9.8 | 84,480 |
| 76 – 95 | 1920 – 1939 | 4.9 | 42,240 |
| 95 – 115 | 1900 – 1119 | 4.9 | 42,240 |
| >115 | Before 1900 | 0 | 0 |
| Total Linear Feet | | | 865,288 |
| Total Miles | | | 164 |

Source: CIWQS Operational Performance Report, Updated February 2022

I.3 Critical Supporting Documents

State Water Resources Control Board Order No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, California State Water Resources Control Board, May 2, 2006.

State Water Resources Control Board Order No. Order No. 2013-0058-EXEC, Amending Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, September 9, 2013.

Central Valley Regional Water Quality Control Board Order No. R5-2018-0086 NPDES Permit No. CA0079049, Wastewater Discharge requirements for the City of Davis Wastewater Treatment Plant, Yolo County adopted October 4, 2013. Permit Section C5(c).

Element I: SSMP Goals

State Resources Water Control Board (SWRCB) Waste Discharge Requirement:

The purpose of the Sewer System Management Plan (SSMP) is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent Sanitary Sewer Overflows (SSOs), as well as mitigate any SSOs that do occur.

I.1 SSMP Goals

The goals of the City of Davis (City) SSMP are:

- To execute the basic plan of routine maintenance, designed to preclude interruption of service throughout the collection system;
- To properly manage, operate, and maintain all portions of the City’s wastewater collection system;
- To immediately investigate all complaints, with prompt correction of faulty conditions on the collection system infrastructures;
- To continue routine inspection for physical damage to the collection system supplemented by immediate and adequate repair of any damage and eliminations of the cause;
- To reduce, prevent and mitigate the impacts of SSOs;
- To conduct all operation with due consideration to protect the public health, worker safety and the environment;
- To involve employees in the strategic planning process for the collection system; and
- To recognize the ownership of the system by the public, to be manifested by courteous, efficient and business-like performance of all collection system operations and functions.

I.2 Critical Supporting Documents

None

Element II: Organization

SWRCB Waste Discharge Requirement:

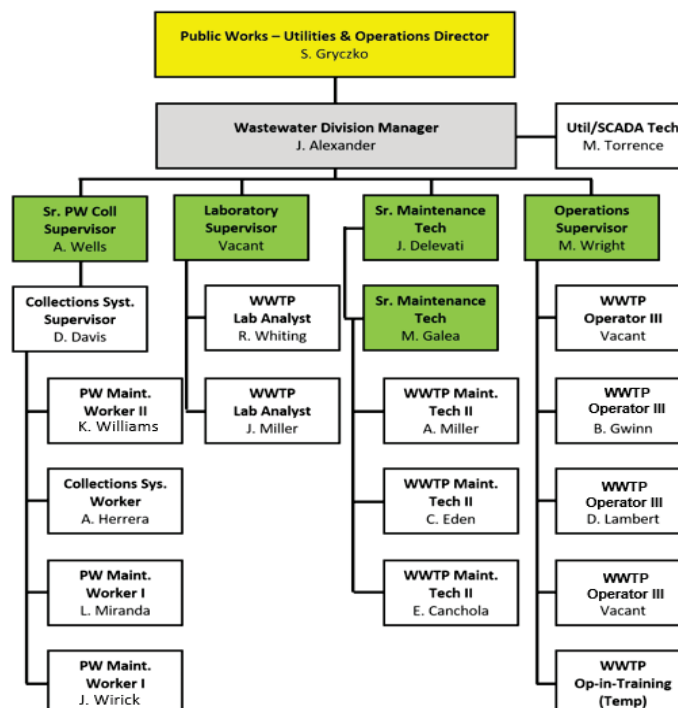
The SSMP must identify:

- a. The name of the responsible or authorized representative as described in Section J of this Order.
- b. The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
- c. The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).

II.1 Organizational Structure

The organization chart for the management, operation, and maintenance of the City’s wastewater collection system is shown on Figure 3.

Figure 3: City of Davis Wastewater Division Organization Chart



II.2 Authorized Representatives

The City’s Legally Responsible Officials (LRO) and Data Submitters (DS) for wastewater collection system matters are identified in Table 4 along with their roles and responsibilities for the collection system operations. They are authorized to submit electronic and written spill reports to the OES. They are the City’s LROs who are authorized to certify electronic spill reports and other required submittals to the SWRCB.

Table 4: Roles and Responsibilities Defined

| Position | Roles and Responsibilities |
|---|---|
| City Council | Establishes policy. |
| City Manager | Plans, organizes and directs the overall administrative activities and operations of the City. Advises and assists the City Council, represents the City’s interest with other governmental agencies, business interests, and the community. |
| City Engineer | Plans, coordinates, supervises, and participates in the performance of professional engineering activities of a complex nature involving engineering planning and design, construction project management. |
| Public Works – Utilities and Operations Director (LRO) | Plans, directs, organizes, coordinates, supervises and reviews the activities of the divisions comprising the Public Works-Utilities and Operations Department; and provides highly responsible professional and technical staff assistance to the City Manager. |
| Wastewater Division Manager (LRO) | Directs, oversees, supervises, organizes and coordinates the operations, laboratory and maintenance of the City’s Wastewater Division consisting of the wastewater treatment plant and collection system. |
| Senior Public Works Collections Supervisor (LRO) | Plan, organizes, and directs the activities of the Sewer/Stormwater Collections section and to provide technical assistance to public works management staff. |
| Collections System Supervisor (DS) | Plans, coordinates, lays out the work assignments and supervises the work of a number of crews involved in the operation and maintenance of wastewater and storm sewer systems, and provides technical staff assistance. |
| Senior Utility Program Technician (SCADA) | Performs technical office or field engineering work. Specifically manages Supervisory Control and Data Acquisition (SCADA) to perform data collection and control, oversees the day-to-day operation, maintenance and repair/replacement of pump stations, and manages flow monitoring activities for infiltration/inflow studies, capacity studies and wastewater flow monitoring. |
| Environmental Program Specialist | Oversees the pretreatment program and the Fats, Oils, and Grease (FOG) program under direction of the Wastewater Division Manager. Coordinates, implements, conducts, analyzes, and maintains the wastewater pretreatment program, stormwater quality discharge program or other environmental programs at a level of service that enables compliance with mandates and facilitates the protection of water quality. Performs water quality assessments and special studies associated with the sanitary sewer. Lead role in implementation the City’s FOG program. Coordinates and confers with federal and state regulatory agencies as well as with the Collections Division, consultants, and directly with sewer users to ensure compliance with regulations and |

| Position | Roles and Responsibilities |
|---|--|
| | related reporting requirements. Prepares reports and communicates as needed with the public, commissions and the sewer users. |
| Collection Systems Technician | Participates in maintenance and repair duties and performs a wide variety of skilled and semi-skilled maintenance, construction, and repair work, and operates light and moderately heavy power-driven equipment. |
| Collection System Worker | Performs a variety of semi-skilled and skilled tasks in the construction, maintenance, and repair of sewers, and related public works facilities; and to operate light and moderately heavy power-driven equipment. |
| Public Works Maintenance Worker I/II | Perform a variety of semi-skilled and skilled tasks in the construction, maintenance, and repair of sewers and related public works facilities; and to operate light and moderately heavy power-driven equipment. |
| Senior Engineering Technician | Provides engineering and technical support to the Wastewater Division involving researching and collecting data, creating and maintaining a geographical information system (GIS) mapping system in support of engineering and operational work activities, responsible for creating, collecting, compiling, manipulating and maintaining data for various GIS applications. |
| Electrician | Under direction, performs skilled work in the installation, maintenance and repair of electrical wiring and related apparatus, components of the WWTP, water utility, traffic signals, sanitary and storm collections systems and street light installations, and to conduct electrical inspections of City buildings. |
| WWTP Senior Maintenance Technician | Leads, maintains and repairs wastewater treatment plant, wetlands, lift station equipment and drainage facilities. |
| WWTP Maintenance Technician II | Performs a variety of semi-skilled and skilled tasks to insure the operation, maintenance and repair of treatment plant, sewer lift and storm drainage equipment, buildings, grounds and structures. |
| Management Analyst I/II | Provides responsible, professional administration and technical assistance in the development, administration, and implementation of City programs; provides highly responsible administrative staff assistance including conducting specific and comprehensive analyses of a wide range of municipal policies involving organization, procedures, finance and services; and assists in basic office management functions such as developing and monitoring a department budget, administering contracts, and monitoring and administering project grants. |
| Laboratory Supervisor | Supervises and administers the City's environmental laboratory and provides direction for the laboratory service program, including the Laboratory Information Management System, Chemical Hygiene Plan, and Quality Assurance/Quality Control program. Provides support with permitting activities for City programs, including wastewater, water, pretreatment, and stormwater. |
| WWTP Laboratory Analyst | Performs chemical and bacteriological analysis of water, wastewater, and related solids and liquids in support of the wastewater treatment plant operations and laboratory services program. |
| Environmental Program Specialist | Coordinates, implements, conducts, analyzes, and maintains the wastewater pretreatment program, stormwater quality discharge program or other environmental programs at a level of service that enables compliance with mandates and facilitates the protection of water quality. |

II.3 Responsibility for SSMP Implementation and Maintenance

The Senior Public Works Collections Supervisor shall have the overall responsibility for, implementing, periodically auditing, and maintaining the City’s SSMP. He/she may delegate these responsibilities to his/her staff.

Other City staff responsible for developing, implementing, and maintaining specific elements of the City’s SSMP are identified by job title in Table 5.

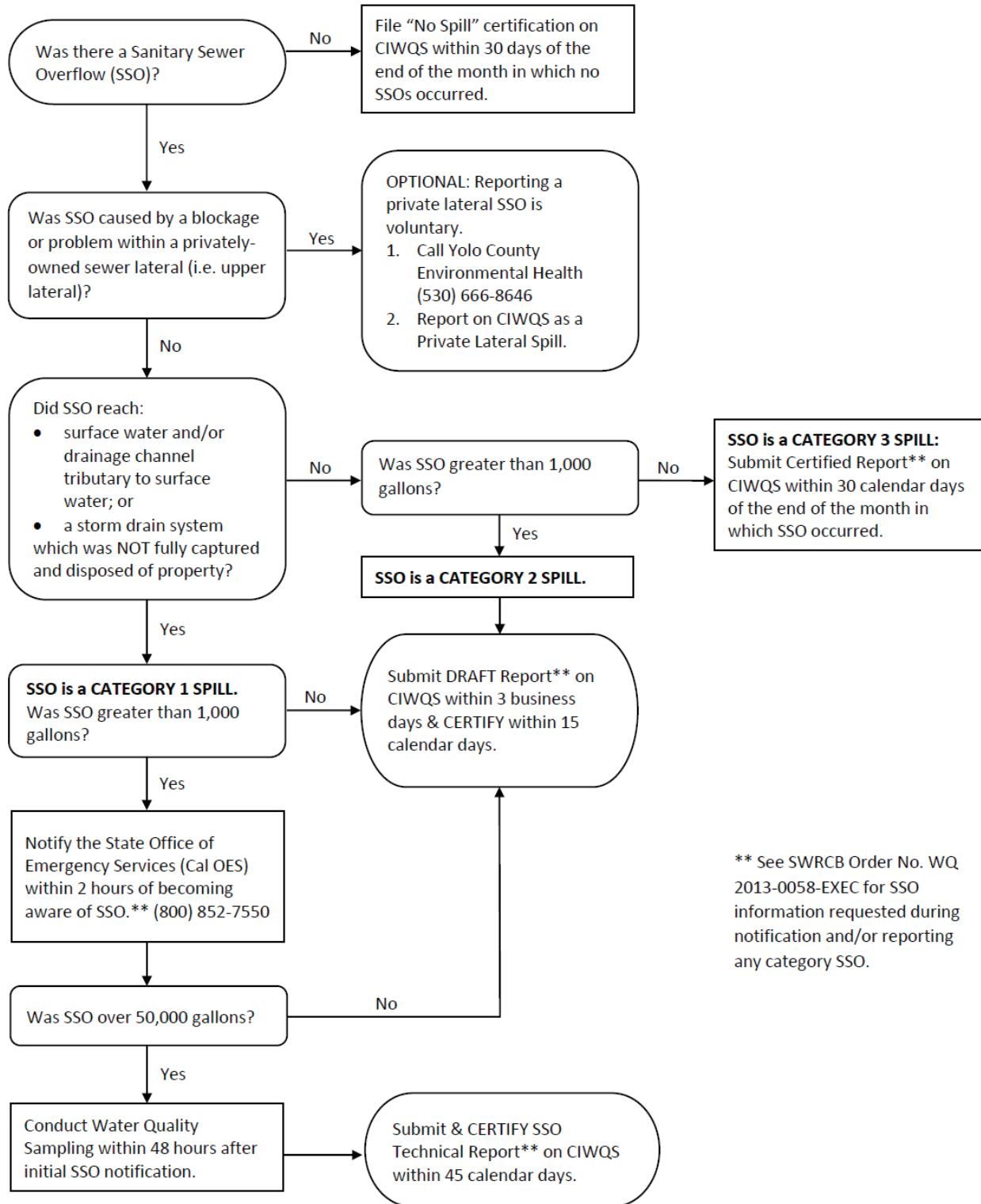
Table 5: Responsible Officials in Water Quality Chain of Communication

| Element | Element Name | Responsible City Official | Phone | Email |
|------------|---|----------------------------------|-----------------|--|
| - | Introduction | Wastewater Division Manager | 530 747-8283 | JAlexander@cityofdavis.org |
| 1 | Goals | | | |
| 2 | Organization | | | |
| 3 | Legal Authority | | | |
| 4 | Operations and Maintenance Program | Senior Collections Supervisor | 530 681-7872 | awells@cityofdavis.org |
| 5 | Design and Performance Provisions | City Engineer | 530 757-5686 | djensen@cityofdavis.org |
| 6 | Overflow Emergency Response Plan | Senior Collections Supervisor | 530 681-7872 | awells@cityofdavis.org |
| 7 | Fats, Oils and Grease (FOG) Control Program | Environmental Program Specialist | 530 757-5686 | smacomb@cityofdavis.org |
| 8 | System Evaluation and Capacity Assurance Plan | City Engineer | 530 757-5686 | djensen@cityofdavis.org |
| 9 | Monitoring, Measurement and Program Modifications | Wastewater Division Manager | 530 747-8283 | JAlexander@cityofdavis.org |
| 10 | Program Audits | Wastewater Division Manager | 530 757-5686 | jalexander@cityofdavis.org |
| 11 | Communications Program | Wastewater Division Manager | 530 747-8283 | JAlexander@cityofdavis.org |
| Appendix A | SSMP Adoption Documents | | | |
| Appendix B | SSMP Change Log | | | |
| Appendix C | SSMP Audit Reports | | | |
| Appendix D | OERP | | | |
| Appendix E | Water Quality Monitoring Plan | | | |
| Appendix F | Annual Performance Report | | | |

II.4 SSO Reporting Chain of Communication

The SSO Reporting Chain of Communication follows the flow chart shown on Figure 4. The SSO Reporting process and responsibilities are also described in detail in the Overflow Emergency Response Plan in Element IV.

Figure 4: SSO Reporting Flow Chart



II.5 Critical Supporting Documents

None.

Element III: Legal Authority

SWRCB Waste Discharge Requirement:

Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- a. Prevent illicit discharges into its sanitary sewer system (examples may include infiltration and inflow (I/I), stormwater, chemical dumping, unauthorized debris and cut roots, etc.);
- b. Require that sewers and connections be properly designed and constructed;
- c. Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
- d. Limit the discharge of FOG and other debris that may cause blockages; and
- e. Enforce any violation of its sewer ordinances.

III.1 Municipal Code

The City’s Municipal Code is available online (<http://qcode.us/codes/davis/>) and describes the City’s current legal authority required for compliance with the General Waste Discharge Requirements (GWDR). That authority is specifically contained within Chapter 33 Sewers and Sewage Disposal of the Municipal Code and generally within other Municipal Code Titles that are summarized in Table 6.

Table 6: GWDR Legal Authority

| Requirement | Legal Authority Reference |
|---|---|
| Prevent illicit discharges into the wastewater collection system | 33.03.050 |
| Limit the discharge of fats, oils, and grease and other debris that may cause blockages | 33.03.030; 33.03.050(b)(2); 33.03.040 |
| Require that sewers and connections be properly designed and constructed | 33.02.030; 33.02.020; 33.02.050; |
| Require proper installation, testing, and inspection of new and rehabilitated sewers | 36.09.020 |
| Clearly define City responsibility and policies for sewer laterals | None to be added to municipal code in the coming year |
| Ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by the City | 33.02.050; 33.03.430; 33.04.110; Sewer Lateral Maintenance Policy |
| Control I/I from private service laterals | 33.02.050(b)(16) |
| Requirements to install grease removal devices (such as traps or interceptors), design standards | 33.01.020; 33.03.030; 33.03.165; 8.01.010(a)(6); 8.01.060 |

| Requirement | Legal Authority Reference |
|---|---------------------------------|
| for the grease removal devices, maintenance requirements, Best Management Practices (BMP) requirements, record keeping and reporting requirements | |
| Authority to inspect grease producing facilities | 33.03.310; 33.03.430; 33.04.110 |
| Enforce any violation of its sewer ordinances | 33.06.070; 33.03.370 et seq. |

III.2 Agreements with Satellite Agencies

The City has two extraterritorial service areas that discharge to the Davis Wastewater Treatment Plant (WWTP). All these areas have agreements with the City for either operations and maintenance or acceptance of waste through the Davis collection system and for treatment and disposal at the WWTP. The two extraterritorial service areas are the Teichert Construction Corporation Yard and the Royal Oaks Mobile Home Park.

III.3 Critical Supporting Documents

- City of Davis Municipal Code Chapters 8 and 33.
- Agreement for Sewage Collection and Treatment (El Macero Sewer Interceptor Project) dated April 7, 1975 with Amendments in 2013 and 2015.
- Agreement for Sewer Treatment Service, Contribution to Sewer Collection System and Sewer System Maintenance in North Davis Meadows dated May 19, 1998.
- Sewer Agreement Between City of Davis and A. Teichert & Sons, Inc. Dated November 14, 2006.
- Agreement for Sewer Services Royal Oaks Mobile Home Park July 1985 with First and Second Amendments, 1988 and 2013.
- Public Information Handout, Sewer Lateral Maintenance Procedure February 2019

Element IV: Operations and Maintenance Program

SWRCB Waste Discharge Requirement:

The Sewer System Management Plan (SSMP) must include those elements listed below that are appropriate and applicable to the Enrollee's system:

- a. Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
- b. Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventive Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;
- c. Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
- d. Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and provide equipment and replacement part inventories, including identification of critical replacement parts.

IV.1 Collection System Mapping

Each Collections field crew has an atlas map book of collection system facilities. The map book includes information on main lines, maintenance holes, and pump stations. The map is organized by map grids or quadrants and shows maintenance hole numbers, field-verified maintenance hole depths and pipe diameters, and in some cases-flow arrows. Crews also have CAD-based utility maps that indicate storm drainage facility locations, for use in SSO events.

The City Engineering Division developed a GIS-based collection system map book in October 2019, which will also include rim and invert elevation data, where available. The GIS has many layers available for Collections operations and maintenance, such as planning, scheduling, cleaning, repairs, and other maintenance activities. This will enable both the recording and tracking of all these Collections work items.

All Collections field staff are responsible for documenting necessary revisions to the map books when they discover discrepancies in their fieldwork. The Senior Public Works Collections Supervisor is responsible for communicating any needed revisions to the Engineering Division, who is responsible for revising the GIS and CAD-based map books. Each of the three field crews is equipped with hard copies of map books and a laptop for access to these map books, as well as for field access to work orders.

IV.2 Preventive Operation and Maintenance

The elements of the City's sewer system O&M program include:

- Proactive, preventive, and corrective maintenance of gravity sewers;
- Closed circuit television (CCTV) inspection program to determine the condition of the gravity sewers;
- Rehabilitation and replacement of sewers that are in poor condition.

IV.2.1 Computerized Maintenance Management System (CMMS)

The City uses Lucity™ as its CMMS to manage its collection system maintenance program. All collection system assets (sewers, maintenance holes and pump stations) are identified in the CMMS, as are the size and lengths of the sewers. The CMMS is also used to schedule, generate, and record work orders. The CMMS is used as the repository for asset history and also stores labor hours for work orders. Field crews have laptops for field access to the work orders.

IV.2.2 Gravity Sewers

Collections crews proactively clean all pipes 4 inches to 21 inches in diameter. The core area of the system is performed on a quarterly schedule. Backyard easement cleaning is performed on an annual basis. The City is currently developing a schedule to clean the remainder of the system on a 3- to 5-year schedule. The City also maintains service laterals (lower laterals) and takes responsibility for these laterals when they are blocked and/or cause sanitary sewer overflows (SSOs).

Cleaning crews operates combination cleaning units (a high-pressure water jetting truck and a rodder) and a hydro flusher, which can also be used for easement areas with limited access to clean sewer lines.

In general, hydro jetting is utilized for cleaning and maintenance, supplemented by rodding and root cutting where required. The downtown core area has a high concentration of food service establishments (FSEs) that generate significant amounts of FOG and is consequently cleaned quarterly. Backyard easement lines are scheduled for annual cleaning, and the remainder of the less than 21-inch pipes are cleaned approximately every 3 to 5-years.

The City also provides reactive maintenance, which are typically the result of service calls from staff or the public. Quick response from Collections staff often prevent potential SSOs from occurring, since staff can sometimes clear blockages before an SSO occurs. Collections staff can also minimize

the impact of SSOs that do occur by containing and recovering the SSO volume as quickly as possible.

Collections field crews are all equipped with the City's Wastewater Collections Division Binder, an extensive compilation of standard operating procedures (SOP), standards, guides, and forms. The binder outlines expectations, responsibilities, and expected production rates for work items.

The historical sewer line cleaning and high frequency cleaning results are shown in Table 7. Large diameter pipes above 21 inches in diameter should be videoed every 10 years to check condition. If determined necessary, these large diameter lines will be cleaned using service contractors rather than City staff.

Table 7: Historical Sewer Line Cleaning Results

| Fiscal Year | Line Cleaning, feet | Line Cleaning, miles | High Frequency, miles | Total Cleaning, Miles | Percent of System |
|-------------|---------------------|----------------------|-----------------------|-----------------------|-------------------|
| 2021 | 104,368 | 19.77 | 18.8 | 38.54 | 23.53 |
| 2020 | 134,983 | 25.56 | 18.8 | 44.34 | 27.07 |
| 2019 | 162,805 | 30.83 | 18.8 | 49.62 | 30.29 |
| 2018 | 284,084 | 53.8 | 18.8 | 72.56 | 44.30 |
| 2017 | 77,616 | 14.7 | 18.8 | 33.48 | 20.44 |
| 2016 | 95,040 | 18 | 18.8 | 36.79 | 22.46 |
| 2015 | 396,000 | 75 | 18.8 | 93.76 | 57.24 |
| 2014 | 404,044 | 76.52 | 18.8 | 95.28 | 58.17 |
| 2013 | 316,328 | 59.91 | 18.8 | 78.67 | 48.03 |
| 2012 | 330,598 | 62.61 | 18.8 | 81.29 | 49.68 |

The City inspects manholes at the time of cleaning operations. All problem conditions found are then either repaired by Collections staff or contracted for repairs by service contractors.

IV.2.3 CCTV or Video Condition Assessment:

The City uses CCTV camera units to visually inspect portions of the sanitary sewer system. Currently, CCTV inspection is generally performed on lines subsequent to SSO events or problem maintenance areas only. Results of this CCTV work sometimes lead to main line and lateral repairs. The City has recently purchased a new CCTV vehicle and will be using this vehicle to assess system cleaning, repairs and replacements. The new vehicle allows for the condition rating of lines and the City will be selecting or developing a condition rating system in the future. The historical results of the City CCTV efforts are shown in Table 8.

Table 8: Historical CCTV of Mains and Laterals

| Calendar Year | Laterals – CCTV, feet | Mains – CCTV, feet |
|---------------|-----------------------|--------------------|
| 2021 | 15,200 | 9,971 |
| 2020 | 9,720 | 42,972 |

| Calendar Year | Laterals – CCTV, feet | Mains – CCTV, feet |
|---------------|-----------------------|--------------------|
| 2019 | 11,480 | 2,018 |
| 2018 | 7,680 | 8,980 |
| 2017 | 19,080 | 38,615 |
| 2016 | 8,920 | 10,578 |
| 2015 | 45,000 | 2,522 |
| 2014 | 16,200 | 19,687 |
| 2013 | 11,745 | 1,610 |
| 2012 | 8,370 | 7,641 |

IV.2.4 Lift Stations

The City operates and maintains lift stations, as shown on Figure 2 and described in Table 9. Each of the six lift stations discharge to force mains.

Table 9: Lift Station Locations and Descriptions

| Pump Station Name | Location | No. Pumps | Construction Year | Pump GPM | Pump Manufacturer | Pump HP | Standby Generation, kW ^(a) |
|-------------------|--------------------------|-----------|-------------------|----------|-------------------|---------|---------------------------------------|
| SLS#1 | 44501 S. El Macero Dr. | 3 | 1975 | 900 | Fairbanks Morse | 24.1 | 60 (on-site) |
| SLS#2 | 500 First St. | 2 | 1996 | 200 | Flygt | 3 | 30 |
| SLS#3 | 1818 Manzanita | 2 | 1964 | 900 | Smith & Loveless | 15 | 30 |
| SLS#4 | 1717 5 th St. | 2 | 2021 | 764 | Flygt | 15 | 475 |
| SLS#5 | 3434 Anderson Rd. | 2 | 1992 | 200 | Flygt | 3.2 | 250 |
| SLS#6 | 5454 Cowell Blvd. | 2 | 1997 | 200 | Flygt | 2.4 | 30 |

^(a) Standby generation is portable unless otherwise noted.

The City conducts regular maintenance inspections of its lift stations weekly. Regular mechanical, electrical and/or controls maintenance is performed at the stations on a quarterly basis by collection staff City WWTP maintenance staff. Annual inspections of pump stations and force mains are documented in Supplement 1: Lift Station Condition Assessment Checklist.

Standby alarms are connected through a SCADA system to the WWTP control center so quick response to problems can be made.

IV.2.5 Force Mains

The City has recently developed a force main inspection program using an engineering firm to evaluate and define force main needs and conditions. Table 10 lists the force main asset information. Many of the force mains were installed at the time of the original construction of the associated lift stations. The North Davis Meadows line is a low-pressure system conveying sewage from the area to

the Davis collection system for treatment at the Davis wastewater treatment plant. Annually the City inspects the force main alignments for evidence of leaks and the discharge manholes for corrosion or evidence of problems.

Table 10: Force Main Descriptions

| Name of Lift Station Associated with Force Main | Construction Date | Force Main Asset Information | | |
|---|-------------------|------------------------------|--------------|---------------------|
| | | Material Type | Size, inches | Length, linear feet |
| SLS#1 | 1975 | Ductile Iron Pipe (DIP) | 14 | 10,113 |
| SLS#2 | 1996 | DIP | 4 | 519 |
| SLS#3 | 1964 | DIP | 10 | 153 |
| SLS#4 | 2021 | HDPE lined DIP | 8 | 2,762 |
| SLS#5 | 1992 | DIP | 4 | 275 |
| SLS#6 | 1997 | DIP | 4 | 678 |
| North Davis Meadows | | HDPE | 2 to 4 | 19,808 |
| Total, linear feet | | | | 34,308 |
| Total, miles | | | | 6.5 |

IV.2.6 Private Sewer Laterals

The City has no responsibility for the installation, maintenance, operation, repair or replacement of private sewer laterals (upper laterals) connected to the City lower laterals and sewer mains unless a previous overflow has occurred in the lower lateral, at which point the City maintains the lower lateral. The City utilizes chemical treatment for root control in these laterals that have previously had an SSO. This program was previously suspended due to concerns about herbicides but was reinstated in 2016 using less toxic products. Approximately 600 laterals are currently receiving City maintenance.

Table 11: Historical Chemical Treatment of Laterals

| Calendar Year | Laterals in Program | Total Laterals Treated |
|---------------|---------------------|------------------------|
| 2021 | 558 | 558 |
| 2020 | 500 | 210 |
| 2019 | 540 | 582 |
| 2018 | 233 | 243 |
| 2017 | 678 | 601 |
| 2016 | 336 | 336 |

Calendar years 2018 and 2019 values are suspected to be inaccurate due to record keeping procedures. All chemical treatment work is now accurately tracked through the City’s Computerized Maintenance Management Software.

The City has a private sewer lateral maintenance procedure and sewer maintenance responsibilities that can be found on the City website at: <https://www.cityofdavis.org/city-hall/public-works-utilities-and-operations/wastewater/sewer-backup-information>

IV.3 Rehabilitation and Replacement Program

The City has an annual sewer rehabilitation and replacement program to rehabilitate or replace the portions of its wastewater collection system and lift station assets where and when conditions warrant. The annual budgets for all lift station and sewer projects that are included in the City’s Annual Capital Improvement Budget are listed in Table 11.

Table 12: Sewer Capital Improvement Program (CIP)³

| Fiscal Year | Budget, dollars | Long Term Projects |
|---------------|---------------------|---------------------------|
| 2021 | 2,050,000 | SLS #1 Rehab |
| 2022 | 950,000 | SLS #3 Rehab |
| 2023 | 6,280,000 | Collection System Repairs |
| 2024 | 250,000 | Collection System Repairs |
| 2025 | 250,000 | Collection System Repairs |
| 2026 | 250,000 | Collection System Repairs |
| 2027 | 250,000 | Collection System Repairs |
| 2028 | 250,000 | Collection System Repairs |
| Totals | \$10,530,000 | |

In addition to the CIP budget shown, the collection system staff allocates approximately \$250,000 per year to conducting in-house repairs of the wastewater collection system.

IV.4 Training

The City uses a combination of in-house classes, field exercises, on-the-job training, and attendance at conferences, seminars, California Water Environment Association (CWEA) classes and other training opportunities that are provided in Northern California to train staff on WDR, SSMP, OERP, WQMP and how to run a collection system. The City requires its wastewater collection system employees be certified in Collection System Maintenance by CWEA, and all but the most recently-hired individual staff member is certified as CWEA Collection System Maintenance Grade 1 or higher.

In addition, the City conducts annual confined space entry certification for all employees that might be required to enter confined spaces anywhere in the City. Finally, the City conducts frequent tailgate

³ City of Davis, Sewer Rate Study, December 2021, Bartle Wells Associates

meetings with all collections system staff to discuss topics related to safety, operations and performance expectations. O&M procedures and responsibilities are clearly defined, documented, and conveyed to Collections staff through the aforementioned Wastewater Collections Division Binder that all crews possess. As a result of the impending reissue of the WDR by the SWRCB, the City will need to provide regulatory training for all collection and engineering staff prior to the effective date of the new WDR.

IV.5 Equipment and Replacement Parts

The list of the major equipment that City uses in the operation and maintenance of its sewer system is included in Supplement IV6.2. The City has developed an inventory of critical replacement parts that is included in Supplement IV6.3 at the end of Element 4.

IV.6 Critical Supporting Documents

- Wastewater Collections Division Binder
- Private Sewer Lateral Policy
- City of Davis Sewer Rate Study, December 2021, Bartle Wells Associates

IV.7 Supplements

IV.7.1 Supplement 1: Lift Station Condition Assessment Checklist

| Inspection Information | |
|---|--|
| Inspection date | |
| Inspection participants | |
| Facility name | |
| Facility address | |
| Comments | |
| Background Information (Prior 12 Months) | |
| SSOs | |
| Equipment failures | |
| Alarm history (attach copy) | |
| Major maintenance activities (attach list if applicable) | |
| Pending work orders (attach copies) | |
| Operating problems (attach copy of operating log) | |
| Comments | |
| Security Features | |
| Fence and gate | |
| External lighting | |
| Visibility from street | |
| Doors and locks | |
| Intrusion alarm(s) | |
| Signs with emergency contact information | |
| Other security features | |
| Comments | |
| Safety Features and Equipment | |
| Signage (confined space, automatic equipment, hearing protection, etc.) | |
| Fall protection | |
| Emergency communication | |
| Equipment hand guards | |
| Handrails and kickboards | |
| Platforms and grating | |
| Tag out and lock out equipment | |
| Hearing protection | |
| Eye wash | |
| Chemical storage | |
| Comments | |

| External Appearance | |
|---|--|
| Fence | |
| Landscaping | |
| Building | |
| Control panels | |
| Other external features | |
| Comments | |
| Building/Structure | |
| Lift Station building | |
| Control room | |
| Dry well | |
| Wet well | |
| Other structures | |
| Comments | |
| Instrumentation and Controls (including SCADA Facilities) | |
| Control panel | |
| Run time meters | |
| Flow meter | |
| Wet well level | |
| Alarms | |
| SCADA HMI/PLC | |
| Other instrumentation and controls | |
| Comments | |
| Electrical and Switch Gear | |
| Power drop | |
| Transformers | |
| Transfer switches | |
| Emergency generator and generator connection | |
| Starters | |
| Variable frequency drives | |
| Electrical cabinets | |
| Conduit and wireways | |
| Other electrical | |
| Comments | |

| Motors | |
|---------------------------------------|--|
| Lubrication | |
| Insulation | |
| Operating current | |
| Vibration and alignment | |
| Other | |
| Comments | |
| Pumps | |
| Lubrication | |
| Vibration and alignment | |
| Seals | |
| Indicated flow and discharge pressure | |
| Shutoff head | |
| Corrosion and leakage evidence | |
| Drive shaft | |
| Other | |
| Comments | |
| Valves and Piping | |
| Valve operation | |
| Valve condition | |
| Pipe condition | |
| Pipe support | |
| Other | |
| Comments | |
| Other | |
| Lighting | |
| Ventilation | |
| Support systems (air, water, etc.) | |
| Signage | |
| Employee facilities | |
| Sump pump | |
| Overhead crane | |
| Portable pump connections | |
| Portable pumps | |
| Comments | |

IV.7.2 Supplement 2: Sewer System Major Equipment Inventory

| Equipment Number | Equipment Description | Year Purchased | Storage Location |
|------------------|------------------------------------|----------------|------------------|
| 508 | CCTV Van | 2021 | Corp Yard |
| 558 | Combination Cleaning Unit | 2009 | Corp Yard |
| 563 | Dump Truck | 2009 | Corp Yard |
| 564 | Hydro-cleaning Unit | 2022 | Corp Yard |
| 931 | 410L Backhoe | 2021 | Corp Yard |
| 904 | Equipment Trailer | 2017 | Corp Yard |
| 436 | Pick Up | 2012 | Corp Yard |
| 455 | Utility Truck | 2016 | Corp Yard |
| 500 | Utility Truck | 2012 | Corp Yard |
| 519 | Utility Truck | 2020 | Corp Yard |
| 800 | Easement Cleaning Machine | 2015 | Corp Yard |
| 807 | Vacuum Trailer (150 gal.) | 2018 | Corp Yard |
| 812 | Compressor Trailer (jackhammer) | 2006 | Corp Yard |
| 852 | Light Stand Trailer | 2006 | Corp Yard |
| | (5) Mechanical Rodder | | Corp Yard |
| | (3) Portable Trash Pump (1 1/2") | | Corp Yard |
| | (5) Honda Generators | | Corp Yard |
| | (2) Lateral Camera Unit | | Corp Yard |
| | Lateral Chemical Treatment Trailer | | Corp Yard |

IV.7.3 Supplement 3: Critical Sewer System Replacement Parts Inventory

| Part Description | Number in Inventory | Location |
|-------------------------|----------------------------|----------------------|
| <u>Pipe (VCP)</u> | | <u>Outside Area</u> |
| 4" 90 bend | 5 | Outside Area |
| 4" 1/8 bend | 25 | Outside Area |
| 4" 1/16 bend | 25 | Outside Area |
| 4" wye | 25 | Outside Area |
| 4" x 1' pipe | 50 | Outside Area |
| 4" x 2' pipe | 35 | Outside Area |
| 4" x 4' pipe | 35 | Outside Area |
| 6" 90 bend | 5 | Outside Area |
| 6" 1/8 bend | 10 | Outside Area |
| 6" wye | 8 | Outside Area |
| 6" x 4" wye | 22 | Outside Area |
| 6" x 1' pipe | 15 | Outside Area |
| 6" x 2' pipe | 8 | Outside Area |
| 6" x 5' pipe | 20 | Outside Area |
| 8" 90 bend | 2 | Outside Area |
| 8" wye | 2 | Outside Area |
| 8" x 4" wye | 7 | Outside Area |
| 8" x 6" wye | 2 | Outside Area |
| 8" x 1' pipe | 5 | Outside Area |
| 8" x 6' pipe | 8 | Outside Area |
| 10" x 6' pipe | 4 | Outside Area |
| 12" x 6' pipe | 3 | Outside Area |
| 15" x 2' pipe | 1 | Outside Area |
| 15" x 6' pipe | 4 | Outside Area |
| <u>Rubber Couplings</u> | | |
| 4" | 50 assorted | Stores |
| 6" | 25 assorted | Stores |
| <u>Rubber Couplings</u> | | <u>Materials Bay</u> |
| 4" | 80 assorted | Materials Bay |
| 6" | 16 | Materials Bay |
| 8" | 16 | Materials Bay |
| 10" | 12 | Materials Bay |

| Part Description | Number in Inventory | Location |
|------------------------|---------------------|---------------|
| 12" | 6 | Materials Bay |
| 15" | 6 | Materials Bay |
| 24" | 2 | Materials Bay |
| <u>Saddles</u> | | |
| 4" | 20 | Materials Bay |
| 6" | 10 | Materials Bay |
| SDR 26 | | |
| 4" 1/16 bend | 10 | Materials Bay |
| 4" 1/8 bend | 30 assorted | Materials Bay |
| 4" wye | 5 | Materials Bay |
| 4" combo | 5 | Materials Bay |
| 4" stop couplings | 5 | Materials Bay |
| 4" bushing (sdr x abs) | 20 | Materials Bay |
| 4" x 14' pipe | 15 | Materials Bay |
| 6" 1/8 bend | 12 assorted | Materials Bay |
| 6" wye | 3 | Materials Bay |
| 6" x 4" wye | 5 | Materials Bay |
| 6" bushing (sdr x abs) | 10 | Materials Bay |
| 6" x 14' pipe | 3 | Materials Bay |
| 8" x 6" wye | 2 | Materials Bay |
| 8" x 14' pipe | 2 | Materials Bay |
| <u>Saddles</u> | | |
| 4" | 20 | Materials Bay |
| 6" | 10 | Materials Bay |

Element V: Design and Performance Provisions

SWRCB Waste Discharge Requirement:

1. Design and construction standards and specifications for the installation of new sanitary sewer systems, lift stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and
2. Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

V.1 Design Criteria for Installation, Rehabilitation and Repair

The City's Sanitary Sewer Design Standards, Standard Plans, and Standard Specifications for sewer mainlines, structures and appurtenances like maintenance holes, lift stations, and service laterals (lower laterals) are administered by the Engineering Division of the City Public Works Engineering and Transportation Department.

V.1.1 General

The City has established standards for both new construction and renewal and replacement work associated with the collection system. These standards are periodically reviewed and updated by the Engineering Division and were last reviewed and updated in 2021. The City's latest version of its *Sanitary Sewer Design Standards* is available on the City website below.

A publication termed Standard Specifications for Public Works Construction are updated every three years by a group of public works design professionals and are used as the basic standards for the City. These standards are commonly referred to in the industry as the "Green Book". The Engineering Division has revised certain sections of the Green Book to meet the needs of the City's system, and these *City Adaptations to Green Book* are available on the City website below.

Complete versions of the City's Standard Specifications and Standard Plans are located on the City's website at <https://www.cityofdavis.org/home/showdocument?id=1283> and <https://www.cityofdavis.org/city-hall/public-works-engineering-and-transportation/engineering/city-standards> respectively.

The referenced City standards provide for both new construction and rehabilitation and repair of all main lines sewers, trunk sewers, manholes and other collection system appurtenances.

V.1.2 Lift Stations

The City requires that all new or rehabilitated lift stations be designed by an appropriately experienced engineer and approved by the City Engineer before construction and acceptance by the City Council for maintenance. The stations are required to have fully automatic control systems, connection to the City SCADA system, and redundant pumping capability.

V.1.3 City Sewer System – Authorized Pipe Materials

The authorized materials that are currently accepted in the City Sewer System are shown in Table . The standards are currently being revised to include polyvinylchloride pipe (PVC) as the new standard.

Table 13: Acceptable Pipe Materials for New Gravity Sewers

| Material | Designation | Standard |
|-----------------|---|---|
| VCP | Use for all mains and service laterals | Sanitary Sewer Design Standards, in accordance with Green Book specifications |
| DIP | Use in areas with shallow cover | Sanitary Sewer Design Standards, in accordance with Green Book specifications |
| SDR 26 | Use for all mains and service laterals | Sanitary Sewer Design Standards, in accordance with Green Book specifications |
| Other Materials | Other materials (like Acrylonitrile-Butadiene-Styrene) may be used if given special approval by the City Engineer | Green Book specifications, allowed by Sanitary Sewer Design Standards |

V.1.4 Private Sewer Systems and Private Laterals

All private sewer systems and private sewer laterals are required to be design, installed, inspected and accepted per the Green Book and the City Adaptations to the Green Book. Private sewer laterals must also conform to the requirements of the California Plumbing Code.

V.2 Inspection and Testing Criteria

The City’s Wastewater Collection System inspection and testing Criteria are based on the Green Book. The City’s inspection and testing criteria are:

V.2.1 New and Rehabilitated Gravity Sewers

a. Design

Sewer system designs must be prepared by an appropriately experienced engineer for the review and approval by the City Building Division.

b. Inspection during Construction

All new gravity sewers will be periodically inspected during construction to ensure that the sewer is constructed using the specified materials and methods. Specific approvals will be required by the inspector prior to backfilling the trench, prior to paving, and prior to acceptance by the City. The contractor will be required to provide survey controls so that the inspector can verify line and grade (slope). Unusual conditions and special features will be recorded for future reference.

a. Leakage

All new gravity sewers will be tested to verify that they have been properly constructed. Sewers between 8 and 16 inches in diameter will be tested following Standard Specifications for Public Works Construction; Section 306-1.4.4 Air Pressure Test. Gravity sewers that fail the test shall be repaired and retested until they pass.

b. CCTV Inspection

All new gravity sewers will be inspected using a CCTV to verify that the pipe is free from defects/damage, that the joints have been correctly constructed, and that the sewer is free from sags that will cause future operational problems. Gravity sewers shall be cleaned prior to inspection and shall be flushed with water so that sags can be readily identified. Defects shall be recorded following the City standards. Sags that exceed one inch in depth shall be repaired.

V.2.2 New and Rehabilitated Manholes

a. Inspection during Construction

All work for new and rehabilitated manholes to be performed in compliance with “Section 5 System Rehabilitation” of the current edition of the Green Book. For manhole lining and inspection, refer to “500-2 MANHOLE AND STRUCTURE REHABILITATION”.

b. Leakage

All new manholes will be vacuum tested to verify that the joints, connections, and frame/cover are tight. The vacuum test will follow ASTM C1244. The test will be conducted at a 10-inch Hg vacuum. The vacuum loss shall be less than one-inch Hg for the time determined by the inspector or engineer.

Manholes that fail the vacuum test shall be repaired using materials and methods approved by the City Engineer and retested until they pass.

V.2.3 New and Rehabilitated Lift Stations

a. Inspection during Construction

All new and rehabilitated lift stations will be periodically inspected during construction to ensure that they are constructed using the specified materials and methods. Unusual conditions and special features will be recorded for future reference.

b. Functional Test

All systems in new and rehabilitated lift stations will be tested to ensure they function as intended.

c. Performance Test

All new and rehabilitated lift stations will be required to pass an extended performance test to ensure that they are capable of reliably meeting the design performance for a period of continuous operation without failure or alarms. The results of these performance tests will be recorded for use as a basis for evaluating future lift station performance.

V.3 Critical Supporting Documents

- Davis Public Works Revised Design Standards October 2019
- Standard Specifications for Public Works Construction (2015 Greenbook).

Element VI: Overflow Emergency Response Plan

SWRCB Waste Discharge Requirement:

Each Enrollee shall develop and implement an Overflow Emergency Response Plan (OERP) that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

- a. Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
- b. A program to ensure an appropriate response to all overflows;
- c. Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g., health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the Monitoring and Reporting Program (MRP). All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;
- d. Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
- e. Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
- f. A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

The OERP is included in full in Appendix D. This section includes the purpose, policy, and goals of the OERP.

VI.1 Purpose

The purpose of the City of Davis's OERP is to support an orderly and effective response to SSOs. The OERP provides guidelines for City personnel to follow in responding to, cleaning up, and reporting SSOs that may occur within the City's service area. This OERP satisfies the SWRCB Statewide GWDR, which require wastewater collection agencies to have an OERP.

VI.2 Policy

The City's employees are required to report all wastewater overflows resulting from the City-owned/maintained sanitary sewer system found and to take the appropriate action to secure the wastewater overflow area, properly report to the appropriate regulatory agencies, relieve the cause of the overflow, and ensure that the affected area is cleaned as soon as possible to minimize health hazards to the public and protect the environment. The City's goal is to respond to sewer system overflows as soon as possible following notification. The City will follow reporting procedures in

regard to sewer spills as set forth by the Central Valley Regional Water Quality Control Board (RWQCB) and the SWRCB.

VI.3 Goals

The City's goals with respect to responding to SSOs are:

- Work safely;
- Respond quickly to minimize the volume of the SSO;
- Eliminate the cause of the SSO;
- Prevent sewage system overflows or leaks from entering the storm drain system or receiving waters to the maximum extent practicable;
- Contain the spilled wastewater to the extent feasible;
- Minimize public contact with the spilled wastewater;
- Mitigate the impact of the SSO;
- Meet the regulatory reporting requirements;
- Evaluate the causes of failure related to certain SSOs; and
- Revise response procedures resulting from the debrief and failure analysis of SSOs.
- LRO certification of each SSO file.

VI.4 Critical Supporting Documents

- City of Davis Overflow Emergency Response Plan, Appendix D
- City of Davis Water Quality Monitoring Plan, Appendix E

Element VII: Fats, Oils, and Grease (FOG) Control Program

SWRCB Waste Discharge Requirement:

Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

- a. An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
- b. A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
- c. The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
- d. Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
- e. Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;
- f. An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and
- g. Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (f) above.

VII.1 Nature and Extent of FOG Problem

Table lists the total number of FOG-related mainline SSOs from 2011 through 2021. As of May 2022, the City has experienced only two (2) FOG-related SSOs in main lines in the past five years.

Table 14: Historical FOG-Related SSOs in Main Lines

| Calendar Year | SSOs caused by FOG |
|---------------|--------------------|
| 2021 | 1 |
| 2020 | 1 |
| 2019 | 0 |
| 2018 | 0 |
| 2017 | 0 |
| 2016 | 0 |
| 2015 | 0 |

| Calendar Year | SSOs caused by FOG |
|---------------|--------------------|
| 2014 | 1 |
| 2013 | 0 |
| 2012 | 0 |
| 2011 | 1 |

VII.2 FOG Source Control Program - Reviews & Inspections

The City has a fully functioning FOG Program that identifies, monitors, and regulates sources of FOG so that SSOs that result from FOG are minimized. The primary purpose of the program is to reduce the occurrence of FOG-related mainline SSOs in the service area, although the current level of FOG-related SSOs is extremely low. The City focuses on FSEs to effectively prevent or reduce FOG-related mainline SSOs. The City currently maintains a list of about 183 FSEs, 54 of which are conditionally exempt, that are regularly inspected and monitored for compliance with the City Municipal Code, in particular Article 33.03.165 in Chapter 33 regarding grease interceptor requirements for FSEs. This is an increase in FSEs reported as there were 162 in 2015. The City modified its Sewers and Sewage Disposal Code in 2013 to require FOG pretreatment in the form of grease traps and/or interceptors for FSEs in Article 17 and the current Code is posted on the City's website at: <http://qcode.us/codes/davis/>. The City plans to update the Sewer and Sewage Disposal Code again in the next year for updating local limits. During this update there may also be some updates to the FOG sections and FSE requirements.

The City's FOG Source Control Program is intended to work in conjunction with the City's PM program to prevent FOG-related SSOs. It remains an essential component in meeting and maintaining its projected SSO reduction performance goals. The City's program includes FSE reviews and inspections, enforcement of the City's Municipal Code sections regarding FOG, and is managed by City staff, an Environmental Program Specialist.

The elements of the City's FOG Source Control Program include:

- Requirement for the installation of grease removal devices (GRDs);
- Requirement for proper operation and maintenance of GRDs;
- Verification of grease handling and disposal practices;
- FSE reviews and inspections;
- Public Education and Outreach; and
- Enforcement.

The Environmental Program Specialist typically conducts at least one review of each FSE per year. An internal SOP has been developed for the review/inspection, follow up and violation process and can be located on the City webpage at <http://documents.cityofdavis.org/Media/Default/Documents/PDF/Wastewater/SOP%20for%20FSE%20clean.pdf>. The reviews are done on a random basis or grouped by location A review letter is

transmitted to the facility or discharger prior to the review with information regarding the review, such as the date and time of the review and what is to be inspected or reviewed. The results of the review are then sent to the FSE in a letter, generally within two weeks following the review. The City is also looking into performing unscheduled inspections at heavy FOG generators or FSEs with multiple corrective actions.

Public education and outreach remain an integral element of the FOG Program. Outreach is provided to FSE staff and management during routine reviews and inspections, as well as through multiple items of correspondence throughout the year. The City has written communication with FSEs at least four times per year in addition to the two site visits or reviews. A new implementation is a checklist titled “What are FSE requirements in the City of Davis”. This document will cover BMP’s, record keeping and retention, recycling requirements, and other important information for food service establishments.

The Specialist checks GRDs as part of the review process and works with FSE staffs in an on-going, collaborative relationship to stress the importance the City places on review and inspection items. Frequent contact and meetings with FSEs and their manager/owners have helped to decrease the need for corrective actions in the last five years. Reviews of FSEs requiring follow up or corrective actions as a direct result of the grease removal device has decreased from approximately 22% in 2017 to 16% in 2018. Overall corrective actions are at approximately 50%, which include kitchen mat washing procedures, exhaust fan maintenance, trash enclosure maintenance, recycling with 75% diversion including organics separation, single use plastic bag ban, and no Styrofoam.

City staff offers assistance to managers and owners of FSEs with demonstrations and education to FSE employees regarding the cleaning and maintenance of under counter GRDs. City staff also offers FSEs a consultation and inspection of a review of grease interceptors to determine the need for their cleaning. If City staff is asked to check a facility's GRD, there is no charge for this service by City staff and no regulatory liability if it is determined there is a need for immediate cleaning.

Any item that needs corrective action as a result of the City's review and inspections are summarized in the review follow-up letter to FSEs. Such a letter lists the review findings and corrections to be made. Each type of correction has a standard follow up date to have the correction completed. The City may send a specific enforcement letter with milestone dates if the conditions discovered at the review or follow up warrant such an action.

The City has begun using Lucity, a web-based data management system, to document inspections, follow-ups, corrective actions, and violations. The data management system is a work in progress to back log previous records for FSE’s and enter new information. This system allows for the follow up letters to be generated directly from the inspection data entered. It will also allow for tracking of an individual FSE, analyzing any repetitive corrective actions so that city staff may investigate, follow up and educate those FSE’s more frequently.

The City is considering updating the collection system ordinance to include fines for failure to maintain FOG removal devices. Currently, the City is evaluating the effectiveness of the program through the number of enforcement actions required.

VII.3 Response to GWDR Requirements

Requirement (a): An implementation plan and schedule for a public education outreach program should promote proper disposal of FOG.

Response: The City is currently managing its FOG with a FOG Source Control Program and an aggressive and focused PM program (sewer cleaning). The "downtown" area has a large concentration of FSEs, and this entire area is cleaned quarterly by field crews. There have been no SSO's caused by FOG in the last four years. Public education outreach materials are regularly provided to FSEs as well as the general public

Requirement (b): A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area.

Response: There are disposal sites available close to Davis (Yolo County) and in Oakland (EBMUD) that are used by the commercial grease haulers working within the City's service area. The City of Davis has provided users with a list of California Registered Inedible Kitchen Grease Commercial Transporters, this list is provided as a courtesy and the City of Davis makes no recommendations or guarantees on these providers.

Requirement (c): The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG.

Response: The City's Municipal Code provides the legal basis and authority (see Element 3) for the City's FOG Control Program; specifically, Article 33.03.165 in Chapter 33 regarding requirements grease interceptors for FSEs. The City modified its Sewers and Sewage Disposal Code in 2013 to require FOG pretreatment in the form of grease traps and/or interceptors for FSEs and the current Code is posted on the City's website at: <http://qcode.us/codes/davis/>.

Requirement (d): Requirements to install grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements.

Response: The City's FOG Control Program described above in (c) currently meets these requirements (Chapter 33 of the Municipal Code, Sewers and Sewage Disposal). Staff also works with FSEs to convey standards, BMPs, maintenance and recordkeeping requirements.

Requirement (e): Authority to inspect grease producing facilities, enforcement authorities, and determination of whether the collection system agency has sufficient staff to inspect and enforce the FOG ordinance.

Response: The City's FOG Control Program involves regular inspections or reviews by the City's Environmental Program Specialist and enforcement by the City (based upon review findings). The authority to inspect or review is granted by the Municipal Code, as previously stated.

Requirement (f) and (g): Requirement (f) is an identification of sewer system sections subject to FOG blockages and the establishment of a cleaning maintenance schedule for each section, and

Requirement (g) is the development and implementation of source control measures, for all sources of FOG discharged to the sewer system.

Response: The City's FOG Source Control Program and its PM program are currently focused on problematic grease dischargers and "high frequency" maintenance or cleaning in the area with the greatest concentration of FSEs. The City adapts to FOG-related problems and issues, if and when they occur.

VII.4 Critical Supporting Documents

- City of Davis Municipal Code, Chapter 17, Article 17.1
- Standard Operating Procedures for Food Service Establishment Inspections, City of Davis Public Works Department, Environmental Resources Division

Element VIII: System Evaluation and Capacity Assurance Plan

SWRCB Waste Discharge Requirement:

The Enrollee shall prepare and implement a CIP that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the CIP must include:

- a. **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;
- b. **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
- c. **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
- d. **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D.14.

VIII.1 System Capacity Evaluation

The City contracted with NEXGEN Utility Management to complete a Sewer Capacity Evaluation and Assurance Plan (SECAP) dated April 2009. This study created a spreadsheet based hydraulic model that determined that capacity in the Davis collection system was generally adequate. The study found that the City's main trunk sewers only had adequate capacity to pass peak wet weather flows. This study did not validate through flow monitoring the flows used in the SECAP. The hydraulic model utilized the 2010 Davis General Plan for the determination of both short- and long-term flow requirements. The SECAP reviewed and relied upon historical SSOs from November 2007 to March 2009 documented in CIWQS.

The hydraulic analysis utilized the average dry weather flow based upon land use types in the City General Plan within designated areas of the City. The model used traditional flow generation standards developed from historical City records applied to 17 separate discharge areas identified in the model.

The SECAP was considered a phase I SECAP in that the results were not field verified through system flow monitoring. The City contracted with West Yost Associates in 2016 to conduct flow monitoring during the storm season. These results were used to develop a dynamic hydraulic model of the entire collection system replacing the old spreadsheet model. The new model was calibrated against the results of the flow monitoring in 2016; various capacity alternatives run through the model and capacity deficiencies defined from the model. The results of the 2016 work was approved in August 2016 in the System Evaluation and capacity Assurance Plan Update. This report assumed that the City would experience minimal growth in the service area through 2026. The new hydraulic model integrated the sewer GIS data, the existing model spreadsheet and flow monitoring data in 2016 and identified efficiencies in gravity and pressure mains and lift stations. The lift station evaluations included in the model were taken from a February 2015 Lift Station and Inventory Report by Hydrosience.

VIII.2 Design Criteria

The capacity-related design criteria, including base wastewater flow and peaking factors, are included in Element V: Design and Performance Provisions. These criteria were determined from historical rainfall records and resulted in the definition of a design storm based upon a December 31, 2005 rainfall event. The SECAP also documented and established formal design criteria for evaluating the sewer capacities. This study also defined a rainfall intensity-duration-frequency curve for the Davis hydraulic model. The SECAP 2018 Update used both actual flow monitoring information and rainfall results from two rain gages from March 4, 2016, to April 21, 2016, as the basis for the new model. The new model utilized a 10-year, 24-hour design storm.

VIII.3 Capacity Enhancement Measures - Capital Improvement Program (CIP)

The City prepares an annual list of capital improvement projects that includes projects to address recently identified wastewater collection system capacity issues. Engineering staff prioritize and select the projects to be included on the annual list.

The 2018 SECAP did identify priorities for capacity enhancements to the trunk sewer system based upon risks of failure and consequences of failure. The City has been working toward enhancing these trunk lines through its annual capital improvement program. The City has prepared a ten-year sewer capital improvement program includes estimated expenditures up to \$10,500,000⁴ for sewer trunk rehabilitation during this time.

As a part of the Sewer Strategic Plan, the current CIP program was revised to include a new 10-year list of capacity-related CIP projects. Alternatives are analyzed and schedules are established during the design process and updated annually with the revisions to the City's CIP for all City infrastructure.

⁴ City of Davis, 2022 Wastewater Rate Study, Draft Financial Plan and Cost of Service Report, December 10, 2021, Bartle Wells Associates, Table 8A Capital Improvement Plan

The current schedule for the City’s capacity enhancement projects does not include any capacity related improvement projects. However, this list will be revised, as necessary, based upon future condition assessments and maintenance results from the field crews.

The City’s CIP future budgets for sewer trunk rehabilitation are stated in Element IV, Table 12.

VIII.4 Critical Supporting Documents

- System Evaluation and Capacity Assurance Plan – Needs Assessment, April 2009, NEXGEN Utility Management.
- Lift Station Assessment and Inventory Report, February 2015, Hydrosience.
- Wastewater Collection System Evaluation Report, June 2015, West Yost Associates.
- Collection System Evaluation Report, June 2015
- City of Davis Sewer Flow Monitoring and Inflow/Infiltration Study, August 2016, &A Associates
- System Evaluation and Capacity Assurance Plan Update, September 2018, West Yost Associates.
- City of Davis, 2022 Wastewater Rate Study, Draft Financial Plan and Cost of Service Report, December 10, 2021, Bartle Wells Associates

Element IX: Monitoring, Measurement, and Program Modifications

SWRCB Waste Discharge Requirement:

The Enrollee shall:

- a. Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
- b. Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
- c. Assess the success of the PM program;
- d. Update program elements, as appropriate, based on monitoring or performance evaluations; and
- e. Identify and illustrate SSO trends, including: frequency, location, and volume.

IX.1 Performance Measures

The indicators that the City will use to measure the performance of its wastewater collection system and the effectiveness of its SSMP are:

- SSOs: Total number, Number for each cause (roots, grease debris, pipe failure, capacity, lift station failures, and other), SSO rate (#/100 miles/year);
- Portion of sewage recovered compared to total volume spilled;
- Volume of spilled sewage discharged to surface waters; and
- All indicators for service (lower) laterals, separately from gravity mains, force mains, and lift stations.

IX.2 Baseline Performance

The City has performance measures in place, and it will evaluate its performance annually following the end of the calendar year. The historical, or baseline, performance is shown separately for gravity mains/lift stations/force mains and lower laterals.

IX.2.1 Mains, Lift Stations, and Force Mains

The baseline performance and SSO trends for gravity mains, lift stations, and force mains is shown in Table 15 and Figure 5. The results indicate a trend of increasing SSOs in the past five years for main lines, lift stations and force mains.

Table 15: Gravity Main Sewer, Lift Station, and Force Main SSOs by Year

| Calendar Year | Gravity Main Sewer SSOs | Lift Station SSOs | Force Main SSOs |
|---------------|-------------------------|-------------------|-----------------|
| 2012 | 3 | 0 | 0 |
| 2013 | 3 | 0 | 0 |
| 2014 | 1 | 0 | 0 |
| 2015 | 1 | 0 | 0 |
| 2016 | 6 | 0 | 0 |
| 2017 | 4 | 0 | 0 |
| 2018 | 1 | 0 | 0 |
| 2019 | 2 | 0 | 0 |
| 2020 | 3 | 0 | 0 |
| 2021 | 4 | 1 | 1 |

Figure 5: Trend in Number of Gravity Sewer, Lift Station, and Force Main SSOs

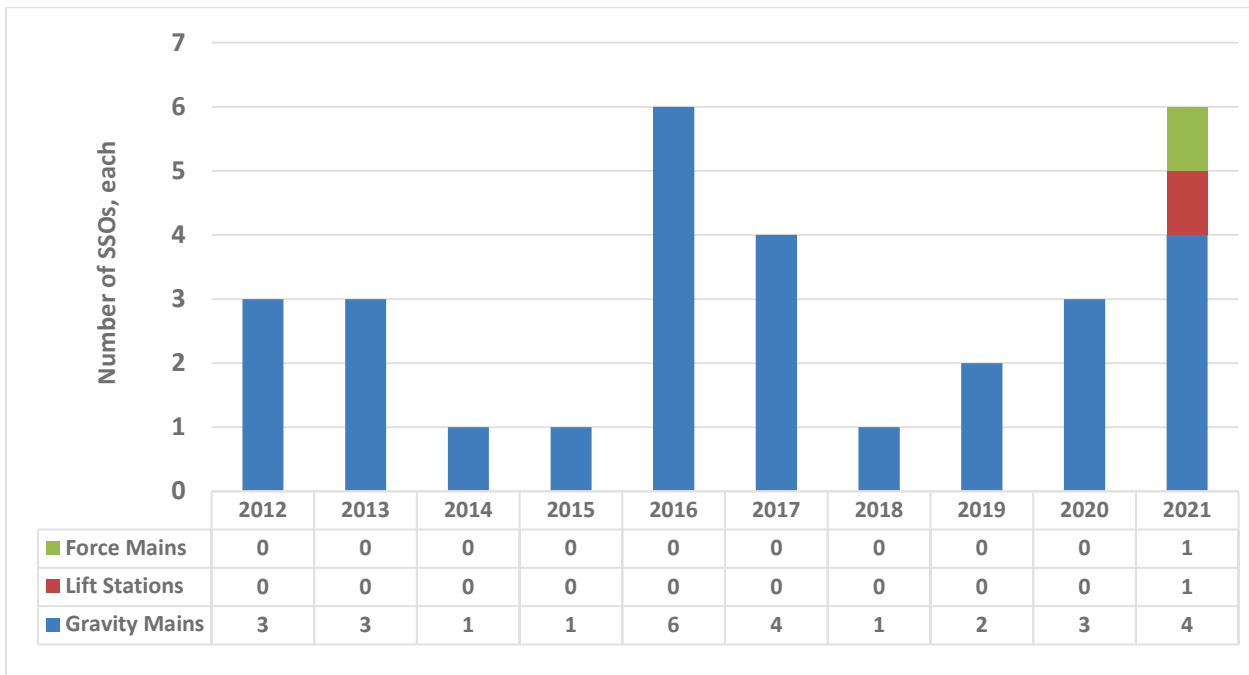


Figure 6: Trend in Number of Lateral and Mainline SSOs

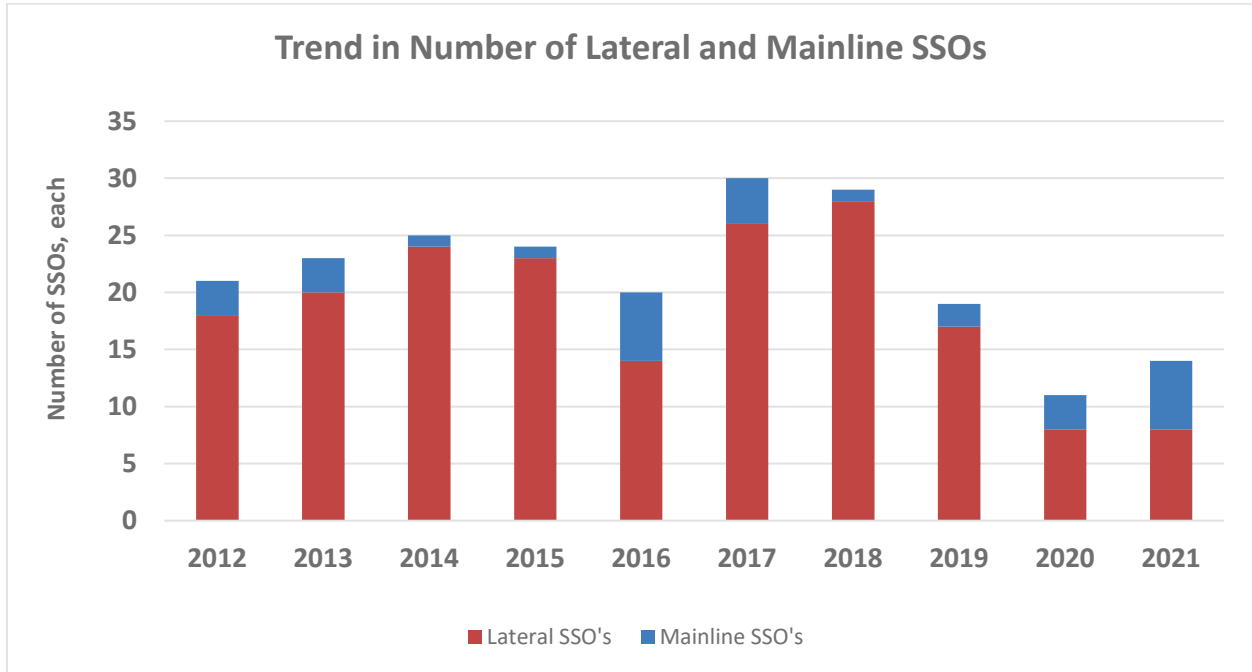


Table 16: Mainline SSOs by Cause

| CY | Roots | Debris | Grease | Infiltration | Vandalism/ Other | Pipe Failure | PS Failure | Total |
|------|-------|--------|--------|--------------|------------------|--------------|------------|-------|
| 2011 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 3 |
| 2012 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 3 |
| 2013 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| 2014 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 2015 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2016 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 6 |
| 2017 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 4 |
| 2018 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2019 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| 2020 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| 2021 | 3 | 0 | 1 | 0 | 0 | 1 | 1 | 6 |

Figure 7: Trend in Gravity Sewer, Lift Station and Force Main SSOs by Cause

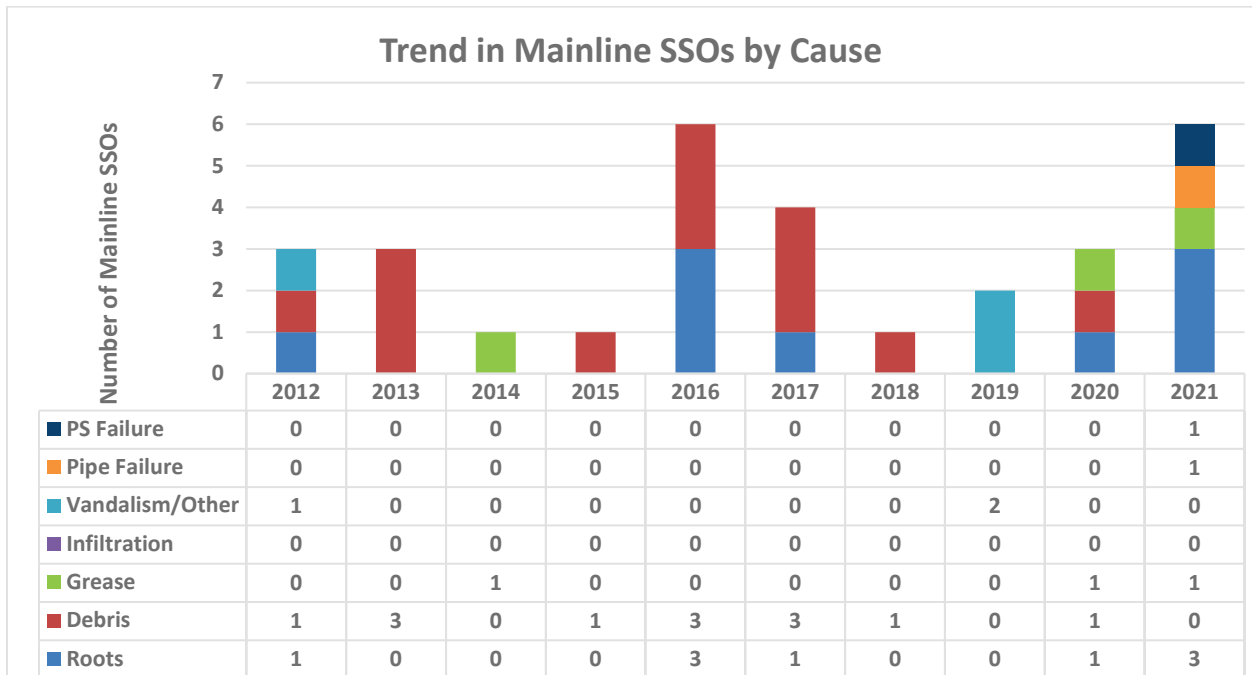
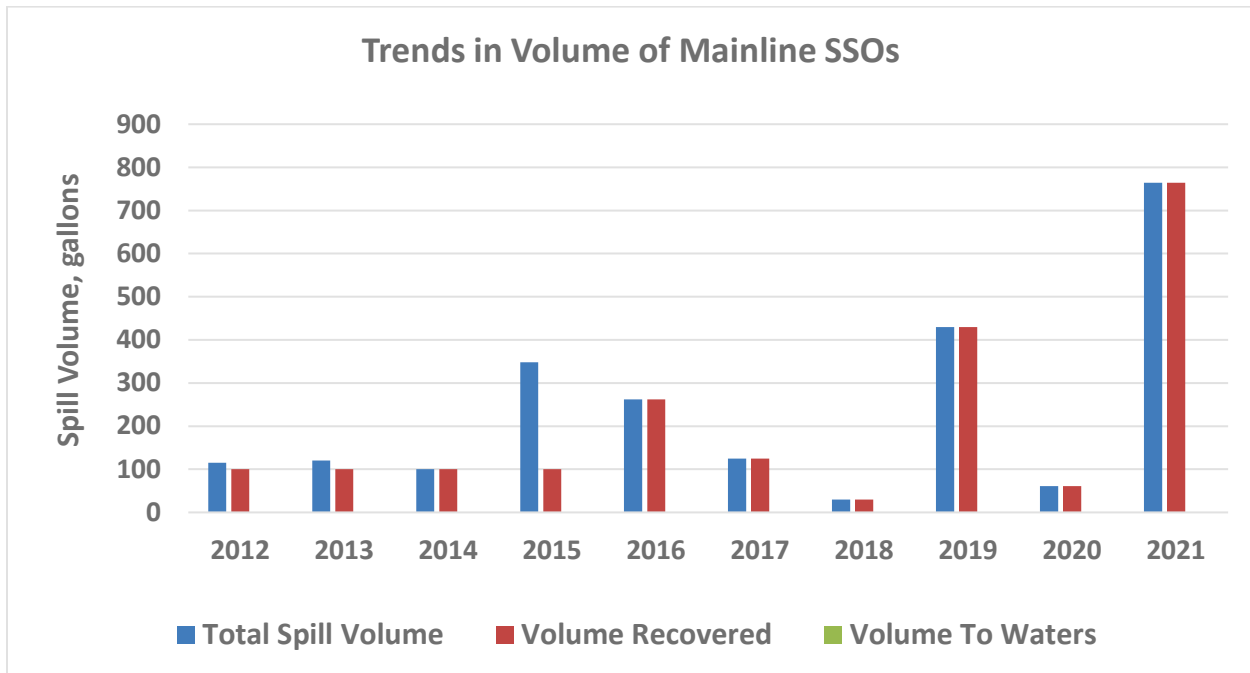


Table 17: Mainline SSO Volumes

| CY | Total Volume, gallons | Portion Contained and Returned to Sewers, percent | Total Volume Entering Surface Waters, gallons |
|------|-----------------------|---|---|
| 2012 | 115 | 100 | 0 |
| 2013 | 120 | 100 | 0 |
| 2014 | 100 | 100 | 0 |
| 2015 | 348 | 100 | 0 |
| 2016 | 262 | 100 | 0 |
| 2017 | 125 | 100 | 0 |
| 2018 | 30 | 100 | 0 |
| 2019 | 430 | 100 | 0 |
| 2020 | 61 | 100 | 0 |
| 2021 | 764 | 100 | 0 |

Figure 8: Trend in Volume of Mainline SSOs



The above Table 13, Figure 6, and Figure 7 show the data and trends in causes of Mainline, Lift Station and Force Main SSOs for the last five years (2017-2021). Table 17 and Figure 8 indicate the Mainline SSO volumes and trends for the period..

IX.2.2 Public Laterals (Service or Lower Laterals)

The baseline performance and trends in public laterals SSOs is shown in Table 18 and the causes of these SSOs is shown in Figure 9. Lateral SSOs remained fairly consistent in 2013-2021. Figure 9 shows the majority of lateral SSOs are caused by roots.

Table 18: Public Sewer Lateral SSOs by Cause

| CY | Roots | Debris | Grease | Infiltration | Vandalism | Pipe Failure | Other – Maint. | Total |
|------|-------|--------|--------|--------------|-----------|--------------|----------------|-------|
| 2012 | 16 | 2 | 0 | 0 | 0 | 0 | 0 | 18 |
| 2013 | 12 | 8 | 0 | 0 | 0 | 0 | 0 | 20 |
| 2014 | 9 | 5 | 1 | 0 | 1 | 2 | 6 | 24 |
| 2015 | 14 | 4 | 0 | 0 | 0 | 1 | 4 | 23 |
| 2016 | 5 | 5 | 0 | 0 | 4 | 0 | 0 | 14 |
| 2017 | 14 | 2 | 0 | 0 | 0 | 9 | 1 | 26 |
| 2018 | 18 | 2 | 0 | 0 | 8 | 0 | 0 | 28 |
| 2019 | 8 | 1 | 0 | 0 | 9 | 0 | 0 | 18 |
| 2020 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 8 |
| 2021 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 8 |

Figure 9: Trend in Cause of Public Sewer Lateral SSOs

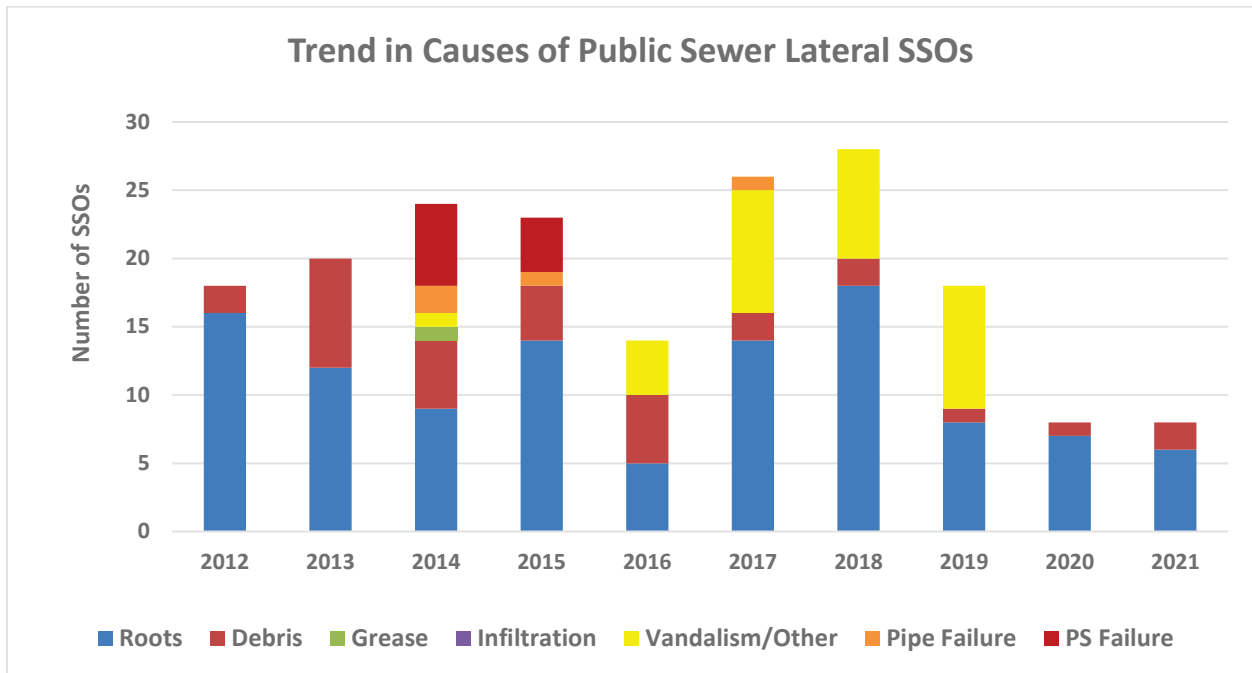


Table 19 below shows the SSO volumes of lateral SSOs in the period of 2011-2021. The volumes are very small. Figure 10 shows this trend Figure 11 displays the trend in both mainline and lateral SSOs, in the number of SSOs per 100 miles of system per year. As noted above, the mainline rate is very low, 0.6 to 1.8, and the lateral rate ranges from 4.7 to 8. While this lateral rate is higher, the SSO volume from these lateral SSOs is very small.

Table 19: Public Sewer Lateral SSO Volumes

| CY | Total Volume, gallons | Portion Contained and Returned to Sewers, percent | Total Volume Entering Surface Waters, gallons |
|------|-----------------------|---|---|
| 2012 | 531 | 99 | 0 |
| 2013 | 382 | 100 | 0 |
| 2014 | 2,025 | 100 | 0 |
| 2015 | 425 | 86 | 0 |
| 2016 | 310 | 100 | 0 |
| 2017 | 1,277 | 100 | 0 |
| 2018 | 656 | 100 | 0 |
| 2019 | 1,437 | 100 | 0 |
| 2020 | 93 | 100 | 0 |
| 2021 | 520 | 100 | 0 |

Figure 10: Trend in Volume of Public Sewer Lateral SSOs

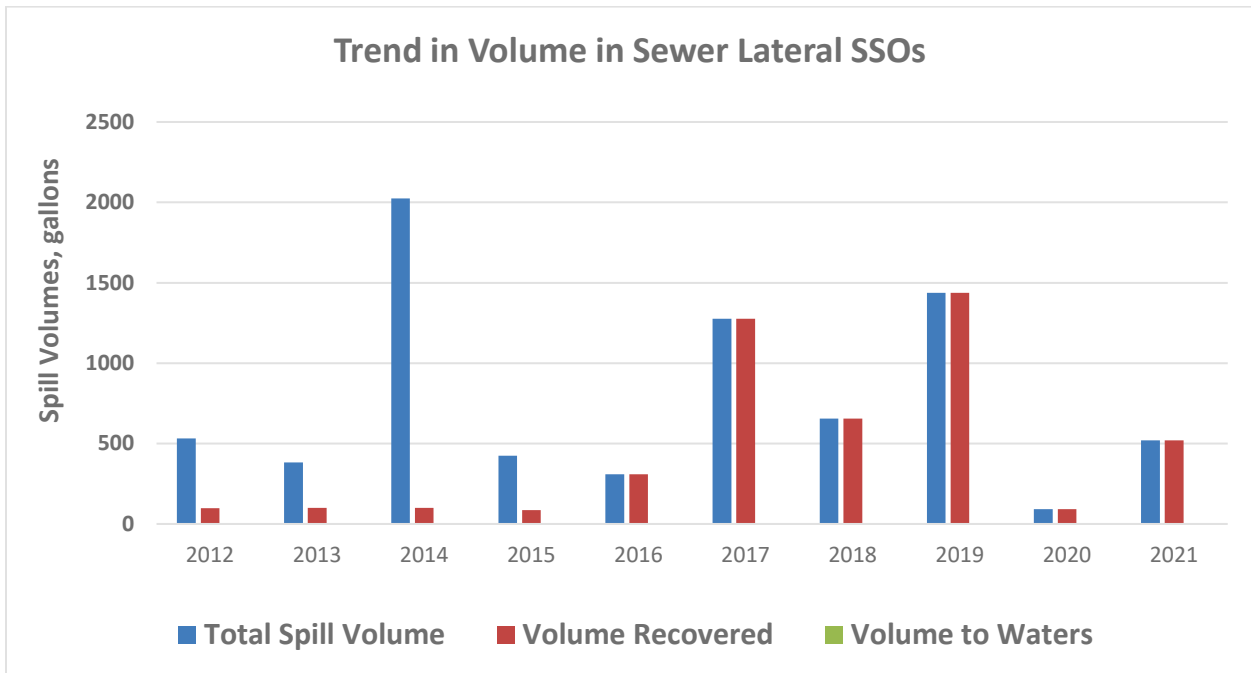


Figure 11: Trend in Rate of SSOs per 100 miles per Year

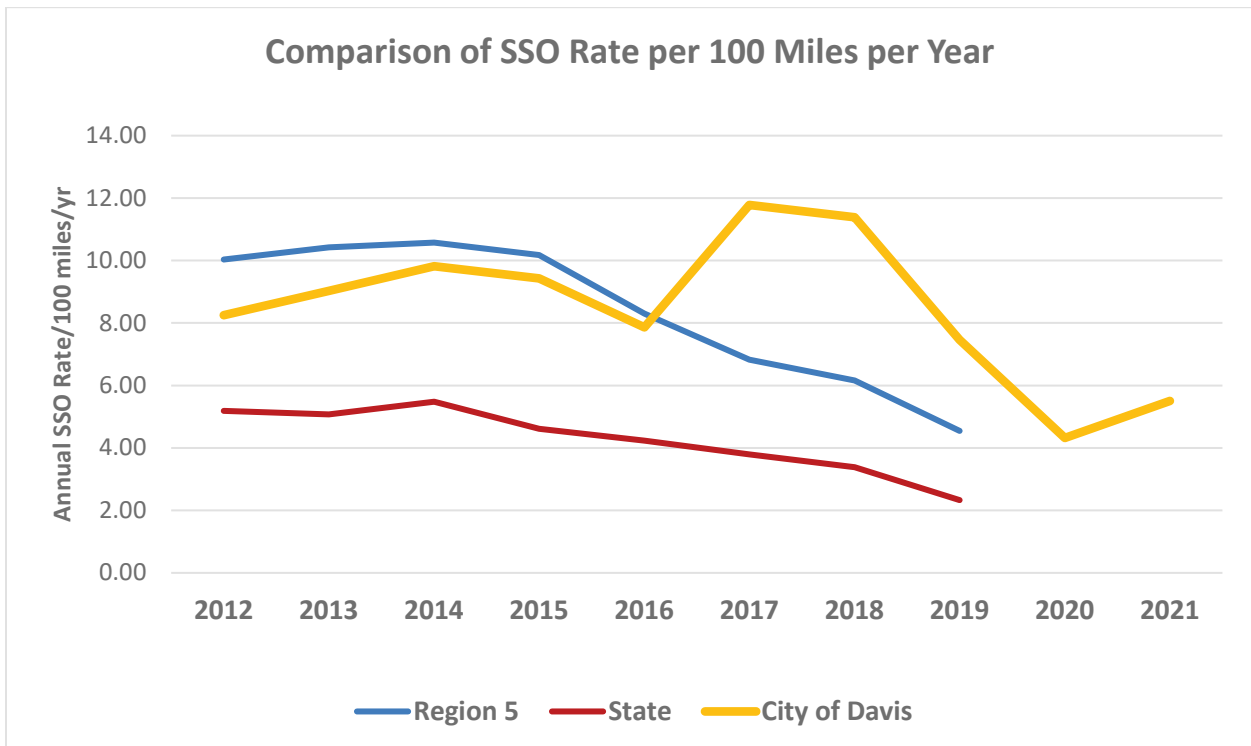
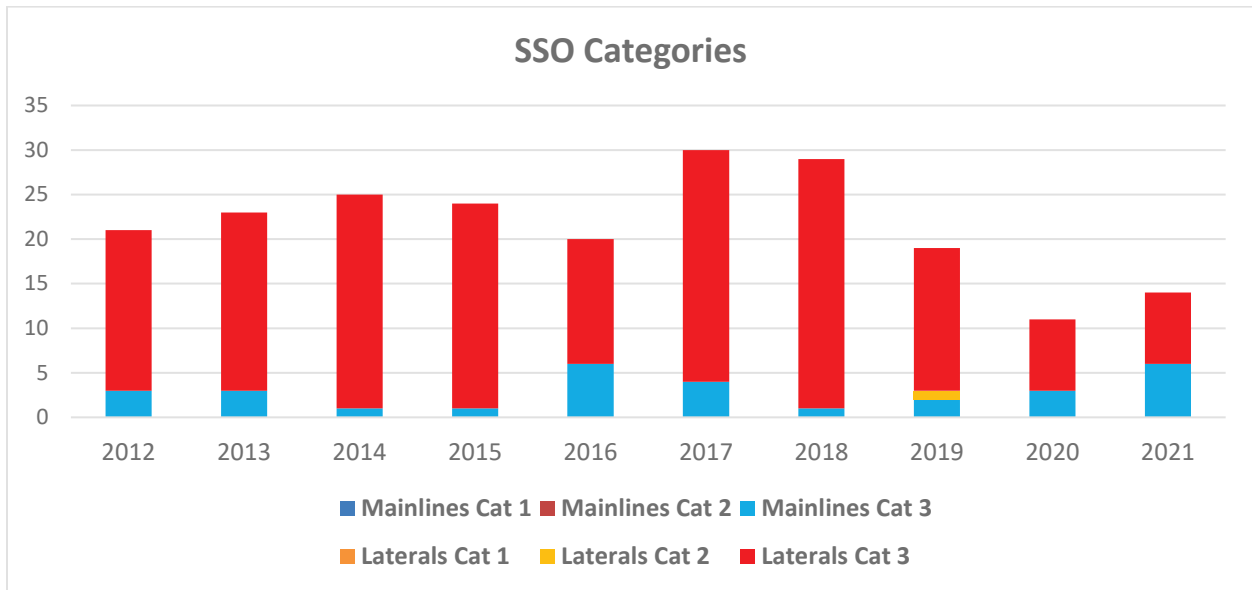


Figure 12: Trend in SSOs by Overflow Category



IX.3 Performance Monitoring and Program Changes

The City will evaluate the performance of its wastewater collection system at least annually using the performance measures identified in this Element. The City will update the data and analysis at the time of the evaluation and will place the annual performance report in Appendix F.

The City may use other performance measures in its evaluation. The City will prioritize its actions and initiate changes to this SSMP, its operations and maintenance practices, and any related programs based on the results of the evaluation. This will be done as part of the annual self-audit (see Element X).

IX.4 Critical Supporting Document

- The data used in this section were taken from City records and CIWQS SSO data as of February 2022.

Element X: SSMP Program Audits

SWRCB Waste Discharge Requirement:

As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

X.1 Audits

The City will audit its implementation and compliance with the provisions of this SSMP every two years from the original adoption date as required by the WDR. The audit will be conducted and completed no later than every three years going forward following original adoption by the City Council. Previous City SSMP Audits are now included in Appendix C. The audit will be conducted by a team consisting of City Staff selected from the Public Works Utilities and Operations Department. The audit team may include members from other departments of the City, outside agencies, or contractors. It is also recommended that an audit of its SSO files to assure that the files are complete, contain all required records as stated in the MRP and that the files contain no extraneous or conflicting documents that are not adequately reviewed, and explanations provided.

The results of the audit, including the identification of any deficiencies and the steps taken or planned to correct deficiencies will be included in an Audit Report. Upon completion of the audit, the City will include a copy of the Final Audit Report in Appendix C of this SSMP. Modifications and changes to the SSMP will be identified and tracked in the SSMP Change Log.

The audit may contain information about successes in implementing the most recent version of the SSMP and identify revisions that are needed for a more effective program. Information collected can be used in preparing the audit. Tables and figures or charts can be used to summarize information about these indicators. An explanation of the SSMP development, and accomplishments in improving the sewer system, should be included in the audit, including:

- How the sewer system agency implemented SSMP elements since the last audit;
- The effectiveness of implementing SSMP elements;
- A description of the additions and improvements made to the sanitary sewer collection system in the past reporting year; and
- A description of the additions and improvements planned for the upcoming reporting year with an estimated schedule for implementation.

X.2 SSMP Updates

The City will recertify its SSMP six years from the original date of City Council adoption and approval or when substantial changes are made in the SSMP. The City will determine the need to update its SSMP more frequently based on the results of the audits and the performance of its wastewater collection system using information from the Monitoring and Measuring Program in Element IX. If the City decides that an update is warranted, the process to complete the update will be identified, assigned to certain staff and include a schedule for completion. The City will complete the update and take the revisions to the City Council no later one year of identifying the need for an update.

X.3 Critical Supporting Documents

None.

Element XI: Communication Program

SWRCB Waste Discharge Requirement:

The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

XI.1 Communication during SSMP Development and Implementation

The City maintains a website (<http://cityofdavis.org/>) to inform the public about City activities. The City's website is an effective communication channel for providing alerts and news to the public. The website provides important announcements, public hearing notices, links to agendas and minutes for City Council meetings, and other key information for City residents. The City will publish the most up-to-date SSMP on the Public Works Department page of the City website. The current SSMP was originally certified by the City Council during a public City Council meeting on August 21, 2012.

Other information provided upon request to interested parties includes brochures and materials regarding collection system operations and maintenance and contact information and/or opportunities for input into the implementation process. The City will also have brochures and information on collection system programs at various department counters in the City as well as available on the City website.

XI.2 Communication with Satellite Wastewater Collection Systems

The City has four extraterritorial services areas that discharge to the City collection system, North Davis Meadow, El Macero, Teichert Construction Corporation Yard and the Davis Creek (formerly Royal Oaks) Mobile Home Park. The City will work to develop regular communications with these two service areas to assure that these systems do not produce any sewage or debris that could be detrimental to the City collection system operations or the treatment plant.

XI.3 Critical Supporting Documents

None.

Appendix A: Sewer System Management Plan Council Adoption Documents

RESOLUTION NO. 22-096, SERIES 2022

RESOLUTION APPROVING UPDATES TO THE SEWER SYSTEM MANAGEMENT PLAN FOR THE CITY OF DAVIS

WHEREAS, in May 2006, the State Water Resources Control Board (SWRCB) issued Statewide General Waste Discharge Requirements (GWDR) for Sanitary Sewer Systems, Order No. 2006-0003-DWQ; and

WHEREAS, pursuant to the statewide GWDR, public agencies that own and operate sanitary sewer systems greater than one mile in length must develop an Sewer System Management Plan (SSMP), and in accordance with SWRCB requirements, the agency must update, recertify, and have their governing body approve the SSMP every 5 years; and

WHEREAS, the City of Davis developed and adopted an SSMP in August of 2012 to serve as a work plan to manage the sanitary sewer system that meets SWRCB guidelines, in a manner consistent with Order 2006-0003-DWQ; and

WHEREAS, the City of Davis updated the SSMP in April of 2017 to comply with order 2006-0003-DWQ requirements; and

WHEREAS, Public Works Utilities and Operations staff, with the assistance of a consulting firm, have updated the City's SSMP to meet the General Waste Discharge Requirements, Order 2006-0003-DWQ.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Davis does hereby approve the update to the Sewer System Management Plan.

PASSED AND APPROVED by the City Council of the City of Davis on this 28th day of June, 2022, by the following vote:

AYES: Arnold, Carson, Chapman, Frerichs, Partida

NOES: None



Gloria J. Partida
Mayor

ATTEST:



Zoe S. Mirabile, CMC
City Clerk

RESOLUTION NO. 17-038, SERIES 2017

**RESOLUTION APPROVING UPDATES TO THE
SEWER SYSTEM MANAGEMENT PLAN
FOR THE CITY OF DAVIS**

WHEREAS, in May 2006, the State Water Resources Control Board (SWRCB) issued Statewide General Waste Discharge Requirements (GWDR) for Sanitary Sewer Systems, Order No. 2006-0003; and

WHEREAS, pursuant to the statewide GWDR, public agencies that own and operate sanitary sewer systems greater than one mile in length must develop a Sanitary Sewer Management Plan (SSMP), and in accordance with SWRCB requirements, the agency must update, recertify, and have their governing body approve the SSMP every 5 years; and

WHEREAS, the City of Davis developed and adopted an SSMP in August of 2012 to serve as a work plan to manage the sanitary sewer system that meets SWRCB guidelines, in a manner consistent with Order 2006-0003; and

WHEREAS, Public Works staff with the assistance of a consulting firm have updated the City's SSMP to meet the SWRCB issued General Waste Discharge Requirements, Order No. 2006-0003.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Davis does hereby approve the updates to the Sewer System Management Plan.

PASSED AND ADOPTED by the City Council of the City of Davis this 18th day of April, 2017, by the following vote:

AYES: Arnold, Frerichs, Lee, Swanson, Davis

NOES: None



Robb Davis
Mayor

ATTEST:



Zoe S. Mirabile, CMC
City Clerk

Appendix B: Sewer System Management Plan Change Log

| LOG OF SSMP CHANGES | | | |
|----------------------------|-----------------------|--|----------------------------------|
| Date | SSMP Element # | Description of Change / Revision Made | Person Authorizing Change |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Appendix C: Sewer System Management Plan Audit Reports



**City of Davis
Sewer System Management Plan
Internal Audit Report
December 2019
WDID: 5SSO10921**

**Prepared By:
Causey Consulting
Walnut Creek, California 94598**



SEWER SYSTEM MANAGEMENT PLAN CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations



*John Alexander, Wastewater Division Manager
Legally Responsible Official*

Acronym Listing Used in The Audit Report

| | |
|--------|--|
| CCTV | Closed Circuit Television |
| CIP | Capital Improvement Program |
| CIWQS | California Integrated Water Quality System |
| DS | Data Submitter |
| FOG | Fats, Oils and Grease |
| FSE | Food Services Establishment |
| GIS | Geographic Information System |
| GWDR | See WDR |
| LRO | Legally Responsible Official |
| MRP | Monitoring and Reporting Program |
| NPDES | National Pollution Discharge Elimination System |
| OERP | Overflow Emergency Response Plan |
| RWQCB5 | Regional Water Quality Control Board, Central Valley |
| SECAP | System Evaluation and Capacity Assurance Plan |
| SSMP | Sewer System Management Plan |
| SSO | Sanitary Sewer Overflow |
| SWRCB | State Water Resources Control Board |
| WDID | Waste Discharge Identification Number 5SSO10921 |
| WDR | Sanitary Sewer Waste Discharge Requirements |
| WQMP | Water Quality Monitoring Plan |
| WWTP | Wastewater Treatment Plant |

1. SSMP Internal Audit

This SSMP internal audit reviews the City of Davis (Davis) Sewer System Management Plan dated February 2017 (SSMP) by West Yost Associates. The Davis City Council originally adopted the Davis SSMP on November 13, 2007 in compliance with the State Water Resources Control Board (SWRCB) Order No. 2006-0003-DWQ General Sanitary Sewer Waste Discharge Requirements (WDR).

The audit evaluates the documentation and implementation of the City sanitary sewer program since the February 2017 SSMP revision. The audit is intended to meet SWRCB 2006 WDR, for agencies that own or operate more than one mile of sanitary sewer collection system discharging to a publicly owned treatment plant. In addition, it also evaluates compliance with the September 2013 Monitoring and Reporting Program (MRP) revised overflow event categories and recordkeeping requirements. Consequently, this audit assesses the current state of compliance with WDR and the MRP provisions including effectiveness of program implementation, identifies "deficiencies" or opportunities for improvement found and recommends corrective actions to remedy those deficiencies.

Causey Consulting performed the current internal audit on behalf of Davis through evaluation of SSMP documentation provided by Davis, publicly available data sources such as the Davis website and the California Integrated Water Quality System (CIWQS), and meetings and conversations with Davis project staff. The following table lists the audit participants interviewed.

| Participant | Classification | Agency |
|--------------------|--|---------------|
| John Alexander | Wastewater Division Manager | City |
| Allen Turner | Senior Public Works Collections Supervisor | City |
| Andy Wells | Collection System Supervisor | City |

2. Audit Schedule

The audit was authorized pursuant to an agreement between the City of Davis and Causey Consulting dated August 8, 2019. Internal audits of an agency SSMP must be conducted every two years from the original adoption date of the SSMP by the Davis City Council. This Audit Report covers the period from May 2017 to May 2019. The audit included a review of the 2017 SSMP, all appendices and other ancillary documents provided by the Davis Staff. The audit began with a document request to the Davis staff for relevant documents supporting the SSMP.

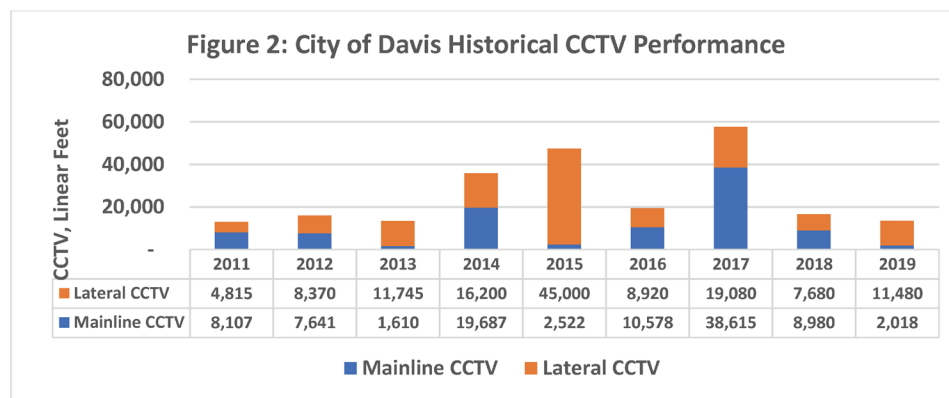
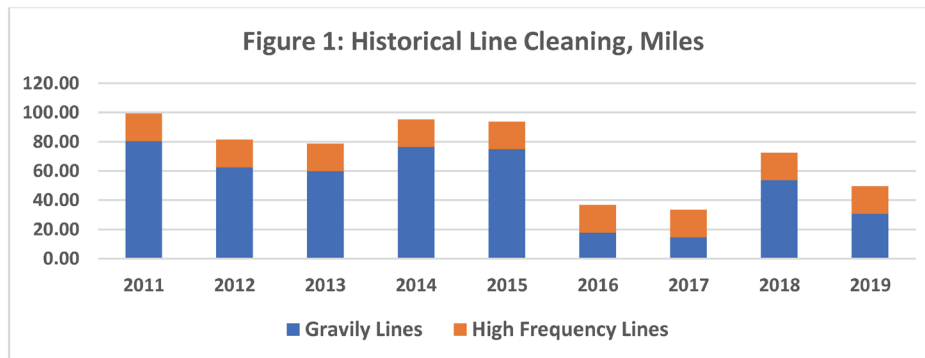
3. Historical Sewer Maintenance Performance Results

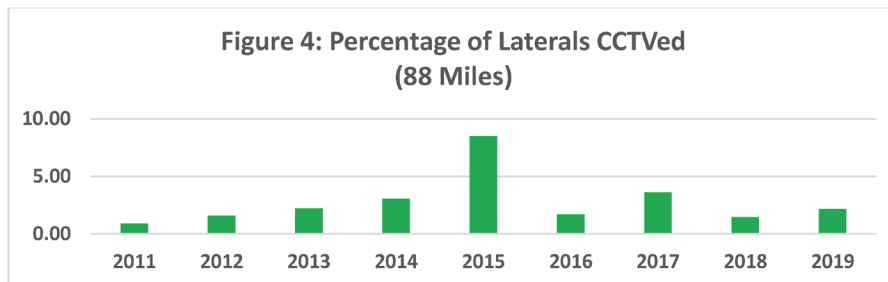
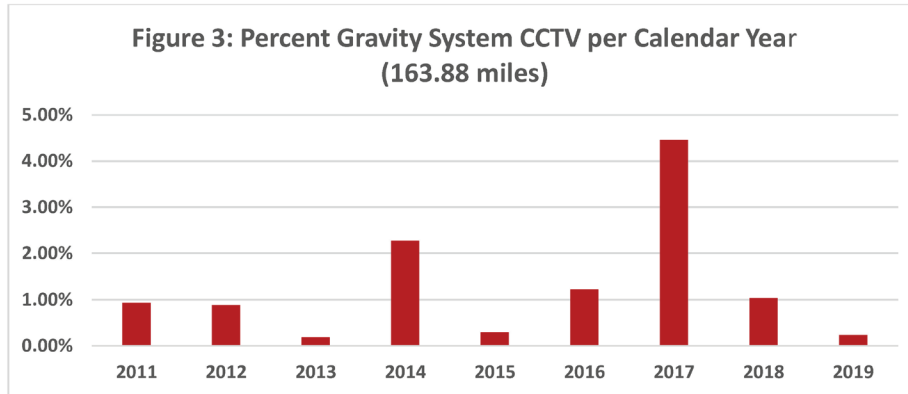
The City staff operates the Davis sanitary sewer collection system that includes 164 miles of gravity pipelines ranging in size from 6 inches to 66 inches, 2.3 miles of pressure pipelines from six sewage pump stations in the service area. The services area serves a population of 66,570 discharging from 15,750 lateral connections to the public sewer system. In addition, the City has

responsibility for 88 miles of lower laterals from these connections. The City has no responsibility for the private upper laterals from the residences and businesses. The City line cleaning program by City crews is limited to the line sizes from 6 inch to 21 inch totaling approximately 150 miles or 91.5% of the full system of lines maintained during the audit period. The remaining 14 plus miles or 8.5% of large diameter pipes, while not currently being cleaned are stated to be cleaned every 3 to 5 years with no defined initiation date for this activity. Additionally, the City has also established a high frequency cleaning program for lines that are subject to possible grease or root problems (4.7 miles) these lines total 18.8 miles per year and the cleaning frequency is done quarterly.

The City crews are also responsible for the CCTV condition assessment of mainlines and lower laterals. Due to equipment limitations, this program has not matured as expected but the City staff have placed an emphasis on reactive lateral inspections rather than mainline inspections due to the recognition that most City overflows have occurred from laterals and not mainlines. These inspections are only conducted after a lateral overflow event.

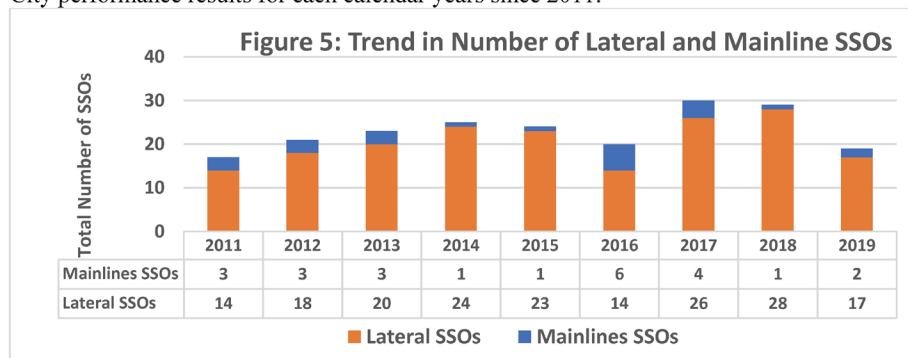
The following graphs present the history of the sewer operations and maintenance program performance from 2011 through December 2019 by calendar year.

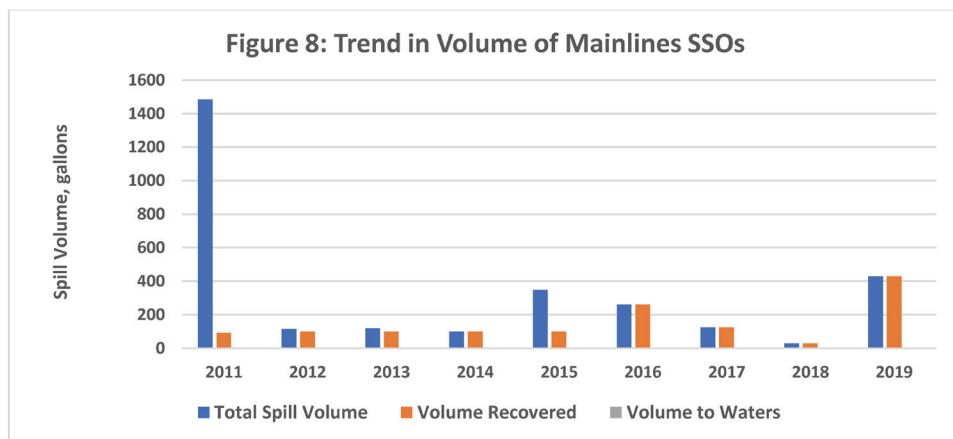
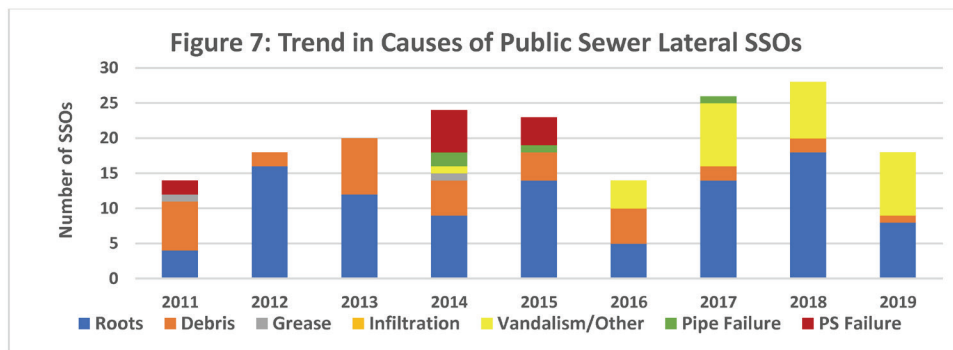
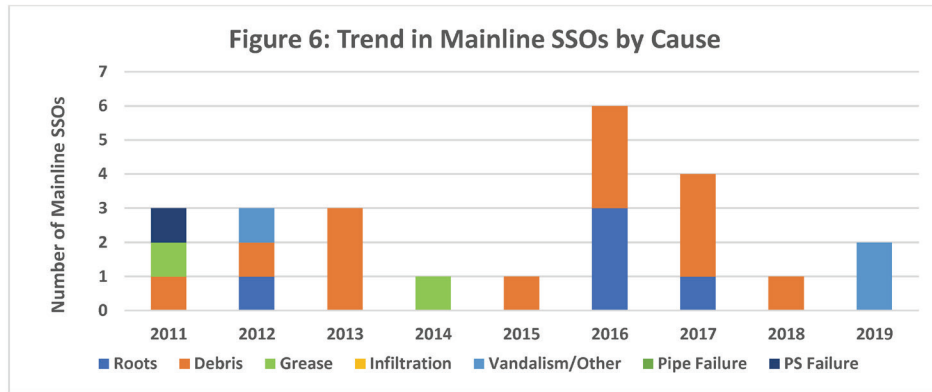




4. Historical Sanitary Sewer Overflow Performance

Since 2007 the City has been required to report and certify all sanitary sewer overflows from the City pipes and lower laterals into the State CIWQS database. The following graphs provide the City performance results for each calendar years since 2011.





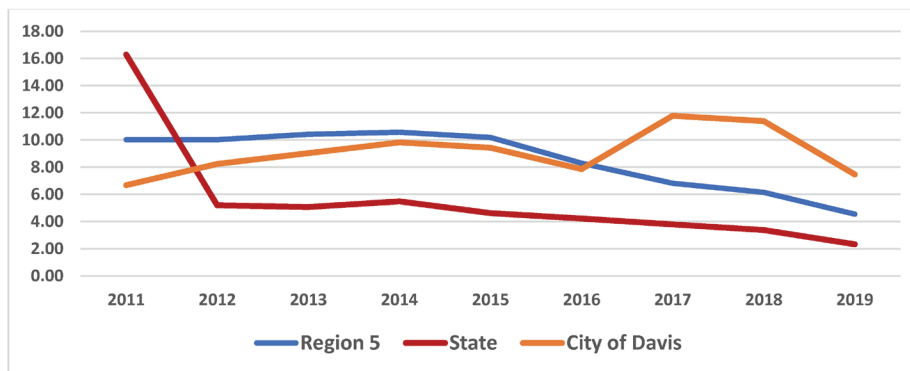
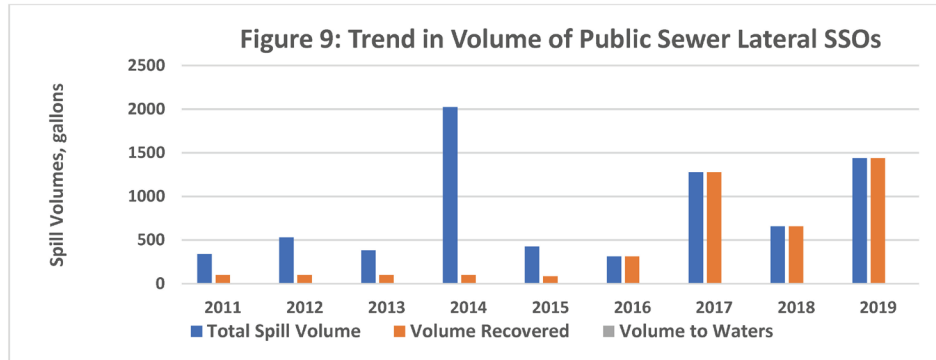


Figure 10: Comparison of Davis SSO Rate/100 miles/Year to Region 5/State

5. SSMP Findings

The purpose of the SSMP Audit is to evaluate the effectiveness of the Davis SSMP and sanitary sewer program, to identify the strengths and any areas for improvement. The information identified here will be used to inform the revisions to the next SSMP and the findings will be used to be evaluated during future biannual internal audits. The following findings and recommendations are broken into two categories, General and WDR Element Specific.

5-1: General Findings and Recommendations

The following general findings and recommendations apply to the entire 2017 SSMP and should be used during the next SSMP revision or evaluated and completed prior to the next internal SSMP audit.

| General Findings | General Recommendations |
|---|---|
| F1. Tables and charts throughout require extension to current. | R1. Tables and graphs should be updated annually throughout the SSMP and changes delineated in the SSMP Change Log. |
| F2. Tables, figures and charts do not state date of preparation. | R2. Tables and charts need the addition of reference dates. |
| F3. 2017 SSMP with critical supporting documents and adoption resolutions could not be found on City website as required by MRP Section 8(iv) – only the 2012 SSMP. | R3. Website must contain the most current adopted SSMP, all critical supporting documents and adoption resolutions or all must be provided to SWRCB as required by MRP Section 8(iv). |
| F4. Most critical supporting documents in appendices were provided as hardcopy. | R4. Consider streamlining the SSMP by the use of hyperlinks for critical supporting documents from both the SSMP and the SSMP website especially for Apps H & I. |
| F5. City has not indemnified nor defined what are critical supporting documents. | R5. Review current list of SSMP references and determine what documents should be defined as critical support documents for compliance with the new MRP requirement. |
| F6. Change log is not detailed enough nor showing annual updates of the SSMP. | R. SSMP Change Log requires more details and specific SSMP sections, graphs, tables or charts modified. |
| F7. CIWQS certified Annual Collection System Questionnaire data does not conform to current City asset information. | R. Assure that annual asset information reported and certified in CIWQS matches SSMP information. |
| F8. The SECAP Update in 2018 was a significant update to the SSMP and no changes or updates were made or conveyed to the City Council as required. | R. The WDR requires that significant changes in the SSMP require governing board consideration and adoption. |

5-2: Specific Element Findings and Recommendations

The specific findings and recommendations below follow the SSMP Elements stated in the WDR Section D13. Each of the 2017 SSMP Elements were ranked against the WDR Section D13. requirements utilizing the following sufficiency ranking system and considering both the findings and the associated recommendations:

- *Complies (C) – complies with all WDR objectives*
- *Substantially Complies (SC) – complies mostly with all WDR objectives*
- *Partially Complies (PC) – complies with basic WDR objectives*
- *Marginal Compliance (MC) – complies minimally with basic objectives of the WDR*
- *Does Not Comply – does not comply with WDR objectives*

| SSMP Element | Sufficiency Ranking | Finding | Recommendations |
|----------------------|---------------------|---|--|
| Cover Page | SC | WDID missing | R. Add City WDID to the title page. |
| Introduction | SC | F12. Three asset tables require updating. F. Sec. 1.3 requires updating to current asset statements. F. Reference to NPDES permit is outdated since new 2018 permit. | R. Bring asset tables current for changes during audit period; Assure conformance with CIWQS operational performance data. R. Revise 1.3 for current data. R. Update reference to 2018 NPDES permit that includes City collection system requirements R5-2018-0086. |
| I. Goals | C | F. Goals are appropriate. | R. Determine if additions or changes are desired. |
| II. Organization | SC | F. Figure 3 outdated. F. Table 4 requires revisions to several titles. F. Table 5 does not contain contact information for each official. F. Figure 4 includes wrong information for health dept and agency name; does not agree with OERP B-1 Flow Chart. F. Figure 4 does not include Category 2 SSO reporting. | R. Update tables and narratives for changes and revisions since 2017 and annually. R. Add reference dates to tables and charts. R. Expand Table 5 to include phone and email contact information. R. Update Figure 4 for Davis specific information. R. Add reporting for Cat 2 SSOs to Figure 4. |
| III. Legal Authority | SC | F. No action to amend the Municipal Code to clarify roles and responsibilities for private lateral operations, maintenance and replacement. F. No Code amendments processed for the sewer program during the audit period. | R. Pursue Code amendments to assure clarity of roles and responsibility for private sewer laterals beyond just the Sewer Lateral Maintenance Procedure; add procedure to this item in the table. R. Future audits should include a statement regarding review of all sanitary sewer related ordinances and procedures including findings. |

| | | | |
|----------------------------|-----------|---|--|
| <p>IV. O&M Program</p> | <p>SC</p> | <p>F. Several actions were identified in this Chapter to be completed with no updates here or in the change log; map book, system cleaning schedule updates/expansion, CCTV needs, force main maintenance/assessment program, root control program, F. Tables 7, 8, 10, 11 outdated. F. 4.2.5 does not include any maintenance or condition assessment of force mains especially to two major force mains. F. Section 4.2.6 dated information and no historical performance results include; hyperlink not correct. F. Section 4.3 does not detail methods for CIP inclusion nor description of projects projected to be completed; old years in Table 11 are dated; table does not project long term projects. F. Section 4.3.2 does not contain maintenance program for large diameter pipes (24 – 66”) F. Section 4.4 does not include sufficient training requirements. F. Section 4.5 table still correct? F. Training program broad and exceptionally well documented. F. The City collections staff has been involved in significant training opportunities during the audit period – substantial training documentation for each employee provided.</p> | <p>R. Revise statements of actions completed include only actions that will be completed during audit/SSMP periods. R. Update all tables and add reference date to tables. R. Must develop a program for both maintenance and condition assessment program for force main lines. R. Update Section 4.2.6 and add table of historical results for root control since 2016 and for numbers of laterals in program; revise hyperlink . R. Expand Section 4.3 to include process for setting CIP priorities; extend table to at least 2030; add break down of types/titles of projects to be pursued. R. Update two tables supporting Section 4.5; move into this Chapter and eliminate appendices F & G. R. Section 4.3 requires expansion to explain priority system used to schedule R&R program for both short and long term projects. R. Expand Section 4.4 to include training on WDR, MRP, SSMP, OERP, WQMP and regular field response exercises.</p> |
| <p>V. Design</p> | <p>C</p> | <p>F. Most City Standards date to 2009 with only minor updates in 2017 and Green Book revisions need regular review to determine if still current. F. Appendix I City Adaptation to Green Book not required. F. Hyperlink to Standards very good. F. Section 5.3 States Standards 9/19/91 conflicts with Section 5.1.1 which states 2009. F. Table 12 does not include all acceptable pipe materials.</p> | <p>R. All standards should be reviewed and evaluated during each audit to determine any revisions required. Consider stating “most current version of Green Book” in narratives and 5.3. R. Assure hyperlink works and remove Standards from Appendix H. R. Update Section 5.3 references. R. Update Table 12 for PVC material allowed.</p> |

| | | | |
|------------------|----|--|--|
| VI. OERP | C | <p>F. Separate appendices for OERP makes document user friendly.</p> <p>F. OERP does not include agency specific WQMP as required but states one will be developed when needed.</p> <p>F. Section 6.3 does not require LRO certification of the SSO event file when completed.</p> <p>F. There was no evaluation or review of the City SSO documentation of certified events as stated in the OERP.</p> | <p>R. Retain OERP in a separate appendix for ease of use in the field.</p> <p>R. Prepare and insert Davis specific WQMP pursuant to MRP Section D in separate appendix to SSMP.</p> <p>R. Add requirement for LRO certification of each SSO file to Goals in 6.3.</p> <p>R. Consider use of a Davis specific SSO Supporting File Checklist (See sample in Attachment 1)</p> <p>R. The City should include a review of at least a sampling of the SSO file documentation with each audit to identify any needed changes or omissions to assure a complete set of records fully documenting each certified CIWQS report.</p> |
| VII. FOG Program | C | <p>F. Table 13 not up to date.</p> <p>F. Much of the FOG narratives in the Chapter requires updating and expansion.</p> <p>F. New internal SOP completed but not referenced in FOG program management.</p> <p>F. No Reference section with list of FOG related references.</p> | <p>R. Extend Table 13 to current or remove in favor of narrative statement.</p> <p>R. Review and update FOG Chapter to current prior to next council consideration and adoption.</p> <p>R. Revise 7.2 to include SOP information and overview.</p> <p>R. Add new Section 7.3 References with proper hyperlinks to references in new FOG SOP.</p> |
| VIII. SECAP | PC | <p>F. City completed a System Evaluation and Capacity Assurance Plan Update in Sep 2018 but not described or included in reference section or hyperlinked from webpage.</p> <p>F. Section 8.2 states design criteria in Element 5 but it does not appear in Appendix H either.</p> <p>F. 8.3 refers to a “Sewer Strategic Plan” but not described or included in reference section.</p> <p>F. Reference to CIP in 8.3 should be to Chapter 4 and not Appendix K.</p> | <p>R. Revise this Chapter for findings from the update.</p> <p>R. Update and extend the CIP budget and reference Chapter 4 table – see above.</p> <p>R. Properly state design criteria in this Element 8.2.</p> <p>R. Either describe Strategic Plan or eliminate if old and outdated – is this the 2005 Wastewater Facilities Master Plan?</p> <p>R. Remove Appendix K in favor of simple CIP table in Element 4.</p> <p>R. Update 8.3 for any capacity related</p> |

| | | | |
|--|----|---|---|
| | | F 8.3 states no capacity related improvement necessary - not consistent with Update results. F. 8.4 does not include the above update. | improvements required from the Update R. Add update to 8.4. |
| IX. Monitoring, Measurement/Modification | PC | F. All tables/graphs are dated. F. Tables/graphs not regularly updated. F. Section 9.1 no CCTV program assessment completed. F. Section 9.2 no annual performance evaluation completed. F. Section 9.3 no annual performance report completed and insert in Appendix DF. Section 9.4 dated | R. Extend all tables/graphs thru 2019 data; consider addition of tables for categories of SSOs for both mains and laterals. R. Remove annual audit requirement if not to be done in the future. R. Annually update performance results and report to City Council. R. Complete annual performance evaluations as stated or remove from SSMP if not to be completed. R. Update reference list for new SSO data utilized. R. Update 9.4 to current. |
| X. SSMP Audit | C | F. Chapter is current and still properly stated. F. Appendix D Audit Report Form no longer allowed; no previous audit reports included. F. SSMP Change Log has very few changes since 2017 and not detailed enough. | R. Current Audit Report form no longer acceptable replace with audit checklist with Element ranking system and comments to inform audit process and interviews to be conducted. R. Assure placement of 2019 Audit Report in SSMP Appendix upon completion and after Council consideration – add previous audit reports to this appendices. R. Make proper use of the change log and include in the SSMP Change Log in Appendix C and not separated from the SSMP. |
| XI. Communications | NC | F. 2017 SSMP not found on District website as stated and required by MRP 8(iv). F. 11.1 is missing requirement for availability of critical supporting documents. F. No annual communication with Council on collection program performance. | R. Assure most current SSMP adopted by Council and all critical supporting documents and adoption resolution are available on City SSMP webpage per MRP Section 8(iv). R. Assure annual sewer program performance report to City Council included on regular Council agenda which allows for public input. |

| | | | |
|--------------------------------|----|--|---|
| Appendices | C | F. Appendices include most required hardcopy critical supporting documents but is significantly expands the size and usability of the SSMP by staff and management especially with the inclusion of all standards | R. Consider reducing by use of hyperlinks rather than hardcopy appendices for H, I, and J. R. Add copies of rate study and SECAP Update or hyperlink. |
| A. Responsible Officials | PC | F. Table outdated and incomplete – no contact information included. | R. Update table at least annually and include in Change Log; add additional roles for all appendices. |
| B. SSMP Adoption Documents | C | F. Does not include adoption documents from 2017 adoption. F. Minutes from 2012 okay but not required. | R. Add all Council adoption resolutions from 2007, 2012 and 2017 SSMP adoption. R. Document SSMP adoptions with copy of Council Resolutions not complete minutes of meeting. R. Add Resolutions 07-171, 12-127 and 17-038. |
| C. Change Log | NC | F. Change Log not updated since 2017. F. Updated Change Log provided as part of document request but not found in this appendix as required. F. Change log entries do not provide adequate details. F. Rate study, Lateral SOP and SECAP Update not listed in the Change Log. | R. Change Log should show regular updates and changes between Council adoptions. R. SSMP Log must be attached in the SSMP. R. Log must contain specific sections and/or other specific changes made not general statements as in the change log provided. R. Assure all document revisions or changes are included on Log on completion and acceptance of documents. |
| D. SSMP Audit Reports | NC | E. No past Audit Reports attached. F. SSMP Audit Checklist no longer acceptable. | R. Add all past and future Audit Reports to appendix. R. Revise Audit Checklist in Appendix D with ranking system above and use to inform audit program and interviews during internal audits. |
| E. Lift Station Checklist | C | F. Still current and used? | R. Review and revise if necessary based upon experience. |
| F. Equipment Inventory | SC | F. Is this current? | R. Update as appropriate and add reference completion date to table. |
| G. Replacement Parts Inventory | SC | F. Is this current? F. Table includes only pipe replacement but not lift station, | R. Update as appropriate and add reference completion date to table. |

| | | | |
|------------------------------------|--------------|---|---|
| | | manhole or other replacement parts. | R. Expand table for additional critical replacement parts. |
| H. Sewer Design Standards | C | F. Standards while critical supporting document not required to be in hard copy if available by hyperlink. | R. Hyperlink from SSMP and SSMP webpage to Engineering webpage.. |
| I. City Adaptations to Green Book | Not required | F. This is not a critical supporting document. | R. Remove from SSMP and just state in Element V. R. Consider a review and comment on adaptations in each Audit. |
| J. FSE Public outreach Materials | Not required | F. This is not a critical supporting document. | R. Remove and create a separate hyperlink FSE webpage from the SSMP webpage with this information |
| K. CIP Program Budget and Schedule | NC | F. Nothing contained in this Appendix – Table 11 intended? F. No revisions since 2017 even though Update completed in 2018. F. 2017 Rate Study completed but not referenced anywhere nor in the change log. | R. Determine if this appendix is necessary in favor of Table 11 only – see recommendation Chapter 4. R. CIP information should be updated regularly and stated in change log. R. Add information on impacts of rate study throughout SSMP especially as relates to CIP. |
| L. OERP | C | F. Cover page not fully completed with important adoption information. F. No revisions to the OERP stated in the Change Log or identified in the OERP. | R. Complete cover page information. R. Were any OERP policies or procedures changed during the audit period? If so specifics should be in the Change Log. |
| M. WQMP | NC | F. No WQMP found or included as stated in OERP Section 7.3. | R. Establish a Davis specific WQMP as required by MRP Section D. |

6. SSMP Effectiveness

The WDR requires that an evaluation of the sanitary sewer program and the SSMP during the audit period contain the identification of opportunities for program improvement or as the WDR states “deficiencies”. In addition, the SSMP poses four areas for the evaluation as follows:

- How did the agency implement the elements of the SSMP?
- The effectiveness of implementing the SSMP Elements?
- Description of additions and improvements made?
- Description of additions and improvements planned for the next year.

The City has done a good job of implementing the SSMP Elements as 68% of the ranked SSMP evaluations rated compliant or substantially compliant. The areas that were deficient or non-compliant were in the areas of communications, use of the SSMP Change Log, conduct of internal audits every two years and placement of the final certified Audit Report in the Appendix as stated, updating of the CIP budget and development of a Davis specific WQMP. The City did move forward with two important evaluations during the audit period including a SECAP Update with expanded system model and capital program projects and important evaluations of the sewer rates to properly support the SECAP revised CIP program. However, the City did not update the SSMP Elements or the Change Log for these important significant revisions to the sewer program.

In the communications area, the City staff is in the process of developing a Division 73 Wastewater Work Plan that will be regularly updated and made available to the wastewater staff and City Council. Finally, the SSMP OERP states that the City will develop a WQMP if it experiences a sewage overflow of greater than 50,000 gallons. Regulators expect that the agency specific WQMP should be ready and available to be immediately implemented following a large event. The City must prepare a WQMP and have it ready to be implemented immediately during and following a large overflow event.

Turning now to the evaluation of the field operations and maintenance program, we find that there has been substantial reductions in the O&M program during the audit period. While high frequency maintenance has continued at the same level, regular cleaning activities are well below those prior to the audit period. In addition, the condition assessment program for both main lines and laterals are significantly below industry standards suggesting that full system CCTV should see at least 10% of the system each year – both are currently in the range of 1 to 3% during the audit period. Well down from the high 2015 performance results much more in line with industry standards. In addition, no action has occurred to define either large diameter or force main condition assessment or operation and maintenance for these important assets. The above areas require management evaluations to assure the full asset and maintenance programs continue to be effective in meeting the SSMP defined metrics and regulatory expectations.

While the O&M performance has seen a reduction, in the important area of sewage overflow activity, the City performance is excellent especially for the main line sewers with between 1 and 4 SSOs per year during the audit period. However, with regard to the lateral overflows, these continue to be problematic in the number of that events have averaged 25 events per year but these events tend to be exceptionally small volume releases averaging 40 gallons per event or a total of 1000 gallons per calendar year with roots being the major cause. The City needs to be more aggressive in its efforts to assure that lateral events are trending downward in the future. This needs to be an area of emphasis for the next audit period.

Finally, when the City of Davis is compared to the State and Central Valley Regional Board using the current SSO Rate per 100 miles per year, the City rate is driven by two important drivers. The single largest is the number of lateral events experienced. For the mainlines sewer rate during the audit period the SSO rate would be between 0.39 and 1.55 which would put the City well below the other two SSO rates for the entire audit period. The SSO Rate for the lower laterals at 25 events/year is 9.68 per year which exceeds both of the other rates substantially.

Overall the main line O&M sewer program has been effective during the audit period suggesting that the program in the past may have been overly aggressive and can be reduced long term but only if CCTV condition assessments are increased and used to establish future cleaning schedules based upon need and field findings. In addition, representative CCTV QA/QC evaluations post cleaning should be considered and implemented. In the area of condition assessment, it is imperative that the City significantly improve its overall efforts to understand both the operational and structural condition of its mainlines and laterals. It is not unreasonable to expect the program to include a QA/QC evaluation of cleaning of 10% of the lines cleaned during the year while also inspecting for structural integrity and replacement prioritization on a five to ten year return frequency. This will assure proper main line maintenance levels.

Finally, the City should improve its regular management of the actions and activities identified in the SSMP document. First and foremost, the City must make the most current SSMP and all critical supporting documents available on the City website or by transmitting copies of these documents along with City Council adoption documents to the SWRCB as required by the WDR. Additional efforts include annually detailed updates to the SSMP Change Log including changes in important contact information, extending and updating tables and charts, updating of the CIP project program and improved communications with the City Council and the public. The City must also be aware that any significant changes to the SSMP like the SECAP Update and the updated Sewer Rate Study should have resulted in major changes to the SSMP that may result in the need for Council adoption.

7. Davis Opportunities for Improvement/Deficiencies Identified

The WDR requires that the Audit Report identify any deficiencies found in the SSMP and sanitary sewer program during the internal audit. The opportunities for improvement include the recommended corrective action required. The City should establish a schedule for completion of each of the action items and assign responsibilities to assure completion of each of the actions prior to the next internal audit.

- A. The 2017 SSMP, all critical supporting documents and the SSMP adoption resolution must either be available on the City webpage or submitted to the SWRCB within 30 days of Council adoption per MRP Section 8(iv).
Corrective Action: The City should place the three sets of the most current documents (2017 SSMP) above on a separate SSMP webpage either in hardcopy or with hyperlinks directly to locations where the documents can be found on the City website.
- B. The City does not regularly update actions and activities associated with the performance metrics identified in both Chapter 4 and 9 nor provide the resulting information to the City Council as stated in the Communications Chapter.
Corrective Action: At least annually update all metrics in Chapter 4 and 9.
- C. Table and graphs are not updated regularly at the end of a calendar year as currently stated.

Corrective Action: Establish proper procedures for regular updates to all sewer system program metrics and share regularly with the City Council during a public meeting.

- D. SSMP Change Log not regularly update for program changes and entries are not as specific as expected, nor is it included in the SSMP appendix as stated in the SSMP.

Corrective Action: At least annual update the Change Log indicating specific SSMP sections or the specific appendix amended and assure that the Change Log is included in the SSMP Appendices. Identify specific changes by Chapter section and detailed description of the changes made to the SSMP.

- E. SSMP, critical supporting documents and Internal Audit Report from 2017 not included in the SSMP or on a separate SSMP webpage.

Corrective Action: Establish a process to assure that the most current SSMP and all supporting documents are available on the City SSMP webpage. Assure all critical supporting documents are included or hyperlinked from the SSMP on the SSMP webpage. If this is not done then all must be transmitted to SWRCB along with adoption resolutions.

- F. When major updates to SSMP related documents and appendices are made or new standard operating procedures are developed, appropriate changes must be made to the SSMP and appendices.

Corrective Action: Assure that major supporting document updates and revisions result in amendments and changes to the appropriate Chapter of the SSMP such as the updated SECAP in September 2018 and add changes to the SSMP Change Log.

- G. 2017 SSMP is generally compliant and includes most critical supporting documents in hardcopy in the SSMP. This results in a large document that is not user friendly or useful. The SSMP includes documents that can be hyperlinked and not included in hard copy.

Corrective Action: Evaluate the use of hyperlinks from the SSMP and a new SSMP webpage rather than the inclusion of all hardcopies in the document especially Appendices H, I, and J. This should streamline the SSMP and allow greater use by City staff for training and new employee orientation.

- H. The City does not currently have proper defined operations and maintenance or condition assessment programs for both force mains and large diameter (>21") lines as required.

Corrective Action: The City must establish some level of program for large diameter pipes and force mains for both normal maintenance and condition assessment and add descriptions to Element 4 of the SSMP.

- I. The current OERP title page has not been completed nor has a City specific WQMP been established as required by the MRP and is not readily available if needed during or following an overflow of greater than 50,000 gallons.

Corrective Action: Complete the OERP Title Page and develop and seek approval of a Davis specific WQMP.

- J. Several important updates (SECAP and Rate Study) have been completed during the audit period without the resulting changes being included in or modified in the proper SSMP Chapter narratives and requirements. The SECAP update especially would be considered a significant update that would require Council consideration and readoption of at least a new Chapter 8 as required by WDR Section 14.
Corrective Action: When significant changes such as the updated SECAP when completed, revisions must be made to the SSMP and those revisions should be approved by the City Council and stated in the Change Log.
- K. The SSMP contains several requirements for annual reviews and updates that are not now being completed. In addition, many of the collection system performance metrics are much easier to manage if update regularly shortly following the reporting period.
Corrective Action: Either commit to accomplishing the annual updates as stated or remove these from the SSMP so they can create enforcement liability if not completed. However, it is recommended that the performance results be tracked annual and presented to the City Council to assure public ability to understand and communicate regarding the implementation of the sanitary sewer program.
- L. The WDR in Element XI requires that the “Enrollee communicate on a regular basis with the public on the development, implementation and performance of the SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee...”.
Corrective Action: The staff should at least annual present SSMP and performance information to the City Council on a regular agenda and on the website that allows the public to make input to the sewer program implementation and performance. Chapter 11 states that annually following the end of a fiscal year that communications with the City Council will be provided. It is recommended that the staff develop an Annual Sewer System Performance Report utilizing updated charts and graphs from Chapter 9 and a brief description of the annual accomplishments and challenges of the sewer operation.
- M. The City Standards Section 201 for sewer assets are dated (1991 and 2017) and do not include the allowance for the use of PVC sanitary sewer pipe materials in the City collection system.
Corrective Action: Each internal audit should review and determine if any of the sanitary sewer standards or drawings need to be revised and if so, a corrective action identified and a schedule for update completion established. The Current standards do not allow for anything but clay pipe and need to be modified to allow SDR 26 PVC as currently being installed.
- N. The current internal audit did not include a review of the City recordkeeping and overflow event documentation supporting at least a sampling of the CIWQS certified events during the audit period.
Corrective Action: The City should consider the development of a standard procedure for regular audits of overflow events during an audit period to assure complete documentation and compliance with both the required recordkeeping and the OERP City

stated requirements. This should include utilization of the SSO Recordkeeping Checklist for each event (See Attachment 1).

8. Conclusions

The City has established an effective sanitary sewer program for the operations and maintenance of the small diameter lines in the collection system. They have not however developed a comprehensive maintenance and condition program for the large diameter and force mainlines in the City. The overall SSMP has been effective in describing and explaining the current City sanitary sewer program but needs the addition of a regimented condition assessment program for evaluation of both cleaning activities and renewal and replacement of all pipelines in the sewer system. However, they must assure that all stated activities and actions described in the SSMP are fully completed or addressed in the internal audits every two years. This includes regular updates to the Change Log, at least annual updates to performance results and , metrics and regular communications with the City Council on progress and results allowing for public input on the program. Finally, while the City staff has pursued important revisions to the sewer program for future capital needs and funding, these things must become immediate parts of the appropriate SSMP section when completed and especially noted in the SSMP Change Log.

In order to complete this internal audit, the City staff should assign appropriate staff members to be responsible for the Corrective Actions identified above along with a schedule for completion no later than the next internal audit or SSMP revision. In addition, as the City approaches the next revision to the SSMP many of the findings and recommendations should be incorporated into the SSMP to assure a complete response to the State WDR regulations.

Attachments

**Sanitary Sewer Overflow
Recordkeeping Checklist**

Agency File No. _____ Agency File Location _____
 Date of SSO _____ SSO Location _____
 CIWQS Event ID: _____

- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> SSO File established for each event <input type="checkbox"/> File designation assigned <input type="checkbox"/> File title assigned <input type="checkbox"/> Date of SSO <input type="checkbox"/> SSO Category stated <input type="checkbox"/> SSO site description attached <input type="checkbox"/> SSO incident map attached <input type="checkbox"/> Customer complaint documentation <input type="checkbox"/> Field interviews documented <input type="checkbox"/> List of all staff /contractors involved <input type="checkbox"/> Event chronology attached <input type="checkbox"/> Number of appearance points documented <input type="checkbox"/> CIWQS Draft Data form included <input type="checkbox"/> SWRCB reporting timelines met <input type="checkbox"/> Original data submitter identified in file <input type="checkbox"/> All CIWQS Fields completed by category <input type="checkbox"/> CIWQS Certification Report included <input type="checkbox"/> Event description completed <input type="checkbox"/> List of Photos included <input type="checkbox"/> Photos dated and locations identified <input type="checkbox"/> Location of Photos mapped <input type="checkbox"/> Agency Overflow Report attached <input type="checkbox"/> Impacted waters identified <input type="checkbox"/> Start time documentation attached <input type="checkbox"/> Volume estimation method(s) identified <input type="checkbox"/> Volume computations attached/approved | <ul style="list-style-type: none"> <input type="checkbox"/> Volume assumptions stated/approved <input type="checkbox"/> Recovered volume return location stated <input type="checkbox"/> Agencies notified/date/time <input type="checkbox"/> Map/photos of signs/security attached <input type="checkbox"/> Electronic-monitoring records attached <input type="checkbox"/> Pump Station Telemetry records attached if used <input type="checkbox"/> LRO report approval <input type="checkbox"/> Extraneous forms removed <input type="checkbox"/> Debrief documentation attached <input type="checkbox"/> Failure Analysis completed/attached <input type="checkbox"/> Process or procedure changes identified <input type="checkbox"/> Action plan prepared <input type="checkbox"/> SSMP Change Log updated for changes <input type="checkbox"/> File certified by LRO <input type="checkbox"/> File retention schedule set For SSOs > 50,000 gallons <ul style="list-style-type: none"> <input type="checkbox"/> Water Quality Monitoring sites identified <input type="checkbox"/> Chain of Custody attached <input type="checkbox"/> Final sample results attached <input type="checkbox"/> Sampling location map <input type="checkbox"/> Technical report completed <input type="checkbox"/> Documentation in CIWQS <input type="checkbox"/> Tech report certified by LRO <input type="checkbox"/> File disposal date established <input type="checkbox"/> All WDR timelines met/documentated |
|---|--|

Appendix D: Overflow Emergency Response Plan

City of Davis

Overflow Emergency Response Plan



Effective Date: March 30, 2017

Revised Date: N/A _____

Approved by: _____

Signature: _____

Date: _____

City Council Adoption Date: _____

Adapted with permission from: DKF Solutions Group, LLC

City of Davis: Overflow Emergency Response Plan

Table of Contents

Sanitary Sewer Overflow Emergency Response Plan

(ref. SWRCB Order No. 2006-0003-DWQ Element VI)

1. Purpose
2. Policy
3. Goals
4. Sanitary Sewer Overflow (SSO) Detection and Notification
5. SSO Response Procedures
6. Recovery and Cleanup
7. Water Quality
8. Sewer Backup Into/Onto Private Property Claims Handling Policy
9. Notification, Reporting, Monitoring and Recordkeeping Requirements
10. Post SSO Event Debriefing
11. Failure Analysis Investigation
12. SSO Response Training
13. Authority
14. References

Appendix A: Regulatory Notifications Packet

| | |
|--|-----------------|
| Instructions | Packet Envelope |
| Regulatory Reporting Guide | A-1 |
| Category 1 SSO Reporting Checklist..... | A-2a |
| Category 2 and 3 SSO Reporting Checklist | A-2b |

Appendix B: Sanitary Sewer Overflow/Backup Response Packet

| | |
|---|-------------------------|
| Response Instructions and Chain of Custody | Packet Envelope |
| Sanitary Sewer Overflow/Backup Response Flowchart | B-1 |
| Start Time Determination Form..... | B-2 |
| Volume Estimation Methods | |
| Eyeball | B-3a |
| Area/Volume | B-3b |
| Upstream Lateral Connections | B-3c |
| Sewer Overflow Report..... | B-4 |
| Lateral CCTV Report..... | B-5 |
| Bubbled Toilets Letter | B-6 |
| First Responder Form | B-7 |
| Claims Submittal Checklist..... | B-8 |
| Collection System Failure Analysis Form | B-9 |
| Customer Service Packet | |
| Instructions | Envelope |
| Customer Information..... | CS-1 |
| Sewer Spill Reference Guide | Pamphlet |
| Regulatory Notifications Packet | See Contents List Above |
| Public Posting | n/a |
| Door Hanger | n/a |

Appendix C: Field Sampling Kit

| | |
|--|-----|
| Procedures for Sampling Receiving Waters and Posting | |
| Warnings after a Sewage Spill | C-1 |
| Sample Collection Chain of Custody Record..... | C-2 |

Appendix D: Contractor Orientation

Sanitary Sewer Overflow Emergency Response Plan

(ref. SWRCB Order No. 2006-0003-DWQ Element VI)

1 Purpose

The purpose of the City of Davis's Overflow Emergency Response Plan (OERP) is to support an orderly and effective response to Sanitary Sewer Overflows (SSOs). The OERP provides guidelines for City personnel to follow in responding to, cleaning up, and reporting SSOs that may occur within the City's service area. This OERP satisfies the SWRCB Statewide General Waste Discharge Requirements (GWDR), which require wastewater collection agencies to have an Overflow Emergency Response Plan.

2 Policy

The City's employees are required to report all wastewater overflows resulting from the City-owned/maintained sanitary sewer system found and to take the appropriate action to secure the wastewater overflow area, properly report to the appropriate regulatory agencies, relieve the cause of the overflow, and ensure that the affected area is cleaned as soon as possible to minimize health hazards to the public and protect the environment. The City's goal is to respond to sewer system overflows as soon as possible following notification. The City will follow reporting procedures in regards to sewer spills as set forth by the Central Valley Regional Water Quality Control Board (CVRWQCB) and the California State Water Resources Control Board (SWRCB).

3 Goals

The City's goals with respect to responding to SSOs are:

- Work safely;
- Respond quickly to minimize the volume of the SSO;
- Eliminate the cause of the SSO;
- Prevent sewage system overflows or leaks from entering the storm drain system or receiving waters to the maximum extent practicable;
- Contain the spilled wastewater to the extent feasible;
- Minimize public contact with the spilled wastewater;
- Mitigate the impact of the SSO;
- Meet the regulatory reporting requirements;
- Evaluate the causes of failure related to certain SSOs; and
- Revise response procedures resulting from the debrief and failure analysis of SSOs.

4 SSO Detection and Notification

ref. SWRCB Order No. 2006-0003-DWQ VI(a)

The processes that are employed to notify the City of the occurrence of an SSO include: observation by the public, receipt of an alarm, or observation by City staff during the normal course of their work.

The City operates wastewater pump stations. In the event of any pump failure, the high level sensor activates the SCADA alarm system and the City is contacted. To prevent overflow, wastewater from the wet well can either be pumped into a vacuum truck for disposal to a nearby sanitary sewer maintenance hole, or bypassed around the station into the sanitary sewer system. Each pump station has an emergency response plan that can be followed in the event of a pump failure.

4.1 Public Observation

Public observation is the most common way that the City is notified of blockages and spills. Contact numbers and information for reporting sewer spills and backups are in the phone book and on the City's website www.cityofdavis.org. Customers can report sewer problems by telephone at (530) 757-5686 during business hours or (530) 758-3600 (Police Dispatch) after hours.

Normal Work Hours

When a report of a sewer spill or backup is made during normal work hours, the office staff takes the call and creates a Lucity Service Request and notifies the Collections Crew or the Field Crew.

After Hours

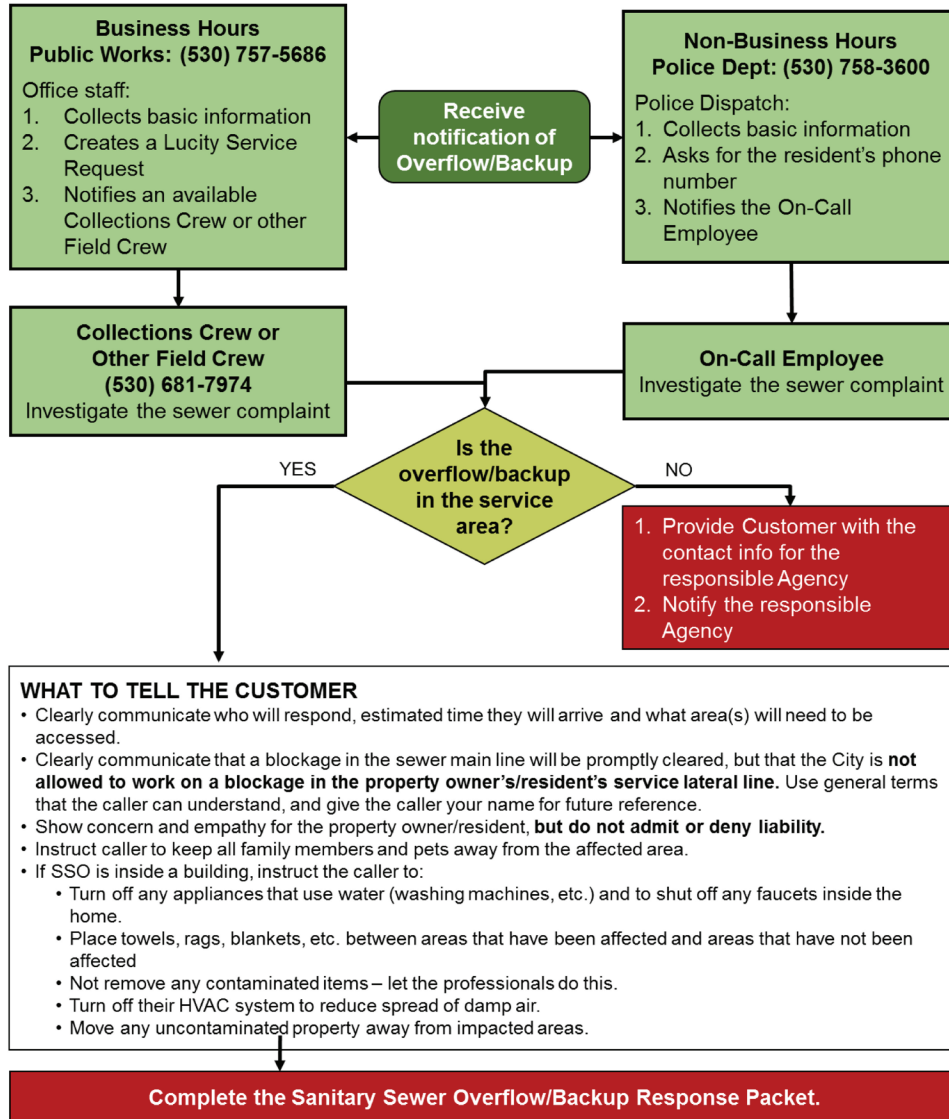
After hours callers will receive a voice message instructing them to call Police Dispatch at (530) 758-3600. Police Dispatch will notify the On Call Standby Employee.

When calls are received, either during normal work hours or after hours, the individual receiving the call will collect the following information:

- Time and date of call
- Specific location of potential problem
- Nature of call
- In case of SSO, estimated start time of overflow
- Caller's name, address and telephone number
- Caller's observation (e.g., odor, duration, location on property, known impacts, indication if surface water impacted, appearance at cleanout or maintenance hole)
- Other relevant information

The following (Figure 4.1) is an overview of receiving a sewage overflow or backup report:

Figure 4.1 Overview of Receiving a Sewage Overflow or Backup Report Procedure



Adapted with permission from: DKF Solutions Group, LLC

4.2 City Staff Observation

City staff conducts periodic inspections of its sewer system facilities as part of their routine activities. Any problems noted with the sewer system facilities are reported to appropriate City staff that, in turn, responds to emergency situations. Work orders are issued to correct non-emergency conditions.

4.3 Contractor Observation

The following procedures are to be followed in the event that a contractor/plumber causes or witnesses a Sanitary Sewer Overflow. If the contractor/plumber causes or witnesses an SSO they should:

1. Immediately notify the City: Business hours (530) 757-5686, After hours (530) 758-3600.
2. Protect storm drains
3. Protect the public
4. Provide Information to the City Collections Crew or other Field Crew such as start time, appearance point, suspected cause, weather conditions, etc.
5. Direct ALL media and public relations requests to the Wastewater Division Manager, at (530) 747-8283, who will provide the media with all relevant information.

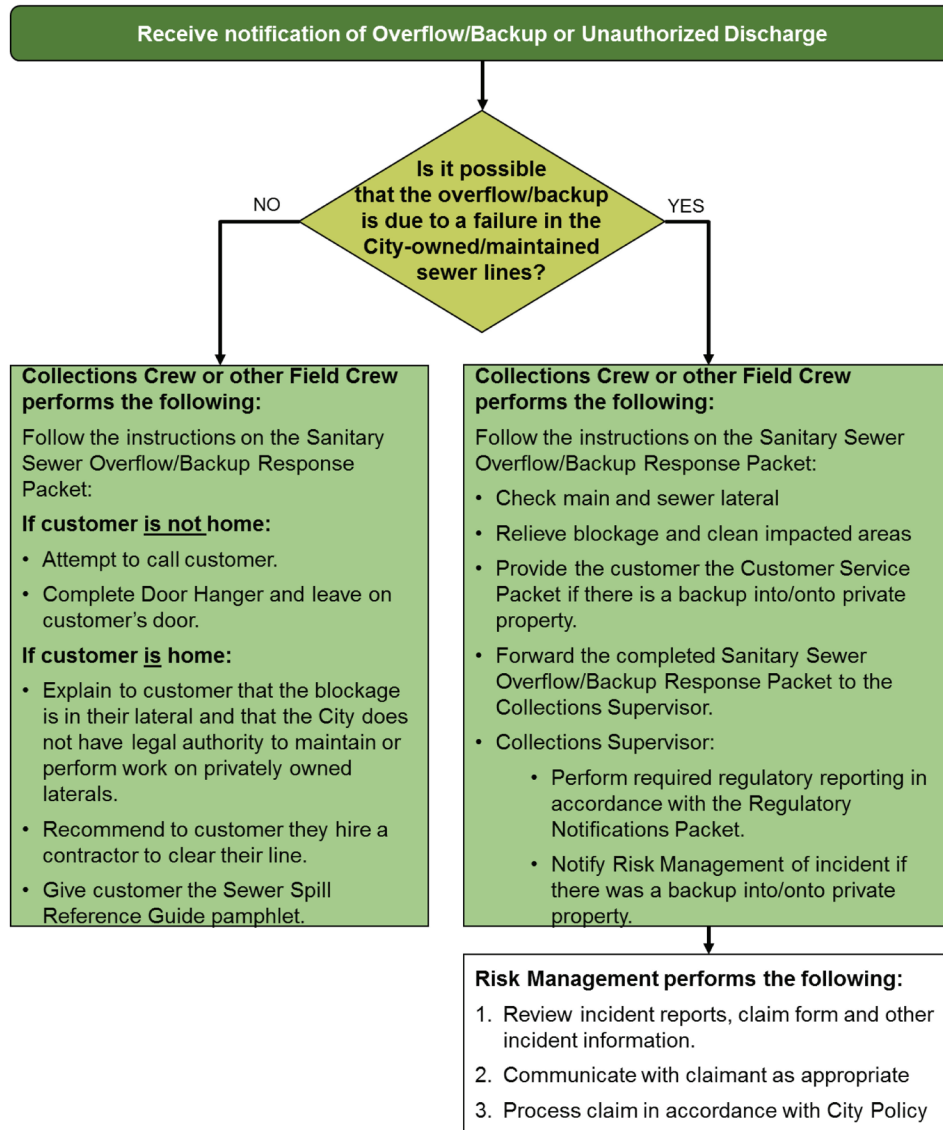
5 SSO Response Procedures

ref. SWRCB Order No. 2006-0003-DWQ Element 6(b)

5.1 Sewer Overflow/Backup Response Summary

The City will respond to SSOs as soon as feasible following notification of an overflow/backup or unauthorized discharge. The following (Figure 5.1) is an overview of the response activities.

Figure 5.1 Overview of SSO/Backup Response



Adapted with permission from: DKF Solutions Group, LLC

5.2 First Responder Priorities

The first responder's priorities are:

- To follow safe work practices.
- To respond promptly with the appropriate and necessary equipment and call the Hydro-Cleaning Crew or other crew.
- To contain the spill wherever feasible.
- To restore the flow as soon as practicable.
- To minimize public access to and/or contact with the spilled sewage.
- To promptly notify the Collections Supervisor in event of major SSO.
- To return the spilled sewage to the sewer system.
- To restore the area to its original condition (or as close as possible).
- To photograph or video field conditions of the SSO.

5.3 Safety

The first responder is responsible for following safety procedures at all times. Special safety precautions must be observed when performing sewer work. There may be times when City personnel responding to a sewer system event are not familiar with potential safety hazards peculiar to sewer work. In such cases it is appropriate to take the time to discuss safety issues, consider the order of work, and check safety equipment before starting the job.

5.4 Initial Response

The first responder must respond to the reporting party/problem site and visually check for potential sewer stoppages or overflows.

The first responder will:

- Note arrival time at the site of the overflow/backup.
- Verify the existence of a sewer system spill or backup.
- Determine if the overflow or blockage is from a City-owned/maintained or private sewer.
- Identify and assess the affected area and extent of spill.
- Contact additional collections personnel for SSO response.
- Contact caller if time permits.
- If the spill is large or in a sensitive area, document conditions upon arrival with photographs. Decide whether to proceed with clearing the blockage to restore the flow or to initiate containment measures. The guidance for this decision is:
 - Small spills (i.e., spills that are easily contained) – proceed with clearing the blockage.
 - Moderate or large spill where containment is anticipated to be simple – proceed with the containment measures.
 - Moderate or large spills where containment is anticipated to be difficult – proceed with clearing the blockage; however, whenever deemed necessary, call for additional assistance and implement containment measures.
- Take steps to contain the SSO. For detailed procedures refer to Appendix B: Sanitary Sewer Overflow/Backup Response Packet.

5.5 Initiate Spill Containment Measures

The first responder will attempt to contain as much of the spilled sewage as possible using the following steps:

- Determine the immediate destination of the overflowing sewage.
- Plug storm drains using air plugs, sandbags, and/or plastic mats to contain the spill, whenever appropriate. If spilled sewage has made contact with the storm drainage system, attempt to contain the spilled sewage by plugging downstream storm drainage facilities.
- Contain/direct the spilled sewage using dike/dam or sandbags.
- Pump around the blockage/pipe failure.

For detailed procedures refer to Appendix B: Sanitary Sewer Overflow/Backup Response Packet.

5.6 Restore Flow

Using the appropriate cleaning equipment, the Hydro Cleaning Crew will set up downstream of the blockage and hydro-clean upstream from a clear maintenance hole. Attempt to remove the blockage from the system and observe the flows to ensure that the blockage does not reoccur downstream. If the blockage cannot be cleared within a reasonable time from arrival, or sewer requires construction repairs to restore flow, then initiate containment and/or bypass pumping. If other assistance is required, immediately contact the Wastewater Division Manager. For detailed procedures refer to Appendix B: Sanitary Sewer Overflow/Backup Response Packet.

5.7 Equipment

This section provides a list of specialized equipment that may be used to support this Overflow Emergency Response Plan.

- *Closed Circuit Television (CCTV) Inspection Unit* – A CCTV Inspection Unit is required to determine the root cause for all SSOs from gravity sewers.
- *Camera* -- A digital camera is required to record the conditions upon arrival, during clean up, and upon departure.
- *Emergency Response Trucks* -- A utility body pickup truck, or open bed is required to store and transport the equipment needed to effectively respond to sewer emergencies. The equipment and tools will include containment and clean up materials.
- *Portable Generators, Portable Pumps, Piping, and Hoses* – Equipment used to bypass pump, divert, or power equipment to mitigate an SSO.
- *Combination Sewer Cleaning Trucks* -- Combination high velocity sewer cleaning trucks with vacuum tanks are required to clear blockages in gravity sewers, vacuum spilled sewage, and wash down the impacted area following the SSO event.
- Air plugs, sandbags and plastic mats
- Portable Lights

6 Recovery and Cleanup

ref. SWRCB Order No. 2006-0003-DWQ Element 6(e)

The recovery and cleanup phase begins immediately after the flow has been restored and the spilled sewage has been contained to the extent possible. The SSO recovery and cleanup procedures are:

6.1 Estimate the Volume of Spilled Sewage

Use the methods outlined in the Sanitary Sewer Overflow/Backup Response Packet (Appendix B) and/or the Field Guide to estimate the volume of the spilled sewage. Wherever possible, document the estimate using photos and/or video of the SSO site before and during the recovery operation.

6.2 Recovery of Spilled Sewage

Vacuum up and/or pump the spilled sewage and rinse water, and discharge it back into the sanitary sewer system.

6.3 Clean-up and Disinfection

Clean up and disinfection procedures will be implemented to reduce the potential for human health issues and adverse environmental impacts that are associated with an SSO event. The procedures described are for dry weather conditions and will be modified as required for wet weather conditions. Where cleanup is beyond the capabilities of the Field Crew, a cleanup contractor will be used.

Private Property

City crews are responsible for the cleanup when the property damage is minor in nature and is outside of private building dwellings, such as in front, side and backyards, easements, etc. In all other cases, affected property owners can call a water damage restoration contractor to complete the cleanup and restoration. If the overflow into property is the definite cause of City system failure, the property owner can call out a water damage restoration contractor to complete the cleanup and restoration. In both cases, property owners may obtain a City claim form from the Management Analyst.

Hard Surface Areas

Collect all signs of sewage solids and sewage-related material either by protected hand or with the use of rakes and brooms. Wash down the affected area with clean water and/or deozyme or similar non-toxic biodegradable surface disinfectant until the water runs clear. The flushing volume will be approximately three times the estimated volume of the spill. Take reasonable steps to contain and vacuum up the wastewater. Allow area to dry. Repeat the process if additional cleaning is required.

Landscaped and Unimproved Natural Vegetation

Collect all signs of sewage solids and sewage-related material either by protected hand or with the use of rakes and brooms. Wash down the affected area with clean water until the water runs clear. The flushing volume will be approximately three times the estimated volume of the spill. Either contain or vacuum up the wash water so that none is released. Allow the area to dry. Repeat the process if additional cleaning is required.

Natural Waterways

The Department of Fish and Wildlife will be notified by CalOES for SSOs greater than or equal to 1,000 gallons.

Wet Weather Modifications

Omit flushing and sampling during heavy storm events (i.e., sheet of rainwater across paved surfaces) with heavy runoff where flushing is not required and sampling would not provide meaningful results.

6.4 Public Notification

Signs will be posted and barricades put in place to keep vehicles and pedestrians away from contact with spilled sewage. The Collections Supervisor or the Wastewater Division Manager shall direct placement and language of public warnings that will be followed. Additionally, the Collections Supervisor will use their best judgment regarding supplemental sign placement in order to protect the public and local environment. Signs will not be removed until directed by County Environmental Health, the Collections Supervisor or designee.

Creeks, streams and beaches that have been contaminated as a result of an SSO will be posted at visible access locations until the risk of contamination has subsided to acceptable background bacteria levels. The area and warning signs, once posted, will be checked every day to ensure that they are still in place. Photographs of sign placement will be taken.

In the event that an overflow occurs at night, the location will be inspected first thing the following day. The field crew will look for any signs of sewage solids and sewage-related material that may warrant additional cleanup activities.

When contact with the local media is deemed necessary, the City Public Information Officer or the Wastewater Division Manager or their designee will provide the media with all relevant information.

7 Water Quality

ref. SWRCB Order No. 2006-0003-DWQ Element 6(f)

7.1 Waters of the State

Waters of the State (or waters of the United States) means any surface water, including saline waters, within the boundaries of California. In case of a sewage spill, catch basins, storm drains and retention basins are considered to be waters of the State unless the sewage is completely contained and returned to the sanitary sewer collection system and that portion of the storm drain is cleaned.

7.2 Water Quality Sampling and Testing

Water quality sampling and testing is required for Category 1 SSOs of 50,000 gallons or greater to determine the extent and impact of the SSO. The water quality sampling procedures must be implemented within 48 hours and include the following:

- The first responders will collect samples as soon as possible after the discovery and mitigation of the SSO event.
- The water quality samples will be collected from upstream of the spill, from the spill area, and downstream of the spill in flowing water (e.g. creeks). The water quality samples will be collected near the point of entry of the spilled sewage.
- The samples shall then be brought to the City of Davis Sewage Treatment Plant Laboratory for analysis.

7.3 Water Quality Monitoring Plan

The City Water Quality Monitoring Plan will be implemented immediately upon discovery of any Category 1 SSO of 50,000 gallons or more in order to assess impacts from SSOs to surface waters. The SSO Water Quality Monitoring Program will:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.)
3. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the City becoming aware of the SSO, require water quality sampling for ammonia and total and fecal coliform or other parameters as directed by the CVRWQCB Basin Plan.
6. Observe proper chain of custody procedures.

7.4 SSO Technical Report

The City will submit an LRO certified SSO Technical Report to the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to

surface waters. The Wastewater Division Manager will supervise the preparation of this report and will certify this report. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

Causes and Circumstances of the SSO:

- Complete and detailed explanation of how and when the SSO was discovered.
- Documented contact information from the original caller and any others interviewed at the site.
- Diagram showing the SSO failure point, appearance point(s), and final destination(s).
- Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
- Detailed description of the cause(s) of the SSO.
- Copies of original field crew records used to document the SSO.
- Historical maintenance records for the failure location.

City's Response to SSO:

- Chronological narrative description of all actions taken by the City to terminate the spill.
- Explanation of how the SSMP Overflow Emergency Response Plan was implemented to respond to and mitigate the SSO.
- Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

Water Quality Monitoring:

- Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- Detailed location map illustrating all water quality sampling points.

8 Sewer Backup Into/Onto Private Property Claims Handling Procedure

It is the procedure of the City that a claims form shall be offered to anyone wishing to file a claim. The following procedures will be observed for all sewer overflows/backups into/onto private property:

- Collections Crew or other Field Crew will offer a City claim form whenever it is possible that the sanitary sewer backup may have resulted from an apparent blockage in the City-owned sewer lines or whenever a City customer requests a claim form. The claim may later be rejected if subsequent investigations into the cause of the loss indicate the City was not at fault.
- It is the responsibility of the Field Crew to gather information regarding the incident and notify the Collections Supervisor or his/her designee.
- It is the responsibility of Risk Management to review all claims and to oversee the adjustment and administration of the claim to closure.

9 Notification, Reporting, Monitoring and Recordkeeping Requirements

ref. SWRCB Order No. 2006-0003-DWQ Element 6(c)

In accordance with the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS GWDRs) and the most recent Monitoring and Reporting Program (MRP), the City of Davis maintains records for each sanitary sewer overflow. Records include:

- Documentation of response steps and/or remedial actions
- Photographic evidence to document the extent of the SSO, field crew response operations, and site conditions after field crew SSO response operations have been completed. The date, time, location, and direction of photographs taken will be documented.

- Documentation of how any estimations of the volume of discharged and/or recovered volumes were calculated including all assumptions made.
- Documentation of emergency start time.
- All records required by the MRP.
- Electronic monitoring records relied upon in volume estimation.

Regulator required notifications are outlined in Section 9.1 on the following page.

9.1 Regulator Required Notifications

| Element | Requirement | Method |
|---------------------------------|--|--|
| Notification | Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, the City will notify the California Office of Emergency Services (CalOES) and obtain a notification control number. | Call Cal OES at: (800) 852-7550 |
| Reporting | <ul style="list-style-type: none"> Category 1 SSO: The City will submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. Category 2 SSO: The City will submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. Category 3 SSO: The City will submit certified report within 30 calendar days of the end of month in which SSO the occurred. SSO Technical Report: The City will submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. "No Spill" Certification: The City will certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. Collection System Questionnaire: The City will update and certify every 12 months | Enter data into the CIWQS Online SSO Database ¹ (http://ciwqs.waterboards.ca.gov/) certified by the Legally Responsible Official(s) ² . All information required by CIWQS will be captured in the Sanitary Sewer Overflow Report. Certified SSO reports may be updated by amending the report or adding an attachment to the SSO report within 120 calendar days after the SSO end date. After 120 days, the State SSO Program Manager must be contacted to request to amend an SSO report along with a justification for why the additional information was not available prior to the end of the 120 days. |
| Water Quality Monitoring | The City will conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. | Water quality results will be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. |
| Record Keeping | The City will maintain the following records: <ul style="list-style-type: none"> SSO event records. Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. Collection system telemetry records if relied upon to document and/or estimate SSO Volume. | Self-maintained records shall be available during inspections or upon request. |

¹ In the event that the CIWQS online SSO database is not available, the Collections Supervisor will notify SWRCB by phone in accordance with the time schedules identified above. In such an event, the City will submit the appropriate reports using the CIWQS online SSO database when the database becomes available. A copy of all documents that certify the submittal in fulfillment of this section shall be retained in the SSO file.

² The City always has at least one LRO. Any change in the LRO(s) including deactivation or a change to contact information, will be submitted to the SWRCB within 30 days of the change by calling (866) 792-4977 or emailing help@ciwqs.waterboards.ca.gov.

For reporting purposes, if one SSO event of whatever category results in multiple appearance points in a sewer system, a single SSO report is required in CIWQS that includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that cause the SSO, and descriptions of the locations of all other discharge points associated with the single SSO event.

9.2 Complaint Records

The City maintains records of all complaints received whether or not they result in sanitary sewer overflows. These complaint records include:

- Date, time, and method of notification
- Date and time the complainant or informant first noticed the SSO or occurrence related to the call
- Narrative description describing the complaint
- A statement from the complainant or informant, if they know, of whether or not the potential SSO may have reached waters of the state
- Name, address, and contact telephone number of the complainant or informant reporting the potential SSO (if not reported anonymously)
- Follow-up return contact information for each complaint received (if not reported anonymously)
- Final resolution of the complaint with the original complainant
- Work service request information used to document all feasible and remedial actions taken

All sewer service requests are entered into the Lucity Computerized Maintenance Management System (CMMS). If the service request requires work on the sewer or other City infrastructure, a work order is created. Once work is complete, the Work Order and the Service Request are closed. If the work does require City action, the Service Request is closed in Lucity.

All sewer service requests are logged on the Sewer/SSO Report by the responding field crew. If the service request turns out to not be sewer related, this information is captured on this form and the true nature of the service request identified.

The Collections Supervisor is responsible for maintaining separate files for each completed Sewer SSO Report for five years or as otherwise directed by the CVRWQCB or the SWRCB.

10 Post SSO Event Debriefing

ref. SWRCB Order No. 2006-0003-DWQ Element 6(d)

Every SSO event is an opportunity to evaluate the City response and reporting procedures. Each overflow event is unique, with its own elements and challenges including volume, cause, location, terrain, climate, and other parameters.

As soon as possible after Category 1 and Category 2 SSO events all of the participants, from the person who received the call to the last person to leave the site, will meet to review the procedures used and to discuss what worked and where improvements could be made in preventing or responding to and mitigating future SSO events. The results of the debriefing will be documented (including attendees, summary of discussions, action items identified and assignments and schedules for completion and tracked to ensure the action items are completed as scheduled.

11 Failure Analysis Investigation

ref. SWRCB Order No. 2006-0003-DWQ Element 6(d)

The objective of the failure analysis investigation is to determine the “root cause” of the SSO and to identify corrective action(s) needed that will reduce or eliminate future potential for the SSO to recur or for other SSOs to occur.

The investigation will include reviewing all relevant data to determine appropriate corrective action(s) for the line segment. The investigation will include:

- Reviewing and completing the Sanitary Sewer Overflow Report (in Appendix B) and any other documents related to the incident
- Reviewing the incident timeline and other documentation regarding the incident
- SSO start time documentation
- Reviewing communications with the reporting party and witness
- Reviewing volume estimate, volume recovered estimate, volume estimation assumptions and associated drawings and maps of the impacted area(s)
- Reviewing available photographs and video of the incident
- Interviewing staff that responded to the spill
- Reviewing past maintenance records and SCADA records if utilized.
- Reviewing past CCTV records,
- Conducting a CCTV inspection to determine the condition of all line segments immediately following the SSO and reviewing the video and logs,
- Reviewing any Fats, Oils, Roots and Grease (FROG) related information or results
- Post SSO debrief records
- Documented interviews with the public at the SSO location

The product of the failure analysis investigation will be the determination of the root cause and the identification and scheduling of the corrective actions. The Collection System Failure Analysis Form (in Appendix B) will be used to document the investigation.

12 SSO Response Training

ref. SWRCB Order No. 2006-0003-DWQ Element 6(d)

This section provides information on the training that is required to support this Overflow Emergency Response Plan.

12.1 Initial and Annual Refresher Training

All City personnel who may have a role in responding to, reporting, and/or mitigating a sewer system overflow will receive training on the contents of this OERP. All new employees will receive training before they are placed in a position where they may have to respond. Current employees will receive annual refresher training on this plan and the procedures to be followed. The City will document all training.

Affected employees will receive annual training on the following topics by knowledgeable trainers:

- The City's Overflow Emergency Response Plan and Sanitary Sewer Management Plan
- Sanitary Sewer Overflow Volume Estimation Techniques
- Researching and documenting Sanitary Sewer Overflow Start Times
- Impacted Surface Waters: Response Procedures
- State Water Resources Control Board Employee Knowledge Expectations
- Employee Core Competency Evaluations on Sanitary Sewer Operations
- Water Quality Sampling Plan

The City will verify that annual safety training requirements are current for each employee, and that employees are competent in the performance of all core competencies. This will be verified through electronic testing, interviews and observations. The City will address, through additional training/instruction, any identified gaps in required core competencies.

Through SWRCB Employee Knowledge Expectations training the employee will be able to answer the following:

1. Please briefly describe your name and job title.
2. Please describe for us approximately when you started in this field and how long you have worked for your agency.
3. Please expand on your current position duties and role in responding in the field to any SSO complaints.
4. Please describe your SOPs used to respond/mitigate SSOs when they occur.
5. Describe any training your agency provides or sends you to for conducting spill volume estimates.
6. We are interested in learning more about how your historical SSO response activities have worked in the field. We understand from discussions with management earlier that you use the OERP from the SSMP. Please elaborate on how you implement and utilize the procedures in the plan.
7. Historically, before any recent changes, can you please walk us through how you would typically receive and respond to any SSO complaints in the field?
8. Can you tell us who is responsible for estimating SSO volumes discharged? If it is you, please describe how you go about estimating the SSO volume that you record on the work order/service request forms?
9. What other information do you collect or record other than what is written on the work order form?
10. Describe if and when you ever talk with people that call in SSOs (either onsite or via telephone) to further check out when the SSO might have occurred based on what they or others know? If you do this, can you tell us where this information is recorded?
11. We understand you may be instructed to take pictures of some sewer spills/backups into structures. Other than these SSOs, when else would you typically take any pictures of an SSO?
12. Please walk us through anything else you'd like to add to help us better understand how your field crews respond and mitigate SSO complaints.

12.2 SSO Response Drills

Periodic training drills or field exercises will be held to ensure that employees are up to date on these procedures, equipment is in working order, and the required materials are readily available. The training drills will cover scenarios typically observed during sewer related emergencies (e.g. mainline blockage, mainline failure, and lateral blockage). The results and the observations during the drills will be recorded and corrective action items or procedures changes will be tracked to ensure completion and identified in the SSMP Change Log.

12.3 SSO Training Record Keeping

Records will be kept of all training that is provided in support of this plan. The records for all scheduled training courses and for each overflow emergency response training event and will include date, time, place, content, name of trainer(s), and names and titles of attendees.

12.4 Contractors Working On City Sewer Facilities

All construction contractors working on City sewer facilities will be required to develop a project-specific OERP, will provide project personnel with training regarding the content of the contractor's OERP and their role in the event of an SSO, and to follow that OERP in the event that they cause or observe an SSO. Emergency response procedures shall be discussed at project pre-construction meetings, regular project meetings and after any contractor involved incidents.

All service contractors will be provided, and required to observe contractor procedures. See Appendix D: Contractor Orientation.

13 Authority

- Health & Safety Code Sections 5410-5416
- CA Water Code Section 13271
- Fish & Wildlife Code Sections 5650-5656
- State Water Resources Control Board Order No. 2006-0003-DWQ
- State Water Resources Control Board Order 2013-009-DWQ effective September 9, 2013

14 References

- SWRCB Order No. 2006-DWQ
- SWRCB Order No. WQ 2013-0058-EXEC
- Sanitary Sewer Overflow and Backup Response Field Guide, 2014, DKF Solutions Group, LLC
- Appendix A: Regulatory Notifications Packet
- Appendix B: Sanitary Sewer Overflow/Backup Response Packet
- Appendix C: Field Sampling Kit
- Appendix D: Contractor Orientation

Appendix A
REGULATORY NOTIFICATIONS PACKET

City of Davis: Overflow Emergency Response Plan
Regulatory Notifications Packet

Instructions:

1. Receive call from office staff or Police Department reporting a Sanitary Sewer Overflow.
2. Open this packet.
3. Refer to the Regulatory Reporting Guide (A-1) for instructions.
4. Use the SSO Reporting Checklist for the appropriate category of spill (A-2a or A-2b) to document that all notifications are made according to the reporting schedule.

Contents:

| <u>Form</u> | <u>Page Number</u> |
|---|--------------------|
| Regulatory Reporting Guide | A-1 |
| Reporting Checklist: Category 1 | -2a |
| Reporting Checklist: Categories 2 and 3 | -2b |

| | |
|---|---------------|
| City of Davis: Overflow Emergency Response Plan | A-1 |
| Regulatory Notifications Packet Regulatory Reporting Guide | Side A |

| Reporting Instructions | | | | |
|---|---|---|---|----------------------------|
| Deadline | See reverse side for contact information and definitions of the categories of spills of untreated or partially treated wastewater from publically owned sanitary sewer system | | | Spill from Private Lateral |
| | Category 1 | Category 2 | Category 3 | |
| 2 hours after awareness of SSO | If the SSO is greater than or equal to 1,000 gallons, call CalOES at (800) 852-7550 | - | - | - |
| 48 Hours after awareness of SSO | If 50,000 gal or more will likely reach receiving waters, begin water quality sampling and initiate impact assessment | - | - | - |
| 3 Days after awareness of SSO | Submit Draft Spill Report in the CIWQS* database | Submit Draft Spill Report in the CIWQS* database | - | - |
| 15 Days after response conclusion | Certify Spill Report in CIWQS*. Update as needed until 120 days after SSO end time | Certify Spill Report in the CIWQS* database. Update as needed until 120 days after SSO end time | - | - |
| 30 Days after end of calendar month in which SSO occurred | - | - | Certify Spill Report in the CIWQS* database. Update as needed until 120 days after SSO end time | - |
| 45 days after SSO end date | If 50,000 gal or more were not recovered, submit SSO Technical Report using CIWQS* | - | - | - |

* In the event that the CIWQS online SSO database is not available, notify the State Water Resources Control Board (SWRCB) by phone or email until the CIWQS online SSO database becomes available: (See contact information on Side B)

Note: For reporting purposes, if one SSO event results in multiple appearance points, complete one SSO report in the CIWQS SSO Online Database, and report the location of the SSO failure point, blockage or location of the flow condition that caused the SSO, in the CIWQS SSO Online Database, including all the discharge points associated with the SSO event.

| | |
|---|---------------|
| City of Davis: Overflow Emergency Response Plan | A-1 |
| Regulatory Notifications Packet Regulatory Reporting Guide | Side B |

Contact Information

| Contact | Telephone/Fax/Email |
|--|--|
| City Risk Management | (530) 757-5644 |
| CalOES | (800) 852-7550 |
| Yolo County Environmental Health Division | (530) 666-8646 |
| Central Valley Regional Water Quality Control Board (CVRWQCB): | Telephone: (916) 464-3291 Fax: (916) 464-4645 |
| State Water Resources Control Board (SWRCB): | Gil Vazquez, Water Resources Control Engineer (916) 322-1400 Gil.Vasquez@waterboards.ca.gov |

Authorized Personnel

The following individuals are the City’s Legally Responsible Officials (LROs) and are authorized to perform regulatory reporting and to electronically sign and certify SSO reports in the CIWQS online reporting database.

| Contact Name | Title | Telephone |
|----------------|---------------------------------|----------------|
| John Alexander | Wastewater Division Manager | (530) 747-8283 |
| Stan Gryczko | Assistant Public Works Director | (530) 757-8292 |

Definitions of SSO Categories

The response crew will complete the SSO Report form in the SSO Packet to document how the category was determined.

| Category | Definition |
|--------------------|---|
| Category 1: | Discharge of untreated or partially treated wastewater of any volume resulting from a sanitary sewer system failure or flow condition that either: <ul style="list-style-type: none"> Reaches surface water and/or drainage channel tributary to a surface water; or Reached a Municipal Separate Storm Sewer System (MS4) and was not fully captured and returned to the sanitary sewer system or otherwise captured and disposed of properly. |
| Category 2: | Discharge of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from a sanitary sewer system failure or flow condition that either: <ul style="list-style-type: none"> Does not reach surface water, a drainage channel, or an MS4, or The entire SSO discharged to the storm drain system was fully recovered and disposed of properly. |
| Category 3: | All other discharges of untreated or partially treated wastewater resulting from a sanitary sewer system failure or flow condition |

| | |
|---|-------------|
| City of Davis: Overflow Emergency Response Plan | A-2a |
| Regulatory Notifications Packet Category 1 SSO Reporting Checklist | |

Use this Checklist for Category 1 SSOs only

STEP 1: Receive call from crew.

STEP 2: 2-hour Notification

If the SSO is greater than or equal to 1,000 gallons, notify CalOES within 2 hours of the time the City was notified of the SSO.

Notify CalOES at (800) 852-7550:

- o Date Called: _____
- o Time called: _____ : _____ AM PM
- o CalOES Control number: _____
- o City personnel who called CalOES: *Name* _____
Title _____
- o Individual they spoke to at CalOES: _____

STEP 3: Within 2 hours after awareness of SSO

- If SSO impacts private property that may be due to a failure in the City sewer and/or if the City believes a claim for damages may be submitted against the City notify Risk Management.

STEP 4: Within 48 hours after awareness of SSO

- Only if 50,000 gallons or more was not recovered, implement Water Quality Monitoring Plan.

STEP 5: Within 3 Days after awareness of SSO

- Submit a Draft Spill Report using the CIWQS online reporting database.

STEP 6: Within 15 Days after response conclusion

- LRO must certify the Spill Report using the CIWQS online reporting database. Amendments to the Spill Report may be made for up to 120 days following the conclusion of the SSO Response.

STEP 7: Within 45 Days after SSO end date

- Within 45 days after the SSO end date, submit an SSO Technical Report using the CIWQS online reporting database only if 50,000 gallons or more was spilled to surface waters.

This form completed by: _____
Name *Title* *Date*

| | |
|---|-------------|
| City of Davis: Overflow Emergency Response Plan | A-2b |
| Regulatory Notifications Packet Category 2 & 3 SSO Reporting Checklist | |

Use this Checklist for Category 2 and 3 SSOs only

STEP 1: Receive call from crew.

STEP 2: Within 2 hours after awareness of SSO

- If SSO impacts private property that may be due to a failure in the City sewer and/or if the City believes a claim for damages may be submitted against the City notify Risk Management.

STEP 3: Submit Draft Spill Report (Category 2 only)

- Submit a Draft Spill Report using the CIWQS online reporting database within 3 days after awareness of Category 2 SSO.

STEP 4: Certify Spill Report

- Certify the Spill Report using the CIWQS online reporting database:
 - Category 2 SSO: Within 15 days after the conclusion of the response
 - Category 3 SSO: Within 30 days after the end of the calendar month in which the SSO occurred
- Updates to the Spill Report may be made for up to 120 days following the conclusion of the SSO Response.

This form completed by: _____
Name *Title* *Date*

Appendix B

SANITARY SEWER OVERFLOW/BACKUP RESPONSE PACKET

City of Davis: Overflow Emergency Response Plan

Sanitary Sewer Overflow/Backup Response Packet

Table of Contents

| <u>Form</u> | <u>Form Number</u> |
|---|---------------------------|
| Response Instructions and Chain of Custody | Packet Envelope |
| Sanitary Sewer Overflow/Backup Response Flowchart | B-1 |
| Start Time Determination Form | B-2 |
| Volume Estimation Methods | |
| Eyeball Estimation | B-3a |
| Area/Volume Estimation | B-3b |
| Upstream Lateral Connections..... | B-3c |
| Manhole Overflow Flowrate | B-3d |
| Sewer Overflow Report | B-4 |
| Lateral CCTV Report..... | B-5 |
| Bubbled Toilets Letter | B-6 |
| First Responder Form | B-7 |
| Claims Submittal Checklist..... | B-8 |
| Collection System Failure Analysis Form | B-9 |
| Customer Service Packet | |
| Instructions | envelope |
| Customer Information (English) | CS-1 English |
| Customer Information (Spanish) | CS-1 Spanish |
| Sewer Spill Reference Guide..... | pamphlet |
| Regulatory Notifications Packet | See contents list above |
| Public Posting | n/a |
| Door Hanger..... | n/a |

Sanitary Sewer Overflow/Backup Response Packet.

- ❑ **If this is a Category 1 SSO greater than or equal to 1,000 gallons immediately** contact CalOES at (800) 852-7550 to make the 2-hour notification.
- ❑ **If there is a backup into/onto private property AND possibly due to a problem in the public sewer,** notify Risk Management at (530) 757-5644.
- ❑ **For any media requests,** contact the Wastewater Division Manager at (530) 747-8283.

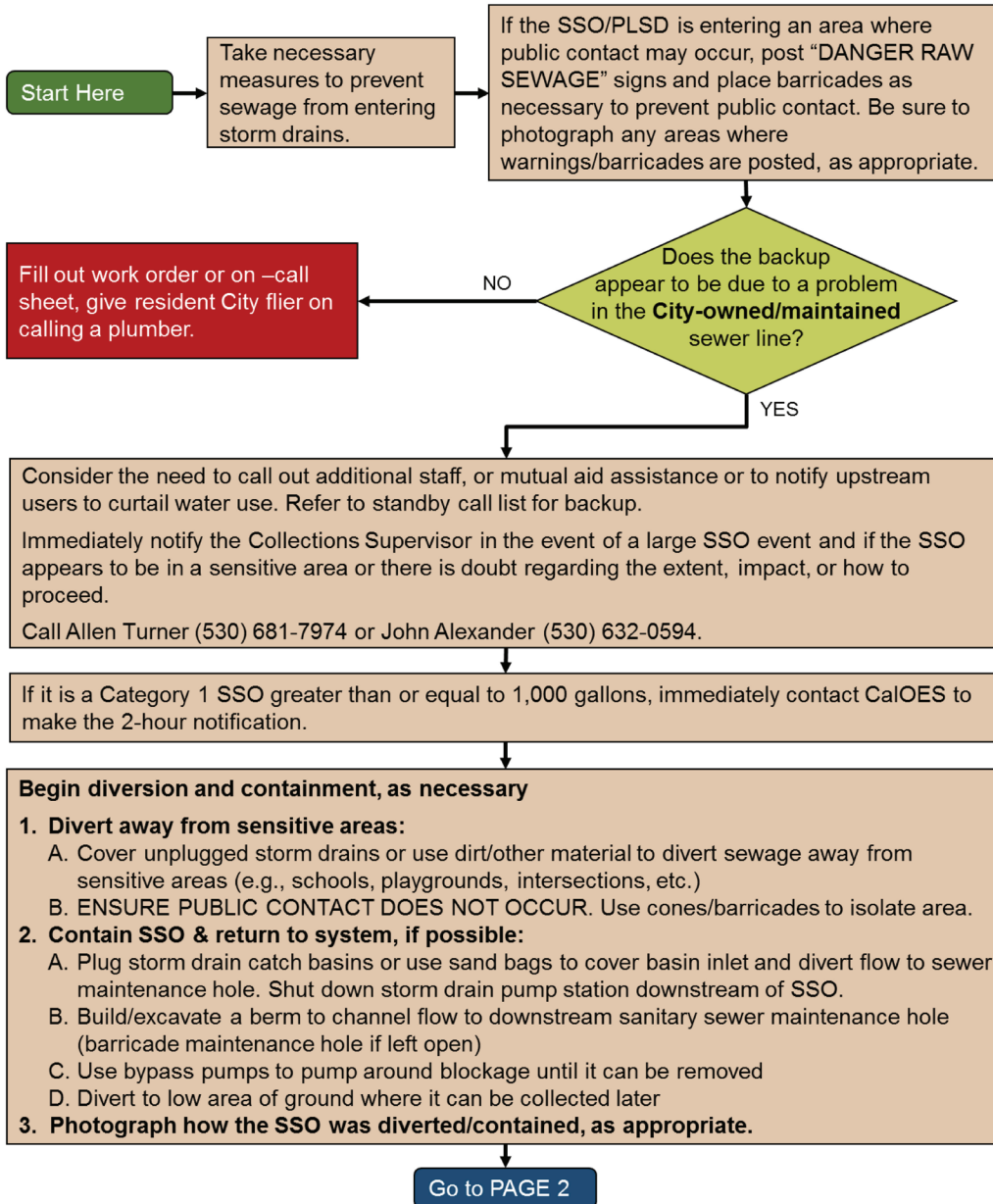
Check here if you believe that fats, roots, oil, and grease (FROG) caused/contributed to the SSO:

| | |
|--|--|
| <p>Collection Crew or other Field Crew:</p> <ul style="list-style-type: none"> ❑ Follow the instructions on the Sanitary Sewer Overflow/Backup Response Flowchart. Note: If there is a backup and multiple dwelling units are affected, use one packet per unit and check here: <input type="checkbox"/> ❑ If indicated on the flowchart, give the customer the Bubbled Toilets Letter and/or the Customer Service Packet and have them initial here: <i>Customer acknowledgement of receipt of Bubbled Toilets Letter</i> _____ <i>Customer acknowledgement of receipt of Customer Service Packet</i> _____ ❑ Place completed forms in this envelope, complete the Chain of Custody record (right) and forward this packet to the Collections Supervisor. | <p>Chain of Custody</p> <p>Print Name: _____</p> <p>Initial: _____</p> <p>Date: _____</p> <p>Time: _____</p> |
|--|--|

| | |
|--|--|
| <p>Collections Supervisor:</p> <ul style="list-style-type: none"> ❑ Follow the instructions on the bottom of the Sanitary Sewer Overflow/Backup Response Flowchart ❑ Complete the Regulatory Notifications Packet. ❑ Complete the Chain of Custody Record (right). ❑ If there is a backup: <ul style="list-style-type: none"> ❑ Complete the Claims Submittal Checklist. ❑ Forward this completed packet to Risk Management. ❑ If no backup, file this completed packet in accordance with City Policy. | <p>Chain of Custody</p> <p>Print Name: _____</p> <p>Initial: _____</p> <p>Date: _____</p> <p>Time: _____</p> |
|--|--|

Risk Management: Refer to the Claims Submittal Checklist.

| | |
|--|---------------|
| City of Davis: Overflow Emergency Response Plan | B-1 |
| Sanitary Sewer Overflow/Backup Response Flowchart | Page 1 |

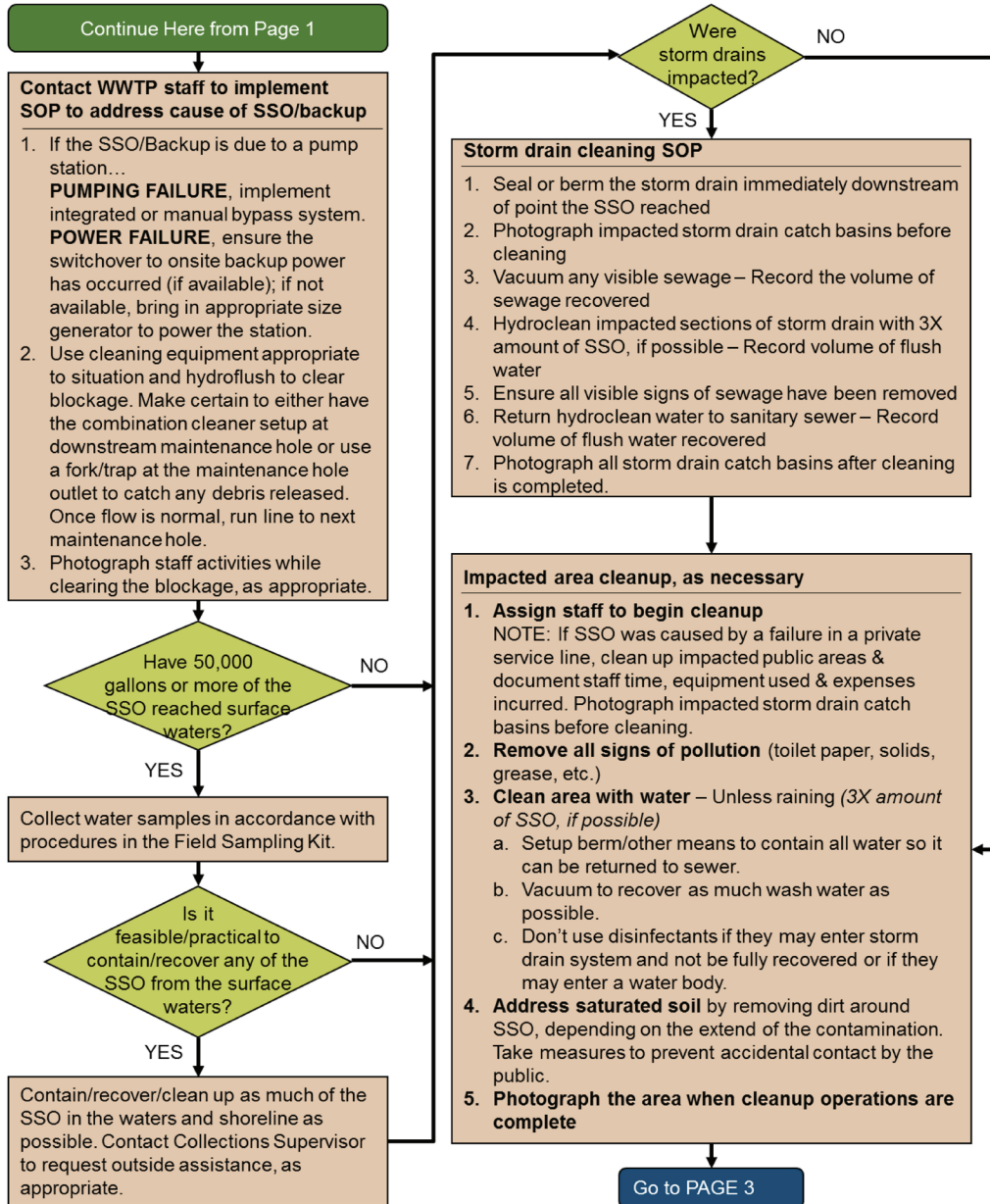


Adapted with permission from: DKF Solutions Group, LLC

City of Davis: Overflow Emergency Response Plan

B-1
Page 2

Sanitary Sewer Overflow/Backup Response Flowchart

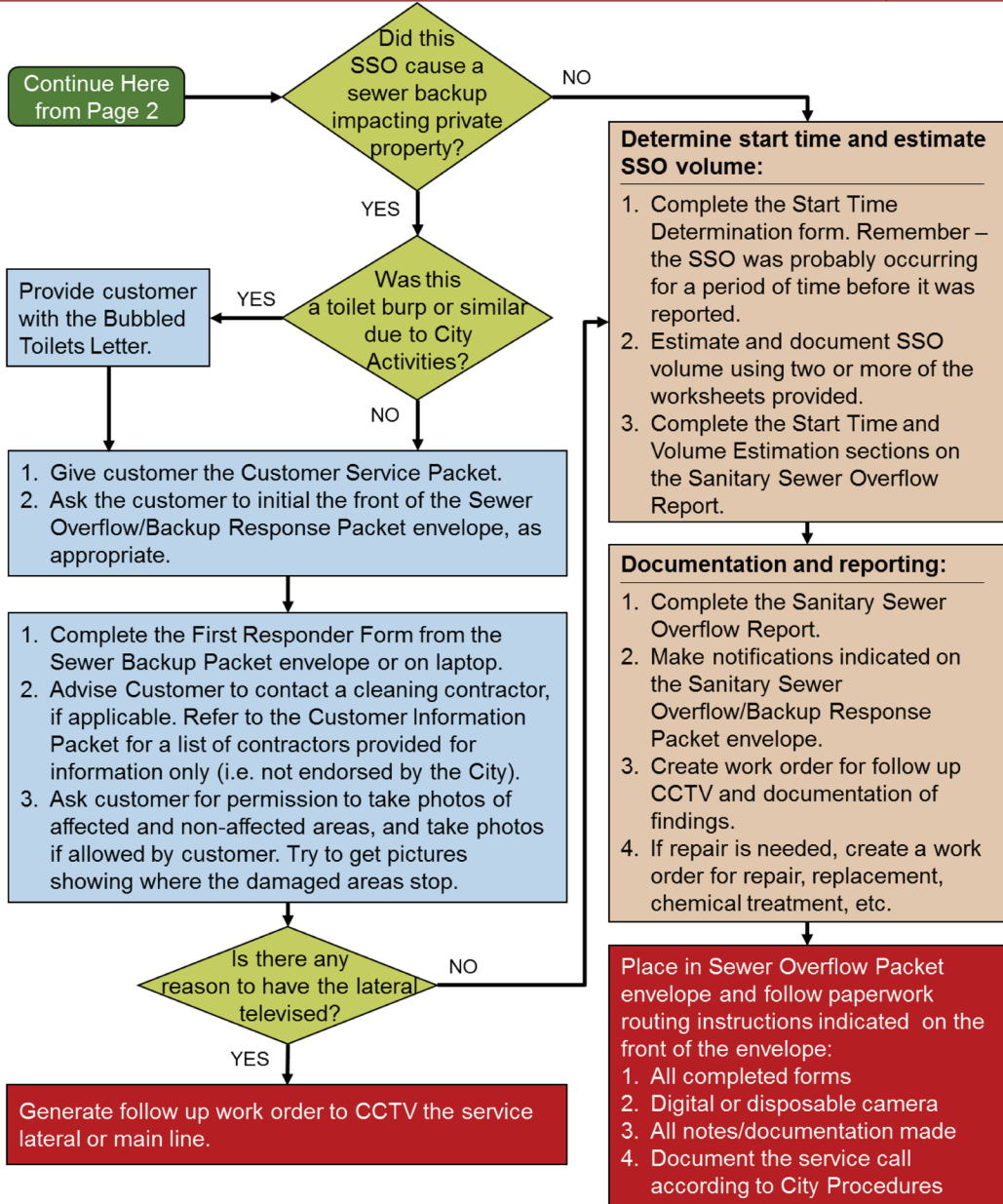


Adapted with permission from: DKF Solutions Group, LLC

City of Davis: Overflow Emergency Response Plan

B-1
Page 3

Sanitary Sewer Overflow/Backup Response Flowchart



Adapted with permission from: DKF Solutions Group, LLC

| | |
|---|-----|
| City of Davis: Overflow Emergency Response Plan | B-2 |
| Sanitary Sewer Overflow/Backup Response Packet Start Time Determination Form | |

SSO Start Date: _____ Location: _____

Accurate start time determination is an essential part of SSO volume estimation. Depending on the flow rate, being even one minute off can have a huge impact on the volume estimation. Be as precise as possible. Do not round to quarter hour increments. Start time must be based on all available information (interviews with neighbors, emergency responders, etc.)

What time was the City notified of the SSO? _____ AM PM

Who notified the City? _____

Did they indicate what time they noticed the SSO? YES NO If yes, what time? _____ AM PM

Who at the City received the notification? _____

What time did the crew arrive at the site of the SSO? _____ AM PM

Who was interviewed regarding the start time of the SSO? Include their name, contact information, and the statement they provided:

| Name | Contact Information | Statement |
|-------|---------------------|-----------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Describe in detail how you determined the start time for this particular SSO:

SSO Start Date: _____ SSO Start Time: _____ AM PM

SSO End Date: _____ SSO End Time: _____ AM PM

SSO Duration: _____ **minutes**

This form completed by:

Name: _____ Signature: _____

Job Title: _____ Date: _____

| | |
|--|------|
| City of Davis: Overflow Emergency Response Plan | B-3a |
| Sanitary Sewer Overflow/Backup Response Packet Volume Estimation: Eyeball Estimation Method | |

Use this method only for small SSOs of less than 200 gallons.

SSO Date: _____ Location: _____

- STEP 1: Position yourself so that you have a vantage point where you can see the entire SSO.
- STEP 2: Imagine one or more buckets or barrels of water tipped over. Depending on the size of the SSO, select a bucket or barrel size as a frame of reference. It may be necessary to use more than one bucket/barrel size.
- STEP 3: Estimate how many of each size bucket or barrel it would take to make an equivalent spill. Enter those numbers in Column A of the row in the table below that corresponds to the bucket/barrel sizes you are using as a frame of reference.
- STEP 4: Multiply the number in Column A by the multiplier in Column B. Enter the result in Column C.

| | A | B | C |
|------------------------------------|------------------------|-----------------|--------------------------------|
| Size of bucket(s) or barrel(s) | How many of this size? | Multiplier | Estimated SSO Volume (gallons) |
| 1 gallon water jug | | x 1 gallons | |
| 5 gallon bucket | | x 5 gallons | |
| 32 gallon trash can | | x 32 gallons | |
| 55 gallon drum | | x 55 gallons | |
| Other: _____ gallons | | x _____ gallons | |
| Estimated Total SSO Volume: | | | |

STEP 5: Is rainfall a factor in the SSO? Yes No
 If yes, what volume of the observed spill volume do you estimate is rainfall? _____ gallons
 If yes, describe how you determined the amount of rainfall in the observed spill?

STEP 6: Calculate the estimated SSO volume by subtracting the rainfall from the SSO volume:
 _____ gallons - _____ gallons = _____ gallons
 Estimated SSO Volume Rainfall **Total Estimated SSO Volume**

Do you believe that this method has estimated the entire SSO? Yes No
 If no, you MUST use additional methods to estimate the entire SSO. If yes, it is advisable to use additional methods to support the estimation. Explain why you believe this method has/has not estimated the entire SSO:

This worksheet completed by:
 Name: _____ Signature: _____
 Job Title: _____ Date: _____

| | |
|--|--------|
| City of Davis: Overflow Emergency Response Plan | B-3b |
| Sanitary Sewer Overflow/Backup Response Packet Volume Estimation: Area/Volume Estimation Method | Page 1 |

Note: Refer to form B-4b Page 3 for computation formulas and guides

SSO Date: _____ Location: _____

STEP 1: Describe spill area surface: Asphalt Concrete Dirt Landscape Inside Building
Other: _____

STEP 2: Draw/sketch the outline (footprint) of the spill. Then break the footprint down into recognizable shapes. Refer to the example on form B-4b Page 3.

STEP 3: Calculate the area of the footprint by completing the table below for each shape in Step 2. If two shapes overlap, select one of the two shapes and estimate the percentage of that shape that does not overlap. Enter that percentage in the % Not Overlapping column. This will ensure that the overlap area is only counted once. Refer to the example on form B-4b Page 3.

| Rectangles | Length | X | Width | X | % Not Overlapping* | = | Area |
|------------|--------|---|-------|---|--------------------|---|-----------------|
| | ft | X | ft | X | % | = | ft ² |
| | ft | X | ft | X | % | = | ft ² |
| | ft | X | ft | X | % | = | ft ² |

| Triangles | Base | X | Height | Multiplier | X | % Not Overlapping* | = | Area |
|-----------|------|---|--------|------------|---|--------------------|---|-----------------|
| | ft | X | ft | ÷ 2 | X | % | = | ft ² |
| | ft | X | ft | ÷ 2 | X | % | = | ft ² |
| | ft | X | ft | ÷ 2 | X | % | = | ft ² |

| Circles | π | X | Radius | X | Radius | X | % Not Overlapping* | = | Area |
|---------|------|---|--------|---|--------|---|--------------------|---|-----------------|
| | 3.14 | X | ft | X | ft | X | % | = | ft ² |
| | 3.14 | X | ft | X | ft | X | % | = | ft ² |
| | 3.14 | X | ft | X | ft | X | % | = | ft ² |

Total Spill Area (sum of all three tables above): _____ ft²

| | |
|--|--------|
| City of Davis: Overflow Emergency Response Plan | B-3b |
| Sanitary Sewer Overflow/Backup Response Packet Volume Estimation: Area/Volume Estimation Method | Page 2 |

STEP 4: Calculate the volume of the spill that **was NOT absorbed** into the ground. If the entire spill was absorbed, skip to Step 5.

- a. If spill is of varying depths, take several measurements at different depths and find the average.

$$\frac{\text{inches}}{\text{sum of measurements}} \div \frac{\text{# of measurements}}{\text{# of measurements}} = \frac{\text{inches}}{\text{average depth in inches}} \div 12 = \frac{\text{feet}}{\text{average depth in feet of ponded sewage}}$$

- b. Calculate spill volume of ponded sewage in cubic feet by multiplying the Total Spill Area in Step 3 by the average depth calculated in Step 4a. Convert from cubic feet to gallons by multiplying by 7.48.

$$\frac{\text{ft}^2}{\text{spill area (Step 3)}} \times \frac{\text{ft}}{\text{average depth (Step 4a)}} = \frac{\text{ft}^3}{\text{spill volume in cubic feet}} \times 7.48 \text{ gal} = \frac{\text{gallons}}{\text{estimated volume of ponded sewage}}$$

STEP 5: Calculate the volume of the spill that **was absorbed** into the ground. If only a wet stain is observed, use the guidelines on B-4b Page 3 for the average depth. When estimating the volume that was absorbed, take into consideration:

- How long the sewage has been sitting
- The air temperature on the day of the SSO
- Soil type for the area (e.g., hard-packed clay vs. loose or gravelly soil)

When estimating the volume of the spill that was absorbed into the ground, it is also advisable to dig down far enough to reach dry soil and take the depth of the wet soil into consideration.

Estimated volume that was absorbed into the soil: _____ gallons

Explain how this estimation was determined:

STEP 6: Add the volume not absorbed (Step 4) plus the volume absorbed (Step 5) to get the total estimated volume:

$$\frac{\text{gallons}}{\text{volume not absorbed}} + \frac{\text{gallons}}{\text{volume absorbed}} = \frac{\text{gallons}}{\text{Total Estimated Spill Volume}}$$

Do you believe that this method has estimated the entire SSO? Yes No

If no, you MUST use additional methods to estimate the entire SSO. If yes, it is advisable to use additional methods to support the estimation. Explain why you believe this method has/has not estimated the entire SSO:

This worksheet completed by:

Name: _____ Signature: _____
Job Title: _____ Date: _____

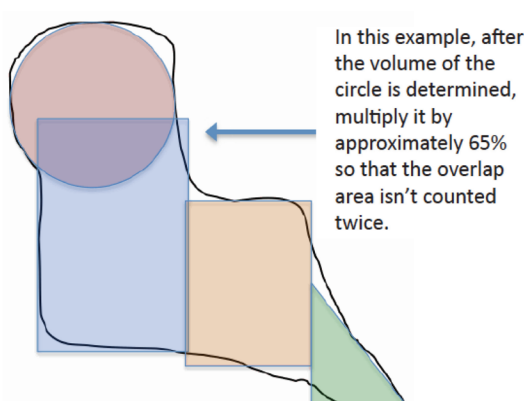
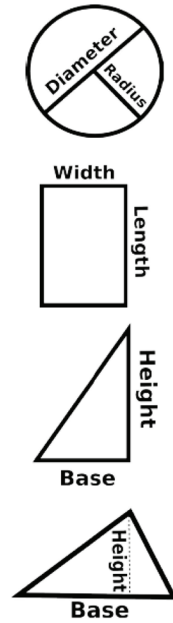
| | |
|--|--------|
| City of Davis: Overflow Emergency Response Plan | B-3b |
| Sanitary Sewer Overflow/Backup Response Packet Volume Estimation: Area/Volume Estimation Method | Page 3 |

Miscellaneous Computations

| | |
|---|--|
| To convert inches to feet | Divide the inches by 12 or use the chart on the bottom right of this page. |
| Volume of one cubic foot | 7.48 gallons of water |
| Area: Two-dimensional measurement represented in square feet | Square/rectangle: Area = Length x Width Circle: Area = πr^2 (where $\pi \approx 3.14$ and $r = \text{radius} = \frac{1}{2} \text{ diameter}$) Triangle: Area = $\frac{1}{2} (\text{Base} \times \text{Height})$ |
| Volume: Three-dimensional measurement represented in cubic feet | Rectangle/square footprint: Volume = Length x Width x Depth Circle footprint (cylinder): Volume = $\pi r^2 \times \text{Depth}$ (where $\pi \approx 3.14$ and $r = \text{radius} = \frac{1}{2} \text{ diameter}$) Triangle footprint: Volume = $\frac{1}{2} (\text{Base} \times \text{Height}) \times \text{Depth}$ |
| Depth: Contained or "Ponded" sewage | Measure actual depth of standing sewage whenever possible. When depth varies, measure several representative sample points and determine the average. Add the depth of the sample points and then divide that total by the number of sample points. If the depth is not measurable because it is only a wet stain, consider using the following estimated depths: <ul style="list-style-type: none"> • Depth of a wet stain on concrete surface: 0.0026' (1/32") • Depth of a wet stain on asphalt surface: 0.0013' (1/64") |

Example of how to draw/sketch the outline (footprint) of the spill for Step 2:

1. Sketch the outline of the spill (black line).
2. Break the sketch down into recognizable shapes (circles, squares, etc.) as well as you can.

| Convert Inches to Feet | |
|------------------------|-------|
| Inches | Feet |
| 1/8" | 0.01' |
| 1/4" | 0.02' |
| 3/8" | 0.01' |
| 1/2" | 0.04' |
| 5/8" | 0.05' |
| 3/4" | 0.06' |
| 7/8" | 0.07' |
| 1" | 0.08' |
| 2" | 0.17' |
| 3" | 0.25' |
| 4" | 0.33' |
| 5" | 0.42' |
| 6" | 0.50' |
| 7" | 0.58' |
| 8" | 0.67' |
| 9" | 0.75' |
| 10" | 0.83' |
| 11" | 0.92' |
| 12" | 1.00' |

| | |
|--|------|
| City of Davis: Overflow Emergency Response Plan | |
| Sanitary Sewer Overflow/Backup Response Packet Volume Estimation: Upstream Lateral Connections Method | B-3c |

SSO Date: _____ Location: _____

STEP 1: Determine the number of Equivalent Dwelling Units (EDUs) for this SSO: _____ EDUs
NOTE: A single-family residential home = 1 EDU. For commercial buildings, refer to agency documentation.

STEP 2: This volume estimation method utilizes daily usage data based on flow rate studies of several jurisdictions in California. Column A shows how an average daily of usage of 180 gallons per day is distributed during each 6-hour period. Adjust the table as necessary to accurately represent the actual data.

Complete Column E by entering the number of minutes the SSO was active during each 6-hour time period. Multiply column D times Column E to calculate the gallons spilled during each time period. Add the numbers in Column F together for the Total Estimated SSO Volume per EDU.

| Time Period | Flow Rate Per EDU | | | | SSO | |
|--|--------------------|------------------|----------------------------------|-------------------------------------|--------------------------------------|--|
| | A | B | C | D | E | F |
| | Gallons per Period | Hours per period | $A \div B =$ Gallons per Hour | $C \div 60 =$ Gallons per Minute | Minutes SSO was active during period | $D \times E =$ Gallons spilled per period |
| 6am-noon | 72 | 6 | 12 | 0.20 | | |
| noon-6pm | 36 | 6 | 6 | 0.10 | | |
| 6pm-midnight | 54 | 6 | 9 | 0.15 | | |
| midnight-6am | 18 | 6 | 3 | 0.05 | | |
| Total Estimated SSO Volume per EDU: | | | | | | |

STEP 3: Multiply the Estimated SSO Volume per EDU from Step 2 by the number of EDUs from Step 1.

$$\frac{\text{gallons}}{\text{Volume per EDU}} \times \frac{\text{# of EDUs}}{\text{# of EDUs}} = \frac{\text{gallons}}{\text{Estimated SSO Volume}}$$

STEP 4: Adjust SSO volume as necessary considering other factors, such as activity that would cause a fluctuating flow rate (doing laundry, taking showers, etc.). Explain rationale below and indicate adjusted SSO estimate (attach a separate page if necessary):

Estimated SSO Volume: _____ gallons

Do you believe that this method has estimated the entire SSO? Yes No

If no, you MUST use additional methods to estimate the entire SSO. If yes, it is advisable to use additional methods to support the estimation. Explain why you believe this method has/has not estimated the entire SSO:

This worksheet completed by:

Name: _____ Signature: _____
 Job Title: _____ Date: _____

City of Davis: Overflow Emergency Response Plan

Sanitary Sewer Overflow/Backup Response Packet
Volume Estimation: Manhole Overflow Flowrate

B-3d
Page 1



City of San Diego
Metropolitan Wastewater Department



5 gpm



100 gpm



225 gpm

**Reference Sheet for Estimating Sewer Spills
from Overflowing Sewer Manholes**
All estimates are calculated in gallons per minute (gpm)



25 gpm



150 gpm



250 gpm

Wastewater Collection Division
(619) 654-4160



50 gpm



200 gpm



275 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

ww_499

| | |
|--|--------|
| City of Davis: Overflow Emergency Response Plan | B-3d |
| Sanitary Sewer Overflow/Backup Response Packet Volume Estimation: Manhole Overflow Flowrate | Page 2 |

SSO Date: _____ Location: _____

- STEP 1: Position yourself so you can clearly see the overflowing maintenance hole.
- STEP 2: Use the reference sheet on the previous page to estimate the flowrate at the maintenance hole.
- STEP 3: Using the establish start time, determine the duration of the SSO in minutes.
- STEP 4: Multiply the flowrate shown on the reference sheet for the corresponding photo by the number of minutes the SSO occurred. Use multiple flowrates and durations at that flowrate if the overflow rate is not constant during the SSO.

| Maintenance Hole Overflow Flowrate (gpm) | x | Duration of SSO (minutes) | Estimated SSO Volume (gallons) |
|--|---|---------------------------|--------------------------------|
| | x | | |
| | x | | |
| | x | | |
| | x | | |
| | x | | |
| Estimated Total SSO Volume: | | | |

Do you believe that this method has estimated the entire SSO? Yes No
 If no, you MUST use additional methods to estimate the entire SSO. If yes, it is advisable to use additional methods to support the estimation. Explain why you believe this method has/has not estimated the entire SSO:

This worksheet completed by:
 Name: _____ Signature: _____
 Job Title: _____ Date: _____

| | |
|--|--------|
| City of Davis: Overflow Emergency Response Plan | B-4 |
| Sanitary Sewer Overflow/Backup Response Packet Sanitary Sewer Overflow Report | Side 1 |

INSTRUCTIONS: Complete all items EXCEPT those that are shaded gray

SSO Category (check one):

- Category 1: Discharge of untreated or partially treated wastewater of any volume resulting from a sanitary sewer system failure or flow condition that either (1) Reaches surface water and/or drainage channel tributary to a surface water; OR (2) Reached a Municipal Separate Storm Sewer System (MS4) and was not fisure of lly captured and returned to the sanitary sewer system or otherwise captured and disposed of properly.
- Category 2: Discharge of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from a sanitary sewer system failure or flow condition that either (1) Does not reach surface water, a drainage channel, or an MS4, OR (2) The entire SSO discharged to the storm drain system was fully recovered and disposed of properly.
- Category 3: All other discharges of untreated or partially treated wastewater resulting from a sanitary sewer system failure or flow condition
- Spill from Private Lateral (specify): Single Family Home Multi-Family Home High Density Residential (5+ units)
 Food Service Establishment (FSE) Mixed Use Property Industrial Property Commercial Property
 Public quasi-public institution (hospital, schools, fire department, etc.)

IMMEDIATE NOTIFICATION: For a Category 1 SSO ≥1,000 gallons reaching surface waters, CalOES must be contacted within 2 hours at (800) 852-7550.

| A. SSO LOCATION | | |
|-------------------------|---------------------------|------------------------|
| SSO Location Name: | | |
| Latitude Coordinates*: | | Longitude Coordinates: |
| Street Name and Number: | | |
| Nearest Cross Street: | City: | Zip Code: |
| County: | SSO Location Description: | |

| B. SSO DESCRIPTION (Complete Volume Estimation Worksheets and/or refer to Field Guide as needed for estimations.) | | |
|---|-----|----------------|
| SSO Appearance Point (check one or more): <input type="checkbox"/> Force Main <input type="checkbox"/> Gravity Mainline <input type="checkbox"/> Manhole <input type="checkbox"/> Lateral Cleanout (Public) <input type="checkbox"/> Lateral Cleanout (Private) <input type="checkbox"/> Inside Building or Structure <input type="checkbox"/> Pump Station <input type="checkbox"/> Lateral (Private) <input type="checkbox"/> Service Lateral or Lower Lateral <input type="checkbox"/> Other Sewer System Structure (specify): | | |
| Were there multiple spill appearance points? <input type="checkbox"/> No <input type="checkbox"/> Yes, number of appearance points: | | |
| Did the SSO reach a drainage channel and/or surface water? <input type="checkbox"/> Yes (Category 1) <input type="checkbox"/> No | | |
| If the SSO reached a storm sewer, was it fully captured and returned to the Sanitary Sewer? <input type="checkbox"/> Yes <input type="checkbox"/> No (Category 1) | | |
| Was this spill from a private lateral? <input type="checkbox"/> Yes <input type="checkbox"/> No If YES, name of responsible party: | | |
| Final Spill Destination: <input type="checkbox"/> Surface waters other than ocean <input type="checkbox"/> Drainage channel <input type="checkbox"/> Building/structure <input type="checkbox"/> Separate Storm drain <input type="checkbox"/> Combined storm drain <input type="checkbox"/> Paved surface <input type="checkbox"/> Unpaved surface <input type="checkbox"/> Street/curb/gutter <input type="checkbox"/> Other: | | |
| *Provide name(s) of affected drainage channels, beach, etc.: | | |
| Total Estimated SSO volume (in gallons – 1,000gal or more = Category 1): | | gallons |
| Est. volume that reached a separate storm drain that flows to a surface water body: | gal | Recovered: gal |
| Est. volume that reached a drainage channel that flows to a surface water body: | gal | Recovered: gal |
| Est. volume discharged directly to a surface water body: | gal | Recovered: gal |
| Est. volume discharged to land: | gal | Recovered: gal |
| Calc. Methods: <input type="checkbox"/> Eyeball <input type="checkbox"/> Photo Comparison <input type="checkbox"/> Upstream Lat. Connections <input type="checkbox"/> Area/Volume (include sketch/photo with dimensions) <input type="checkbox"/> Other (describe): | | |

| C. SSO OCCURRING TIME (complete Start Time Determination Form and then complete information below) | |
|--|----------------------------------|
| Estimated SSO start date: | Estimated SSO start time: |
| Date SSO reported to sewer crew: | Time SSO reported to sewer crew: |
| Date sewer crew arrived: | Time sewer crew arrived: |
| Who was interviewed to help determine start time? | |
| Estimated SSO end date: | Estimated SSO end time: |

* If multiple appearance points, use the GPS coordinates for the location of the SSO appearance point closest to the failure point/blockage.

| | |
|---|--------|
| City of Davis: Overflow Emergency Response Plan | B-4 |
| Sanitary Sewer Overflow/Backup Response Packet | Side 2 |
| Sanitary Sewer Overflow Report | |

D. CAUSE OF SSO

Where did failure occur? (Check all that apply): Air Relief or Blow-Off Valve Force Main Gravity Mainline Siphon
 Lower Lateral (public) Manhole Pump Station (specify): Controls Mechanical Power
 Lateral (private) Service Lateral or Lower Lateral Other:

SSO cause (check all that apply): Air Relief or Blow-Off Valve Failure Construction Diversion Failure CS Maintenance
 Damage by others Debris (specify): from Construction from Lateral General Rags Flow Exceeded Capacity
 FOG (Fats, oil, grease) Inappropriate Discharge Natural Disaster Operator Error Root Intrusion
 Pipe Structural Problem/Failure Pipe Structural Problem/Failure (Installation) Rainfall Exceeded Design
 Pump Station Failure (specify): Controls Mechanical Power Roots Siphon Failure Vandalism
 Surcharged Pipe Non - Dispersible Wipes Other (specify):

Diameter (in inches) of pipe at point of blockage/spill cause (if applicable):

Sewer pipe material at point of blockage/spill cause (if applicable):

Estimated age of sewer asset at the point of blockage or failure (if applicable):

Description of terrain surrounding point of blockage/spill cause: Flat Mixed Steep

E. SSO RESPONSE

SSO response activities (check all that apply): Cleaned-Up Mitigated Effects of Spill Contained All or Portion of Spill
 Restored Flow Returned All Spill to Sanitary Sewer System Returned Portion of Spill to Sanitary Sewer System
 Property Owner Notified Other Enforcement Agency Notified (specify) Other (specify):

SSO response completed (date & time):

Visual inspection result of impacted waters (if applicable):

Any fish killed? Yes No Any ongoing investigation? Yes No

Were health warnings posted? Yes No

Were samples of impacted waters collected? Yes No
 If YES, select the analyses: DO Ammonia Bacteria pH Temperature Other:

Recommended corrective actions: (check all that apply and provide detail)
 Add sewer to preventive maintenance program Adjust schedule/method of preventive maintenance
 Enforcement action against FOG source Inspect sewer using CCTV to determine cause
 Plan rehabilitation or replacement of sewer Repair facilities or replace defect
 Remove roots Spot repair
 Other (specify):

What major equipment was used in the response?

List all agency personnel involved in the response including name, title and their role in the response:

F. NOTES

G. NOTIFICATION DETAILS: Enter details if applicable

CalOES contacted on (Date and Time):

Spoke to: _____ CalOES Control Number: _____

| | | |
|------------------------------|--------|-------|
| This form prepared by: NAME: | TITLE: | DATE: |
| This form reviewed by: NAME: | TITLE: | DATE: |

Place completed form in Sewer Backup Envelope and follow routing instructions.

| | |
|---|------------|
| City of Davis: Overflow Emergency Response Plan | |
| Sanitary Sewer Overflow/Backup Response Packet Lateral CCTV Report | B-5 |

Document results of Lateral CCTV inspection in Lucity work order or on form B-4 if after hours.

| | |
|--|----------------|
| City of Davis: Overflow Emergency Response Plan | B-6 |
| Sanitary Sewer Overflow/Backup Response Packet Bubbled Toilets Letter | ENGLISH |

Dear City of Davis Customer,

Thank you for informing us that your toilet bubbled while our crews were working in proximity of your property. We apologize for the inconvenience and hope that this letter will answer some of your questions about bubbling toilets.

1. Is this a health risk?

The water that came out of your toilet is potable water from the toilet bowl. Unless your toilet was in use when this occurred, this water is no different than that encountered while cleaning your toilet.

2. What is the City doing in the street?

In order to insure reliable sewer service, the City inspects, cleans, and repairs its sewer system on a continuous basis.

3. How does sewer cleaning cause my toilet to bubble?

Typical industry cleaning equipment uses high-pressure water to clean sewers. The first step is to use the high-pressure water jets to propel the hose and cleaning nozzle upstream as far as 800 feet. During this process, air within the main pipe is displaced and sometimes goes up the private lateral pipe and releases through the toilet. This can also happen during the cleaning phase, when high-pressure water is pulled downstream to the cleaning truck.

4. What causes the air to come from my toilet?

Over the years, City crews have found that the bubbling of toilets have many causes, some of which are:

- Obstructed vent pipes;
- Vent pipes that are positioned too far from the toilet;
- Lateral pipes that may be in use as the crew is cleaning (e.g. draining washing machine, draining bathtub, etc.);
- Lateral pipes that may have obstructions that are causing them to hold water (e.g. roots, grease, etc.).

5. What does City staff do, once informed of a bubbling toilet?

Once notified of a bubbling toilet, the crew leader explains to the customer what has happened, and checks to see if there is a clean-out in the customer's yard that could be opened in the future during cleaning. The crew leader then makes notes and completes paperwork that puts the address on the City's computerized notification list. In the future, crews will notice that this address was "bubbled" at one time, and, before commencing the cleaning, they will notify the occupant of the possibility of bubbling toilets. In the event the occupant is not present when the cleaning begins, the crews will attempt to open clean-outs and/or lower water pressure to avoid bubbling.

6. What can I do to prevent my toilet from bubbling?

When a sewer begins to drain slowly, it may be a sign that it needs to be cleaned or repaired. Trees and shrubs may have root structures that are entering the lateral pipe. The homeowner needs to make sure to have a clean-out for accessing the line. It is the homeowner's responsibility to keep the sewer lateral pipe in good working condition.

It is always a good idea to keep the toilet lid down when not in use, and not install carpets in the bathroom unless they can be easily removed and cleaned. For more information, please call the Collections Supervisor at (530) 757-5686.

Sincerely,

City of Davis

Ciudad de Davis: Plan de respuesta ante emergencia de desborde

B-6**Paquete de respuesta ante desborde/obstrucción del alcantarillado sanitario
Carta sobre inodoros que burbujan****ESPAÑOL**

Estimado cliente de la ciudad de Davis:

Gracias por informarnos que su inodoro burbujeó mientras nuestros equipos trabajaban en las cercanías de su propiedad. Pedimos disculpas por las molestias y esperamos que esta carta responda algunas de sus preguntas sobre los inodoros que burbujan.

1. ¿Es un riesgo para la salud?

El agua que salió de su inodoro es agua potable de la taza del inodoro. A menos que el inodoro haya estado en uso cuando esto sucedió, esta agua no es diferente a la que se encuentra cuando limpia el inodoro.

2. ¿Qué realiza la Ciudad en la calle?

A fin de asegurar un servicio de alcantarillado confiable, la Ciudad inspecciona, limpia y repara el sistema de alcantarillado de manera continua.

3. ¿De qué manera la limpieza del alcantarillado provoca que mi inodoro burbujee?

El equipo industrial típico de limpieza utiliza agua a alta presión para limpiar el alcantarillado. El primer paso es utilizar el chorro de agua a alta presión para impulsar la manguera y la boquilla de limpieza contracorriente con un alcance de hasta 243,8 m (800 pies). Durante este proceso, el aire dentro de la tubería principal se desplaza y algunas veces sube por la tubería lateral privada y se libera a través del inodoro. Esto también puede ocurrir durante la fase de limpieza, cuando el agua a alta presión se arrastra aguas abajo hasta el camión de limpieza.

4. ¿Qué provoca que el aire se libere por mi inodoro?

A través de los años, los equipos de la Ciudad descubrieron que el burbujeo de los inodoros ocurre debido a varias causas, entre las cuales encontramos las siguientes:

- tubos de ventilación obstruidos;
- tubos de ventilación que se colocan demasiado lejos del inodoro;
- tuberías laterales que pueden estar en uso mientras el equipo realiza la limpieza (por ejemplo, el drenaje de la lavadora, el drenaje de la bañera, etc.);
- tuberías laterales que pueden tener obstrucciones que hacen contener el agua (por ejemplo, raíces, grasa, etc.).

5. ¿Qué hace el personal de la Ciudad una vez que se le informa de un inodoro que burbujee?

Una vez que se notifica un inodoro que burbujee, el líder del equipo le explica al cliente lo que ha sucedido y comprueba si hay un registro de alcantarillado en el patio del cliente que podría abrirse en limpiezas futuras. Luego, el líder del equipo toma notas y completa documentación para incluir la dirección en la lista automatizada de notificaciones de la Ciudad. En el futuro, los equipos notarán que en esta dirección hubo "burbujeos" en un momento y, antes de comenzar la limpieza, notificará al ocupante acerca de la posibilidad de que burbujeen los inodoros. En caso de que el ocupante no esté presente cuando la limpieza se inicia, los equipos intentarán abrir los registros de alcantarillado y bajar la presión del agua para evitar el burbujeo.

6. ¿Qué puedo hacer para evitar que mi inodoro burbujee?

Cuando un alcantarillado comienza a drenar lentamente, puede ser un signo de que es necesario limpiarlo o repararlo. Los árboles y arbustos pueden tener estructuras de raíz que entren en la tubería lateral. El propietario debe asegurarse de tener un registro de alcantarillado para acceder a la línea. Es responsabilidad del dueño de casa mantener la tubería lateral de la alcantarilla en buen funcionamiento.

Siempre es una buena idea mantener la tapa del inodoro baja cuando no está en uso y no instalar alfombras en el baño a menos que puedan quitarse y limpiarse con facilidad. Para obtener más información, comuníquese con el Supervisor de Obras Públicas al (530) 757-5686.

Atentamente,

Ciudad de Davis

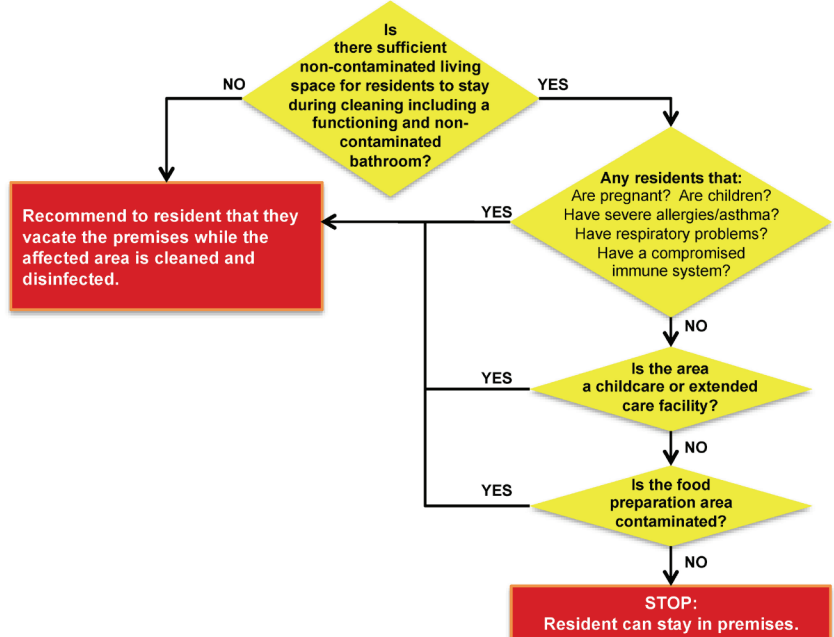
| | |
|--|--------|
| City of Davis: Overflow Emergency Response Plan | B-7 |
| Sanitary Sewer Overflow/Backup Response Packet First Responder Form | Page 1 |

Fill out this form as completely as possible.
Ask customer if you may enter the home. If so, take photos of all damaged and undamaged areas.

| | | | |
|--|--|---|----------------------|
| PERSON COMPLETING THIS FORM: | | PHONE: | |
| Name: _____ | | DATE: | |
| Title: _____ | | TIME: | |
| TIME STAFF ARRIVED ON-SITE: | | | |
| DOES THE CUSTOMER WANT THE CITY TO CALL A CLEANING CONTRACTOR? <input type="checkbox"/> Yes <input type="checkbox"/> No IF NO, complete the Declination of Sewage Cleaning Services form. | | | |
| DID CUSTOMER CALL CLEANING CONTRACTOR? <input type="checkbox"/> Yes <input type="checkbox"/> No If YES, name of contractor: | | | |
| RESIDENT NAME: <input type="checkbox"/> Owner <input type="checkbox"/> Renter | | IF RENT, PROPERTY MANAGER(S): OWNER: | |
| STREET ADDRESS: CITY, STATE AND ZIP: PHONE: | | STREET ADDRESS: CITY, STATE AND ZIP: PHONE: | |
| Is nearest upstream manhole visibly higher than the drain/fixture that overflowed? <input type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| # OF PEOPLE LIVING AT RESIDENCE: | | | |
| Approximate Age of Home: | | # of Bathrooms: | # of Rooms Affected: |
| Approximate Amount of Spill (gallons): | | Approximate Time Sewage Has Been Sitting (hrs/days): | |
| Numbers of Photographs or Videos Taken: <input type="checkbox"/> Photographs <input type="checkbox"/> Video | | Where are photos/video stored? | |
| Does property have a Property Line Cleanout or BPD? | | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unknown | |
| If yes, was the Property Line Cleanout/BPD operational at the time of the overflow? | | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unknown | |
| Have there ever been any previous spills at this location? | | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unknown | |
| Has the resident had any plumbing work done recently? <i>If YES, please describe:</i> | | <input type="checkbox"/> YES <input type="checkbox"/> NO | |

GO TO PAGE 2

LIVABILITY ASSESSMENT



SANITARY SEWER LINE BLOCKAGE LOCATION

PLEASE CHECK THE BOXES THAT DESCRIBE YOUR OBSERVATIONS:

| | |
|--|--|
| Customer Cleanout Was: <input type="checkbox"/> Non-Existent <input type="checkbox"/> Full <input type="checkbox"/> Empty | Public Cleanout was: <input type="checkbox"/> Non-Existent <input type="checkbox"/> Full <input type="checkbox"/> Empty |
|--|--|

Recommended Follow-Up Action(s):

On the diagram below, indicate the location of the sewer line and where the problem occurred.

Affected House

Upstream House

Did sewage go under buildings? Yes No Unsure

Place completed form in Sewer Backup Envelope and follow routing instructions

| | |
|--|------------|
| City of Davis: Overflow Emergency Response Plan | B-8 |
| Sanitary Sewer Overflow/Backup Response Packet Claims Submittal Checklist | |

Complete this form if there is a Sanitary Sewer Backup into/onto Private Property

Collections Supervisor

1. Complete the following information:

Title: _____
Name: _____
Phone: _____
Today's Date: _____

2. Copy the items listed below and retain originals for internal archiving purposes.
3. Place the copies in the Backup Response Envelope and forward to Risk Management:
 - Form B-2: Start Time Determination Form
 - Form B-3: Volume Estimation Forms (a, b and/or c)
 - Form B-4: Sanitary Sewer Overflow Report
 - Form B-5: Lateral CCTV Report
 - Form B-7: First Responder Form
 - Form B-8: Claims Submittal Checklist (*this form*)
 - All photos taken: Check here if digital photographs will be forwarded separately
 - Copies of Work Orders related to this claim
 - Any other information you feel is important in this claim
4. Go to Regulatory Notifications Packet and make all appropriate notifications.
5. Complete Form BP-9: Collection System Failure Analysis

Risk Management

1. Verify claims packet is complete.
2. Review incident reports, claim form and other incident information.
3. Communicate with claimant as appropriate.
4. Process claim in accordance with City policy.

| | |
|--|---------------|
| City of Davis: Overflow Emergency Response Plan | B-9 |
| Sanitary Sewer Overflow/Backup Response Packet Collection System Failure Analysis | Page 1 |

To be completed by the Collections Supervisor

NOTE: The information contained on this form may be confidential.

| | | | |
|--|-------|---------------------|------|
| Incident Report # | | Prepared By | |
| SSO/Backup Information | | | |
| Event Date/Time | | Address | |
| Volume Spilled | | Volume Recovered | |
| Cause | | | |
| Summary of Historical SSOs/Backups/Service Calls/Other Problems | | | |
| Date | Cause | Date Last Cleaned | Crew |
| | | | |
| | | | |
| | | | |
| Records Reviewed By: | | Record Review Date: | |
| Summary of CCTV Information | | | |
| CCTV Inspection Date | | Tape Name/Number | |
| CCTV Tape Reviewed By | | CCTV Review Date | |
| Observations | | | |

Go to Page 2

| City of Davis: Overflow Emergency Response Plan | | | | | B-9 |
|--|---|------------------|---------------------|---------------------|-----------------------------|
| Sanitary Sewer Overflow/Backup Response Packet Collection System Failure Analysis | | | | | Page 2 |
| Recommendations | | | | | |
| ✓ | Type | Specific Actions | Who is Responsible? | Completion Deadline | Who Will Verify Completion? |
| | No Changes or Repairs Required | n/a | n/a | n/a | n/a |
| | Repair(s) | | | | |
| | Construction | | | | |
| | Capital Improvement(s) | | | | |
| | Change(s) to Maintenance Procedures | | | | |
| | Change(s) to Overflow Response Procedures | | | | |
| | Training | | | | |
| | Misc. | | | | |
| Comments/Notes: | | | | | |
| Review Date: | | | | | |

| City of Davis Overflow Emergency Response Plan | |
|---|---------------------------------------|
| Customer Service Packet | |
| <u>Form</u> | <u>Form Number</u> |
| Customer Information Letter | CS-1 |
| Claim Form..... | CS-2 |
| Sewer Spill Reference Guide..... | pamphlet |
| Instructions: | |
| 1. Review the Customer Information letter to determine actions that need to be taken <u>immediately</u> . | |
| 2. See the Customer Information letter for information about filing a claim. | |
| 3. Review the Sewer Spill Reference Guide pamphlet. | |
| If you have any questions, contact: | |
| • Regarding sewer issues: | Collections Supervisor (530) 757-5686 |
| • Regarding claim issues: | Risk Management Office (530) 757-5644 |
| This packet provided by: _____ | |
| Phone: _____ | |
| Paquete de servicio al cliente | |
| <u>Formulario</u> | <u>Número de formulario</u> |
| Carta de información para el cliente | CS-1 |
| Formulario de reclamación | CS-2 |
| Guía de referencia en caso de desborde del alcantarillado | folleto |
| Instrucciones: | |
| 1. Revise la carta de información para el cliente para determinar qué medidas deben tomarse <u>inmediatamente</u> . | |
| 2. Consulte la carta de información para el cliente sobre cómo presentar una reclamación. | |
| 3. Revise el folleto de la Guía de referencia en caso de desborde del alcantarillado. | |
| Si tiene alguna consulta, comuníquese con las siguientes entidades: | |
| • Para los problemas relacionados con el alcantarillado, comuníquese con el Supervisor de Obras Públicas: (530) 757-5686 | |
| • Para los problemas relacionados con las reclamaciones, comuníquese con la Oficina de gestión de riesgos: (530) 757-5644 | |
| Este paquete lo proporciona: _____ | |
| Teléfono: _____ | |

| | |
|--|----------------|
| City of Davis: Overflow Emergency Response Plan | CS-1 |
| Sanitary Sewer Overflow/Backup Response Packet Customer Information Regarding Sewer Backup Claims | ENGLISH |

Dear Resident:

We recognize that sewer back flow incidents can be stressful. The City has prepared this brief set of instructions to help you minimize the impact of the loss by responding promptly to the situation.

The City is not responsible for cleanup charges or damages caused by blockages in the property owner's sewer line or caused by code violations. Regardless of whether you or the City is responsible for the loss, it is up to you to arrange for the repair of your property. If the City is responsible for the damages, you may choose to have the restoration company invoice the City directly for the clean-up.

You or the property owner should immediately contact a firm for clean-up of the affected areas. If you do not know of a company to call for service, the following 24-hour emergency restoration companies are available to respond: *

| Restoration Company | Location | Contact |
|-------------------------------|--|--------------|
| SERVPRO | PO Box 2263 Davis CA 95617 | 530-756-1414 |
| Restoration Management Co. | 1804 Enterprise Blvd. West Sacramento CA 95691 | 800-400-5058 |
| COIT Cleaning and Restoration | 3499 Business Dr. Sacramento CA 95820 | 916-731-7090 |

* This list is provided as a resource only. The City does not require or endorse the use of any of these firms. This list is not to be construed as exclusive, comprehensive or limiting in any way. Qualified contractors can be found in the Yellow Pages under "Water Damage Restoration" or "Fire & Water Damage Restoration". However, be sure you hire a firm with experience in sewer backups and enough resources to get the job done quickly.

What you need to do now:

- Contact a restoration company for clean up and removal of affected surfaces.
- Do not attempt to clean the area yourself, let the company you hire handle this.
- Keep people and pets away from the affected area(s).
- Turn off heating/air conditioning systems.
- Turn off any appliances that use water.
- Prevent any material from reaching floor vents to prevent contamination.
- Do not remove items from the area –the company you hire will handle these contents.
- If you had recent plumbing work, contact your plumber or contractor.
- Contact your homeowner's insurance carrier to report a claim.
- If you believe the City is responsible for damages you may file a claim. Complete the enclosed claim form and mail it to:

Risk Management
City of Davis
23 Russell Boulevard
Davis, CA 95616

Important Legal Notice: For your protection, read carefully, obtain a reliable translation, and/or consult your attorney.

| | |
|--|-------------------------------|
| Ciudad de Davis: Plan de respuesta ante emergencia de desborde | CS-1 ESPAÑOL |
| Paquete de respuesta ante desborde/obstrucción del alcantarillado sanitario Información del cliente sobre reclamaciones de respaldo de alcantarillado | |

Estimado Propietario:

Somos conscientes de que los incidentes de alcantarillado de flujo puede ser estresante. La ciudad ha preparado este breve conjunto de instrucciones que le ayudarán a minimizar el impacto de la pérdida por responder rápidamente a la situación.

La Ciudad no es responsable por los gastos de limpieza o daños causados por bloqueos en la línea de la alcantarilla del dueño de la propiedad o por violaciones de código. Independientemente de si usted o la Ciudad es responsable de la pérdida, depende de usted arreglar la reparación de su propiedad. Si la Ciudad es responsable de los daños, puede optar por que la empresa de restauración facture a la Ciudad directamente para la limpieza.

Usted o el dueño de la propiedad debe inmediatamente ponerse en contacto con una empresa para la limpieza de las zonas afectadas. Si usted no sabe de una empresa de solicitar un servicio, las siguientes 24 horas, empresas de restauración de emergencia están disponibles para responder:*

| Empresa de Restauración | Ubicación | Teléfono |
|-------------------------------|--|--------------|
| SERVPRO | PO Box 2263 Davis CA 95617 | 530-756-1414 |
| Restoration Management Co. | 1804 Enterprise Blvd. West Sacramento CA 95691 | 800-400-5058 |
| COIT Cleaning and Restoration | 3499 Business Dr. Sacramento CA 95820 | 916-731-7090 |

* Esta lista se proporciona como un único recurso. La ciudad no necesita ni aprueba el uso de cualquiera de estas empresas. Esta lista no debe ser interpretado como exclusiva, completa o limitar de ninguna manera. Contratistas calificados se pueden encontrar en las páginas amarillas bajo "Restauración de daños causados agua" o "Fuego y Agua Restauración de daños causados". Sin embargo, asegúrese de contratar a una empresa con experiencia en las copias de seguridad de drenaje y los recursos suficientes para hacer el trabajo rápidamente.

Lo que necesita saber en este momento:

- Póngase en contacto con una empresa de restauración para la limpieza y eliminación de las superficies afectadas.
- No intente limpiar el área, deje que la empresa de contratar a manejar esto.
- Mantenga a las personas ya las mascotas alejados de la zona afectada (s).
- Apague la calefacción / aire acondicionado.
- Apague todos los electrodomésticos que utilicen agua.
- Evite que el material alcance respiraderos del piso para evitar la contaminación.
- No quitar elementos de la zona-la empresa que se encargará de contratar a estos contenidos.
- Si ha tenido el trabajo de plomería reciente, póngase en contacto con un plomero o contratista.
- Póngase en contacto con soporte de su seguro de propietario para presentar una reclamación.
- Si usted cree que la ciudad es responsable de los daños que puede presentar una reclamación. Completar el formulario de solicitud adjunta y enviarla por correo a:

Risk Management
 City of Davis
 23 Russell Boulevard
 Davis, CA 95616:

Aviso legal importante: Para su protección, lea atentamente el material, obtenga una traducción confiable y/o hable con su abogado.

VERIFIED CLAIM

CLAIM AGAINST: CITY OF DAVIS



(FOR CITY USE ONLY)

Claim No. _____

Received By: _____ Via:

- U.S. Mail
- Inter-Office Mail
- Over the Counter
- Drop Box

Date Received: _____

Notice: The City of Davis may prosecute on the basis of Section 72 of the Penal Code (Ca. Ins. Code 1871) which provides: "Every person who, with intent to defraud, presents for allowance or for payment to any state board or office, or to any county, town, city, district, ward or village board or officer, authorized to allow or pay the same if genuine, any false or fraudulent claim, bill, account, voucher, or writing, is guilty of a felony."

A claim must be filed with the City of Davis within a period provided by state statute after which the incident or event occurred. Be sure your claim is against the City of Davis and not another public entity. Completed claims must be mailed or delivered to:

**Risk Management
City of Davis
23 Russell Boulevard
Davis, CA 95616**

PLEASE **PRINT** OR **TYPE**:

Name of Claimant _____ Date of Birth of Claimant _____

Home Address of Claimant _____ City & State _____ Zip Code _____ Home Telephone Number _____

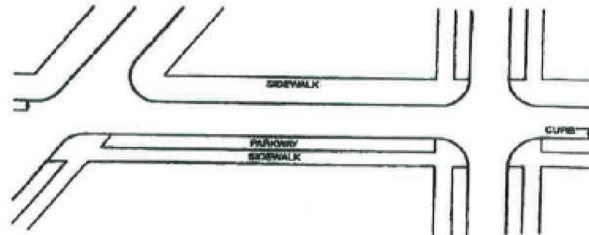
Business Address of Claimant _____ City & State _____ Zip Code _____ Business Telephone Number _____

Give address and telephone number to which you desire notices or communication to be sent regarding this claim. _____

Claims for death, injury to person or to personal property must be filled out not later than six months after the occurrence. (Gov. Code Sec. 911.2) Claims for damages to real property must filled out not later than 1 year after the occurrence.

1. Date, time and place (be specific) where damage or injury occurred? If Claim is for Equitable Indemnity, give date claimant served with the complaint: Date: _____

Please use diagram for clarification. Indicate names of streets and direction (north, south, east and west.) If the diagram does not fit the situation, please attach a proper diagram signed by the claimant.



2. How did the damage or injury occur? (Give full details and attach second sheet, if necessary.)

3. What particular act or omission or individual caused the damage or injury?

4. What damages or injuries do you claim resulted? (Give full extent of damages or injuries claimed.)

5. The amount claimed as of the date of presentation of this claim is computed as follows:
(please attach 2 estimates for repair, claimant must sign all documents.)

| | | | |
|--|----------|---|----------|
| Damage incurred to date (exact): | | Estimated prospective damages as far as known: | |
| Damage to property..... | \$ _____ | Future expenses for medical and hospital care.. | \$ _____ |
| Expenses for medical and hospital care..... | \$ _____ | Future loss of earnings..... | \$ _____ |
| Loss of earnings..... | \$ _____ | Other prospective special damages..... | \$ _____ |
| Special damages..... | \$ _____ | Total estimate prospective damages..... | \$ _____ |
| General damages..... | \$ _____ | | |
| Total damages incurred to date..... | \$ _____ | | |
| Total amount claimed as of date of presentation of this claim: _____ | | \$ _____ | |
| Insurance payments received, if any, and names of insurance companies: _____ | | | |

Section 111 of the Medicare Medicaid & S-CHIP Extension Act requires the entity to report certain claims to the federal government. Please indicate if the claimant is: 65 years of age or older, or is receiving Social Security Disability Insurance Benefits for 24 or more months, or has End Stage Renal Disease. If yes, you may be required to provide additional information to process your claim

Yes / No

(circle one)

If amount claimed is more than \$10,000:

Jurisdiction: \$10,000.00 to \$25,000.00 – Municipal Court
 \$25,001.00 and above – Superior Court

Was damage and/or injury investigated by police? _____
 Were paramedics or ambulance called? _____
 If injured, state date, time, name and address of doctor of your first visit _____
 Date: _____
 Time: _____

Name and Addresses of Witnesses to incident:

| | | |
|------------|---------------|-------------|
| Name _____ | Address _____ | Phone _____ |
| Name _____ | Address _____ | Phone _____ |
| Name _____ | Address _____ | Phone _____ |

I have read the matters and statements made in the above claim and I know the same to be true of my own knowledge, except as to those matters stated upon information or belief and as to such matters I believe the same to be true. I certify under penalty of perjury that the foregoing is TRUE and CORRECT.

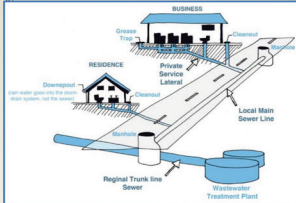
Signed this _____ day of _____, 20____ at _____ (location)

CLAIMANT'S SIGNATURE

(Omitting information may make your claim legally insufficient; answer all questions.)

How a Sewer System Works

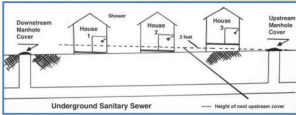
A property owner's sewer pipes are called **service laterals** and are connected to larger local main and regional trunk lines. Service laterals run from the connection at the home to the connection with the public sewer. These laterals are the responsibility of the property owner and must be maintained by the property owner.



Is my home required to have a backflow prevention device?

Section 10.1 of the Uniform Plumbing Code (U.P.C.) states: **Drainage piping serving fixtures which have flood levels located below the elevation of the next upstream manhole or over a private sewer serving such drainage piping shall be protected from backflow of sewage by installing an approved type of backwater valve.** The intent of Section 10.1 is to protect the building interior from mainline sewer overflows or surcharges.

Additionally, U.P.C. 10.6 states: **Backwater valves shall be located where they will be accessible for inspection and repair at all times and, unless continuously exposed, shall be enclosed in a masonry pit fitted with an adequately sized removable cover.**



If you have a sewage spill from your private sewer line that impacts storm drains, waterways or public property, contact:

City of Davis Public Works

(530) 757-5686

Yolo County Environmental Health

(530) 666-8646

California Health and Safety Code, Sections 5410-5416 requires:

- < No person shall discharge raw or treated sewage or other waste in a manner that results in contamination, pollution, or nuisance.
- < Any person who causes or permits a sewage discharge to any state waters, or to any waters of the State:
 - o Must immediately notify the local health agency of the discharge.
 - o Shall reimburse the local health agency for services that protect the public's health and safety.
 - o Who fails to provide the required notice to the local health agency is guilty of a misdemeanor and shall be punished by a fine (between \$500-\$1,000) and/or imprisonment for less than one year.

Central Valley Regional Water Quality Control Board

(916) 464-3291

Requires the prevention, mitigation, response, and reporting of sewage spills.

California Governor's Office of Emergency Services (CalOES)

(800) 552-7550

California Water Code, Article 3, Chapter 3, Sections 13268-13271 & California Code of Regulations, Title 23, Division 3, Chapter 9.2, Article 2, Sections 2250-2260 require:

- < Any person who causes or permits sewage in excess of 1,000 gallons to be discharged to state waters shall immediately notify the Office of Emergency Services.
- < Any person who fails to provide the notice required by this section is guilty of a misdemeanor and shall be punished by a fine (less than \$20,000) and/or imprisonment for not more than one year.



Your Responsibilities as a Private Property Owner

Provided to you by:
City of Davis Public Works
 (530) 757-5686
 www.cityofdavis.org
 Copyright © 2004-2016
 DKF Solutions Group
 All rights reserved.

How do sewage spills happen?

Sewage spills occur when the wastewater in underground pipes overflows through a manhole, cleanout, or broken pipe. Most spills are relatively small and can be stopped and cleaned up quickly, but left unattended they can cause health hazards, damage to homes and businesses, and threaten the environment, local waterways, and beaches.

CAUTION!

When trying to locate a sewer problem, never open manholes or other public sewer structures. Only our crews are allowed to open & inspect these structures.

Common causes of sewage spills

- ◊ Grease build-up
- ◊ Tree roots
- ◊ Broken/cracked pipes
- ◊ Missing or broken cleanout caps
- ◊ Undersized sewers
- ◊ Groundwater/rainwater entering the sewer system through pipe defects and illegal connections

Prevent most sewage backups with a Backflow Prevention Device

This type of device can help prevent sewage backups into homes and businesses. If you don't already have a Backflow Prevention Device, contact a professional plumber or contractor to install one as soon as possible.

Protect the environment!

If you let sewage from your property discharge to a gutter or storm drain, you may be subject to penalties and/or out-of-pocket costs for clean-up and enforcement efforts. A property owner may be charged for costs incurred by agencies responding to spills from private properties.

What to look for:

- ◊ Sewage spills can be very noticeable gushing of water from a manhole or slow water leak that may take time to be noticed. Don't dismiss unaccounted-for wet areas. Look for:
 - ◊ Drain backups inside the building
 - ◊ Wet ground and/or water seeping around manhole lids onto your street
 - ◊ Leaking water from cleanouts or outside drains
 - ◊ Unusual or odorous wet areas: sidewalks, external walls, ground/landscape around building

The following are indicators of possible obstruction in your sewer line:

- ◊ Water comes up in floor drains, showers or toilets.
- ◊ Toilets, showers or floor drains below ground level drain very slowly.

What to do if there is a spill:

- ◊ Immediately notify the City of Davis. Our crews locate the blockage and determine if it is in the public sewer. If it is in the sewer, we remove the blockage and arrange for cleanup. If the backup is in your private internal plumbing or in the private service laterals, you are required to immediately:
 - ◊ Control and minimize the spill by shutting off or not using the water
 - ◊ Keep sewage out of the storm drain system using sandbags, dirt and/or plastic sheeting
 - ◊ Call a plumbing professional to clear blockages and make repairs as needed. Look in the yellow pages under "Plumbing/Drain & Sewer Cleaning" or "Sewer Contractors."
 - ◊ Always notify your sewer/public works department or public sewer district of sewage spills.

Spill cleanup inside the home:

For large cleanups, a professional cleaning firm should be contacted to clean impacted areas. You can locate local firms by looking in the yellow pages under "Water Damage" or "Fire Damage." If you hire a contractor, it is recommended to get estimates from more than one company. Sometimes, the owner's insurance will pay for the necessary cleaning due to sewer backups. Not all policies have this coverage, so check with your agent. If you decide to clean up a small spill inside your home, protect yourself from contamination by observing the following safety measures. Those persons whose resistance to infection is compromised should not attempt this type of cleanup.

Other tips:

- ◊ Keep children and pets out of the affected area until cleanup has been completed.
- ◊ Turn off heating/air conditioning systems
- ◊ Wear rubber boots, rubber gloves, and goggles during cleanup of the affected area.
- ◊ Discard items that cannot be washed and disinfected (such as: mattresses, rugs, cosmetics, baby toys, etc.)
- ◊ Remove and discard drywall and insulation that has been contaminated with sewage or floodwaters.

- ◊ Thoroughly clean all hard surfaces (such as: flooring, concrete, molding, wood and metal furniture, countertops, appliances, sinks and other plumbing fixtures) with hot water and laundry dish detergent.
- ◊ Help the drying process with fans, air conditioning units, and dehumidifiers.
- ◊ After completing cleanup, wash your hands with soap and water. Use water that has been boiled for 1 minute (allow the water to cool before washing your hands) or use water that has been disinfected (solution of 1/8 teaspoon of household bleach per 1 gallon of water). Let it stand for 30 min. If water is cloudy, use 3/4 teaspoon of household bleach per 1 gallon of water.
- ◊ Wash clothes worn during cleanup in hot water and detergent (wash apart from contaminated clothes).
- ◊ Wash clothes contaminated with sewage in hot water and detergent. Consider using a laundromat if your onsite wastewater system has been professionally inspected and serviced.
- ◊ Seek immediate attention if you become injured or ill.

Spill cleanup outside the home:

- ◊ Keep children and pets out of the affected area until cleanup has been completed.
- ◊ Wear rubber boots, rubber gloves, and goggles during cleanup of the affected area.
- ◊ Clean up sewage solids (fecal material) and place in properly functioning toilet or double bag and place in garbage container.
- ◊ On hard surfaces (areas such as asphalt or concrete, it is safe to use a 2% bleach solution, or 2 cups of bleach to 5 gallons of water, but don't allow it to reach storm drain as the bleach can harm the environment).
- ◊ After cleanup, wash hands with soap and water. Use water that has been boiled for 1 minute (allow to cool) before washing your hands) or use water that has been disinfected (solution of 1/8 teaspoon of household bleach per 1 gallon of water). Let it stand for 30 min. If water is cloudy, use 3/4 teaspoon of household bleach per 1 gallon of water.
- ◊ Wash clothes worn during cleanup in hot water and detergent (wash apart from contaminated clothes).
- ◊ Wash clothes contaminated with sewage in hot water and detergent. Consider using a laundromat if your onsite wastewater system has been professionally inspected and serviced.
- ◊ Seek immediate attention if you become injured/ill.

Overflow Emergency Response Plan
Public Posting

DANGER

RAW SEWAGE • AVOID CONTACT



PELIGRO

AGUA CONTAMINADA • EVITE TODO CONTACTO

For more information

Para más información

City of Davis

(530) 757-5686

City of Davis

On (date) _____, at (location) _____,

we responded to a reported blockage of the sanitary sewer service to your property.

We discovered a blockage in:

- The City sanitary sewer and cleared the line
- Your sanitary sewer lateral, which is your responsibility to maintain.

If you require assistance to clear your portion of the lateral you can look on the Internet or in the Yellow Pages of your telephone book under "Sewer Contractors" or "Plumbing Drains & Sewer Cleaning". If you plan to hire a contractor we recommend getting estimates from more than one company.

City of Davis representative notes:

City of Davis Representative:

**For questions or comments, please call
City of Davis
(530) 757-5686**

**For sewer emergencies
at night and on weekends, please call
(530) 758-3600**

City of Davis

On (date) _____, at (location) _____,

we responded to a reported blockage of the sanitary sewer service to your property.

We discovered a blockage in:

- The City sanitary sewer and cleared the line
- Your sanitary sewer lateral, which is your responsibility to maintain.

If you require assistance to clear your portion of the lateral you can look on the Internet or in the Yellow Pages of your telephone book under "Sewer Contractors" or "Plumbing Drains & Sewer Cleaning". If you plan to hire a contractor we recommend getting estimates from more than one company.

City of Davis representative notes:

City of Davis Representative:

**For questions or comments, please call
City of Davis
(530) 757-5686**

**For sewer emergencies
at night and on weekends, please call
(530) 758-3600**

Appendix C
FIELD SAMPLING KIT

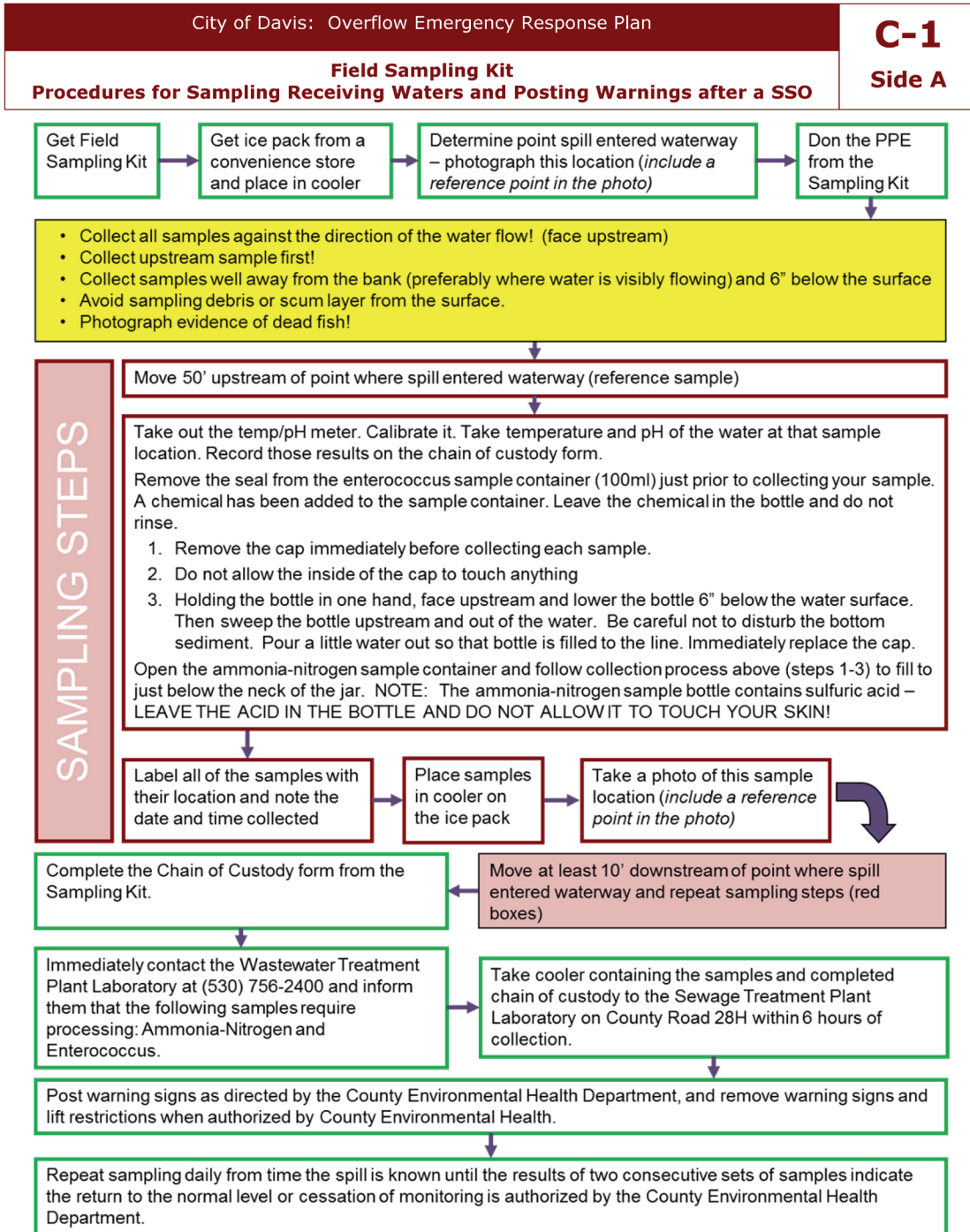
City of Davis: Overflow Emergency Response Plan

**Field Sampling Kit
Table of Contents**

| <u>Form</u> | <u>Form Number</u> |
|--|--------------------|
| Procedures for Sampling Receiving Waters and Posting | |
| Warnings after a Sewage Spill | C-1 |
| Sample Collection Chain of Custody Record | C-2 |

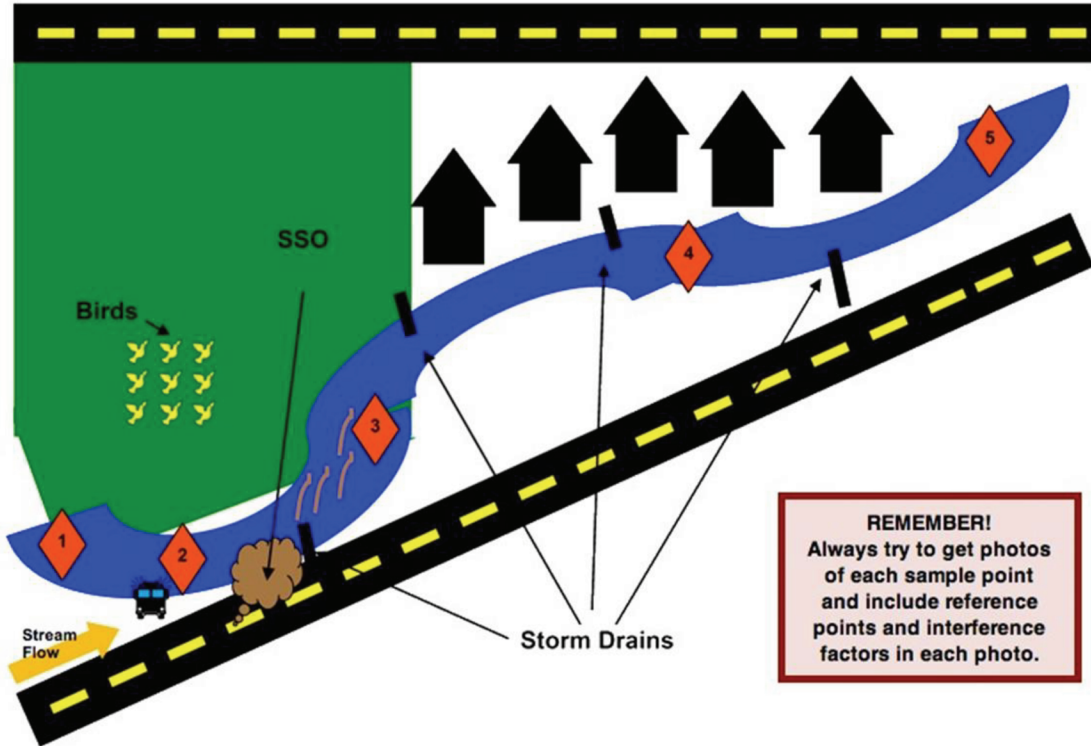
Go to Water Quality Sampling Area and get the following supplies:

- Ice pack
- Ice
- Sample pole
- Latex gloves
- Long rubber gloves
- Safety glasses
- Waterproof Pen (i.e. Sharpie®)
- Chain of Custody form
- Sample Containers
 - Bac-T
 - Ammonia



| | |
|--|---------------|
| City of Davis: Overflow Emergency Response Plan | C-1 |
| Field Sampling Kit Procedures for Sampling Receiving Waters after a SSO | Side B |

This example is provided for illustrative purposes *only!* Base each sampling event on the geography, drainage and interference factors (i.e. birds, animals, runoff, etc.) of the area impacted. Consult the Contract Laboratory as needed.



- ◆ **1** Sample Location 1: Baseline Sample, no observable interference from birds, animals, runoff, etc
- ◆ **2** Sample Location 2: Baseline Sample, observable interference from birds, animals, runoff, etc
NOTE: Only collect this sample if you observe any possible interfering factors upstream from the spill location
- ◆ **3** Sample Location 3: Immediately downstream of SSO entry point
- ◆ **4** Sample Location 4: Further downstream of SSO entry point – note any possible interfering factors
- ◆ **5** Sample Location 5: Further downstream of SSO entry point – note any possible interfering factors

| | |
|---|-----|
| City of Davis: Overflow Emergency Response Plan | C-2 |
| Field Sampling Kit Sample Collection Chain of Custody Record | |

| | | | |
|-------------------------|-----------|--|-----|
| Customer Name | | <input type="checkbox"/> Hazardous Waste | PO# |
| Customer Address | | <input type="checkbox"/> Unknown Material | WO# |
| Customer Telephone | Mail Code | CONTRACT LAB INFORMATION | |
| Program Name | | Turnaround Requirement | |
| Lab Program Coordinator | Phone # | Ship to: <input type="checkbox"/> Normal (21 days) | |
| Sampled By | | Ship Date: <input type="checkbox"/> Rush: _____ | |
| | | Courier: <input type="checkbox"/> Other: _____ | |

| LIMS# (Issued by Lab) | SAMPLE COLLECTION INFORMATION | | | | | | | Analysis Requested | | | | QA/QC Requirements | | | |
|--------------------------|-------------------------------|------|--------------------------|-------------------------------------|-----------------|----------|------------|--------------------|---------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--|
| | Date | Time | Type | | Sample Location | Field pH | Field Temp | Container # | Matrix* | Ammonia | Enterococci | | | | <input checked="" type="checkbox"/> Lab Standard |
| | | | B | O | | | | | | | | | | | W |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Upstream | | | 2 | A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Entry Point | | | 2 | A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Downstream | | | 2 | A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | 2 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | 2 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | 2 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | 2 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

*Matrix: P = Potable Water, W = Wastewater, A = Ambient Water, G = Groundwater, S = Soil, B = Biosolids, I = Industrial, O = Other (specify in remarks)

| Relinquished | Date | Time | Relinquished to | Date | Time | Transport/Shipping Information | | |
|--------------|------|------|-----------------|------|------|---------------------------------|------------------------------|--------------------------------|
| | | | | | | <input type="checkbox"/> USPS | <input type="checkbox"/> UPS | <input type="checkbox"/> FedEx |
| | | | | | | Tracing #: | | |
| | | | | | | <input type="checkbox"/> Other: | | |

| Sample Receiving Documentation | | | | | | | |
|--|--|---|--|---|---|---|--|
| Container intact? <input type="checkbox"/> Yes <input type="checkbox"/> No | | Correct container? <input type="checkbox"/> Yes <input type="checkbox"/> No | | Field preserved? <input type="checkbox"/> Yes <input type="checkbox"/> No | | Custody tape intact? <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| Cooled? <input type="checkbox"/> Yes <input type="checkbox"/> No | | Temp. Blank? <input type="checkbox"/> Yes <input type="checkbox"/> No (°C) | | Comments: | | | |
| Sample distribution: <input type="checkbox"/> Lab bench <input type="checkbox"/> Ice chest <input type="checkbox"/> Walk-in cooler shelf # | | | | Disposal Date: | | Disposed by: (inits.) | |
| C-O-C Distribution Date: | | By: | | <input type="checkbox"/> Lab Admin File | <input type="checkbox"/> Prog/proj Mgr. | <input type="checkbox"/> Lab Prog. Coord. | <input type="checkbox"/> Delivery courier <input type="checkbox"/> Pick-up courier |

Appendix D

**CONTRACTOR ORIENTATION
(DRAFT)**

Contractor Orientation

The following procedures are to be followed in the event that you cause or witness a Sanitary Sewer Overflow.



Sanitary Sewer Overflows

How to avoid them and what to do if you don't

- What?** A sanitary sewer overflow (SSO) is a discharge of untreated human and industrial waste before it reaches the wastewater treatment facility.
- Where?** SSOs usually occur through manholes, plumbing fixtures and service cleanouts.
- Why?** SSOs are usually caused by grease, debris, root balls, or personal hygiene products blocking the sewer lines, or by unusually high flow volume.

How to prevent SSOs:

...when clearing plugged sewer laterals:

Remove root balls, grease blockages and any other debris from the sewer

If you can't prevent root balls, grease or debris from entering the sewer main, call us at (650) 757-5686, so we can work with you to remove the blockage and prevent blockages further downstream

Use plenty of water to flush lines.


...when constructing or repairing sewer laterals:

Refer to the City website for standard design criteria and permit requirements. Go to www.cityofdavis.org.

Check your work area. Make sure there is no debris left in the sewer line before you backfill.

Avoid offset joints, which may make sewer lines vulnerable to root intrusion and grease or debris accumulation. Properly bed your joints and don't hammer tap.

If you cause or witness an SSO, immediately contact:



City of Davis

Business Hours:
(530) 757-5686

After hours:
(530) 758-3600

City of Davis
Public Works

1717 Fifth Street
Davis, CA 95616

www.cityofdavis.org

**Sanitary Sewer Overflow
Recordkeeping Checklist**

Agency File No. _____ Agency File Location _____
 Date of SSO _____ SSO Location _____
 CIWQS Event ID: _____

- | | |
|---|--|
| <input type="checkbox"/> SSO File established for each event | <input type="checkbox"/> Volume assumptions stated/approved |
| <input type="checkbox"/> File designation assigned | <input type="checkbox"/> Recovered volume return location stated |
| <input type="checkbox"/> File title assigned | <input type="checkbox"/> Agencies notified/date/time |
| <input type="checkbox"/> Date of SSO | <input type="checkbox"/> Map/photos of signs/security attached |
| <input type="checkbox"/> SSO Category stated | <input type="checkbox"/> Electronic-monitoring records attached |
| <input type="checkbox"/> SSO site description attached | <input type="checkbox"/> Pump Station Telemetry records attached if used |
| <input type="checkbox"/> SSO incident map attached | <input type="checkbox"/> LRO report approval |
| <input type="checkbox"/> Customer complaint documentation | <input type="checkbox"/> Extraneous forms removed |
| <input type="checkbox"/> Field interviews documented | <input type="checkbox"/> Debrief documentation attached |
| <input type="checkbox"/> List of all staff /contractors involved | <input type="checkbox"/> Failure Analysis completed/attached |
| <input type="checkbox"/> Event chronology attached | <input type="checkbox"/> Process or procedure changes identified |
| <input type="checkbox"/> Number of appearance points documented | <input type="checkbox"/> Action plan prepared |
| <input type="checkbox"/> CIWQS Draft Data form included | <input type="checkbox"/> SSMP Change Log updated for changes |
| <input type="checkbox"/> SWRCB reporting timelines met | <input type="checkbox"/> File certified by LRO |
| <input type="checkbox"/> Original data submitter identified in file | <input type="checkbox"/> File retention schedule set |
| <input type="checkbox"/> All CIWQS Fields completed by category | For SSOs > 50,000 gallons |
| <input type="checkbox"/> CIWQS Certification Report included | <input type="checkbox"/> Water Quality Monitoring sites identified |
| <input type="checkbox"/> Event description completed | <input type="checkbox"/> Chain of Custody attached |
| <input type="checkbox"/> List of Photos included | <input type="checkbox"/> Final sample results attached |
| <input type="checkbox"/> Photos dated and locations identified | <input type="checkbox"/> Sampling location map |
| <input type="checkbox"/> Location of Photos mapped | <input type="checkbox"/> Technical report completed |
| <input type="checkbox"/> Agency Overflow Report attached | <input type="checkbox"/> Documentation in CIWQS |
| <input type="checkbox"/> Impacted waters identified | <input type="checkbox"/> Tech report certified by LRO |
| <input type="checkbox"/> Start time documentation attached | <input type="checkbox"/> File disposal date established |
| <input type="checkbox"/> Volume estimation method(s) identified | <input type="checkbox"/> All WDR timelines met/documentated |
| <input type="checkbox"/> Volume computations attached/approved | |

Appendix E: Water Quality Monitoring Plan

Water Quality Management Plan

Sampling Parameters required for Analyses:

- Orthophosphate (1-pint plastic bottle)
- Fecal coliform bacteria (colilert bottle with 100mL mark)

SSO Sample Collection Kit Inventory:

- 3, 1-pint plastic bottles
- 3 sterile coliforms bottles
- Cooler
- Ice Pack (stored in freezer)
- Safety gloves
- Safety glasses
- Sampling pole
- Pen
- Laboratory chain of custody form

Sampling Locations:

- “Upstream” of SSO (reference sample)
- Immediate vicinity where SSO enters water body (“source”)
- “Downstream” of SS

Pre-Sample Collection:

- Get Field Sampling Kit located at the City of Davis WWTP Laboratory sample receiving room.
- Get ice packs from the lab freezer and place in cooler. Use enough ice to properly cool the samples.
- Determine point spill entered waterway – photograph this location (*include a reference point in the photo*)
- Put on PPE from the Sampling Kit
- For each parameter label the bottles “upstream”, “source”, “downstream”

Sample Collection:

1. Upstream Sample Collection: Move 50 – 100’ upstream of point where spill entered waterway. This will be the reference sample.
2. Remove the seal from a coliform sample container (100ml container) just prior to collecting your sample. A powder has been added to the sample container. Leave the powder in the bottle and do not rinse.
3. Remove the cap immediately before collecting each sample.
4. **Avoid Contamination!** Be careful. Make every effort not to touch the inside of the collection bottle and the inner surface of the lid or bottle rim.
5. Holding the bottle in one hand, face upstream and lower the bottle 6” below the water surface. Then sweep the bottle upstream and out of the water. Be careful not to disturb the bottom sediment. Make sure the bottle is filled to the 100ml line. Immediately replace the cap.
6. Open the pint plastic bottle (*Orthophosphate sample*) and follow collection process above (steps 1-7) to fill to just below the neck of the container. A sampling pole may be used to collect the sample and then transferred to the container.
7. Label all of the samples the date and time collected.

Water Quality Management Plan

8. Place samples in cooler on the ice pack.
9. Take a photo of this sample location (*include a reference point in the photo*)
10. Source Sample Collection: Move at least 10' downstream of Source where the spill entered waterway and repeat steps 2-9
11. Downstream Sample Collection: Move at least 100' downstream of point where spill entered waterway and repeat steps 2-9
12. Complete the Chain of Custody form from the Sampling Kit
13. Immediately contact: City of Davis WWTP Laboratory at 530-757-5642 ext. 7601.

NOTE

Lab hours Monday – Friday 7:00-3:30.
For after hours, Weekends & Holidays
Contact WWTP Operator on call at (530) 760-6051

Inform the lab or on-call operator the following samples require processing:

- Orthophosphate – Holding Time = 48hrs
- Fecal Coliform – Holding Time = 8 hrs

14. Take cooler containing the samples and completed chain of custody to the WWTP lab. Samples should be taken to lab as soon as possible after collection. The lab will send out to an ELAP accredited laboratory and/or analyze the samples on-site.
15. Post warning signs as directed by the County Environmental Health Department.
16. Repeat sampling daily from time the spill is known until the results indicate the return to the normal level or the County Department of Environmental Health authorizes cessation of monitoring.
17. Remove Warning Signs and lift restrictions when authorized by the County Environmental Health Department.

Appendix F: Annual Performance Reports
