COUNTY OF DEL NORTE
COUNTY SERVICE AREA NO. 1
SEWER SYSTEM MANAGEMENT PLAN

Prepared for:
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INTRODUCTION

This Sewer System Management Plan (SSMP) has been prepared in compliance with requirements of the State Water Resource Control Board (SWRCB) pursuant to Order No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (WDR) included in Appendix A, and Order Number WQ 2013-0058-EXEC included in Appendix B. The WDR requires development and implementation of a written SSMP, and defines eleven mandatory SSMP elements. The WDR also defines associated monitoring, record keeping, reporting, and public notification requirements.

County of Del Norte County Service Area No. 1(CSA) developed an initial SSMP dated 2012. A SSMP audit was conducted in July 2017 and is attached as Appendix C. This SSMP is an update of the 2012 SSMP and has incorporated the results of the SSMP Audit.

The County of Del Norte County Service Area No. 1 (CSAs) SSMP has been prepared with the assistance of the Crescent City Public Works Department. This SSMP is intended to be a living document, and should be updated as needed to reflect changes to the SSMP elements. The intent of this SSMP is to meet the requirements of the Statewide WDR. This document presents eleven elements in the order presented in the WDR:

- Goals;
- Organization;
- Legal Authority;
- Operation and Maintenance Program;
- Design and Performance Provisions;
- Overflow Emergency Response Plan;
- Fats, Oils, and Grease (FOG) Control Program;
- System Evaluation and Capacity Assurance Plan;
- Monitoring, Measurement, and Program Modifications;
- SSMP Program Audits; and
- Communication Plan.

The County of Del Norte is situated on the beautiful Northern California coast bordering Oregon on the north, Siskiyou County on the east and Humboldt County on the south. The area offers an abundance of outdoor recreational activities utilizing the proximity of the Pacific Ocean, the Smith River and the Klamath River, Redwood National and State Parks, and the Smith River National Recreation Area.

Summer coastal temperatures average 60 to 70 degrees, with inland temperatures being much warmer. Winter temperatures average 40 to 50 degrees.

The City of Crescent City and the CSA each maintain separate sanitary sewer collection systems within their service areas. Flows generated within the CSA are collected and conveyed to the limits of the City's system. The Crescent City system then conveys combined Crescent City and CSA generated flows to the wastewater treatment plant (WWTP), which is owned, operated, and maintained by Crescent City.

As described in the Crescent City NPDES permit, the City owns, operates, and maintains a municipal WWTP and associated collection system and disposal facilities. The Facility serves a residential population of approximately 15,573 with a small number of commercial and institutional users in Crescent City. The City of Crescent City wastewater treatment works provides primary treatment, including two grit removal tanks and two clarifiers; and secondary treatment. Secondary treatment is provided by operating rotating biological contactors and a membrane bioreactor in parallel.

Facility Design Flow	1.86 million gallons per day (mgd) (average dry weather flow rate), 6.12 mgd (peak wet weather flow rate)
Facility Permitted Flow	Shall not exceed 1.86 mgd as an average dry weather flow rate determined from the lowest average daily flow measured over 30 consecutive days.
Receiving Water	Pacific Ocean
Receiving Water Type	Ocean

The sewerage service areas are on the Smith River Plain bordered by the Pacific Ocean to the west, with the base of the coastal range mountains lying to the east. The CSA and Crescent City are in a coastal terrace area with slopes gently declining south toward the harbor and declining east toward Elk Creek. Elevations within the CSA range from 0 to 150 feet above mean sea level (msl). The Northcrest area has elevations ranging from 40 to 60 feet msl. The Bertsch Ocean View area, slopes from the base of the Coast Range both west and south to natural drainage channels and low-lying wetlands.

ELEMENT 1: GOALS

The intent of this section is to identify the goals that the CSA has established for its SSMP. These goals are intended to provide focus for CSA staff to continue proactive management of its wastewater collection system.

1.1 Regulatory Requirements for the Goals Element

The WDR requires that the SSMP goals focus on proper management, operation, and maintenance of 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.

1.2 SSMP Goals

The goals of the CSA's SSMP include:

- Maintaining or improving the condition of the collection system infrastructure in order to provide reliable services now and into the future;
- Cost-effectively minimizing infiltration/inflow (I/I) and provide adequate sewer capacity to accommodate design storm flows;
- Minimizing the number and impact of sanitary SSOs that occur;
- Preventing unnecessary damage to public and private property;
- Working cooperatively with local, state, and federal agencies to investigate the causes of, minimize, and mitigate the impacts of SSOs;
- Meeting all applicable regulatory notification and reporting requirements;
- Being available and responsive to the needs of the public to prevent and restore interruptions in service, and to minimize public health and property impacts related to SSOs;
- Implementing regular, proactive maintenance of the system to remove and control roots, debris, and fats, oils and grease (FOG) that may cause SSOs;
- Prioritizing renewal and replacement of wastewater collection system facilities to maximize their useful life and optimize capital expenditures; and
- Maintaining the SSMP, which will serve as a reference for the CSA's sanitary sewer system management practices.

ELEMENT 2: ORGANIZATION

The intent of this section of the SSMP is to identify the CSA staff members responsible for implementing this SSMP, responding to SSO events, and meeting the SSO reporting requirements. This section also includes the designation of the Legally Responsible Official (LRO) or authorized representative to meet SWRCB requirements for completing and certifying spill reports.

2.1 Regulatory Requirements for the Organization Element

The WDR requires that the Organization element of the SSMP provide the following:

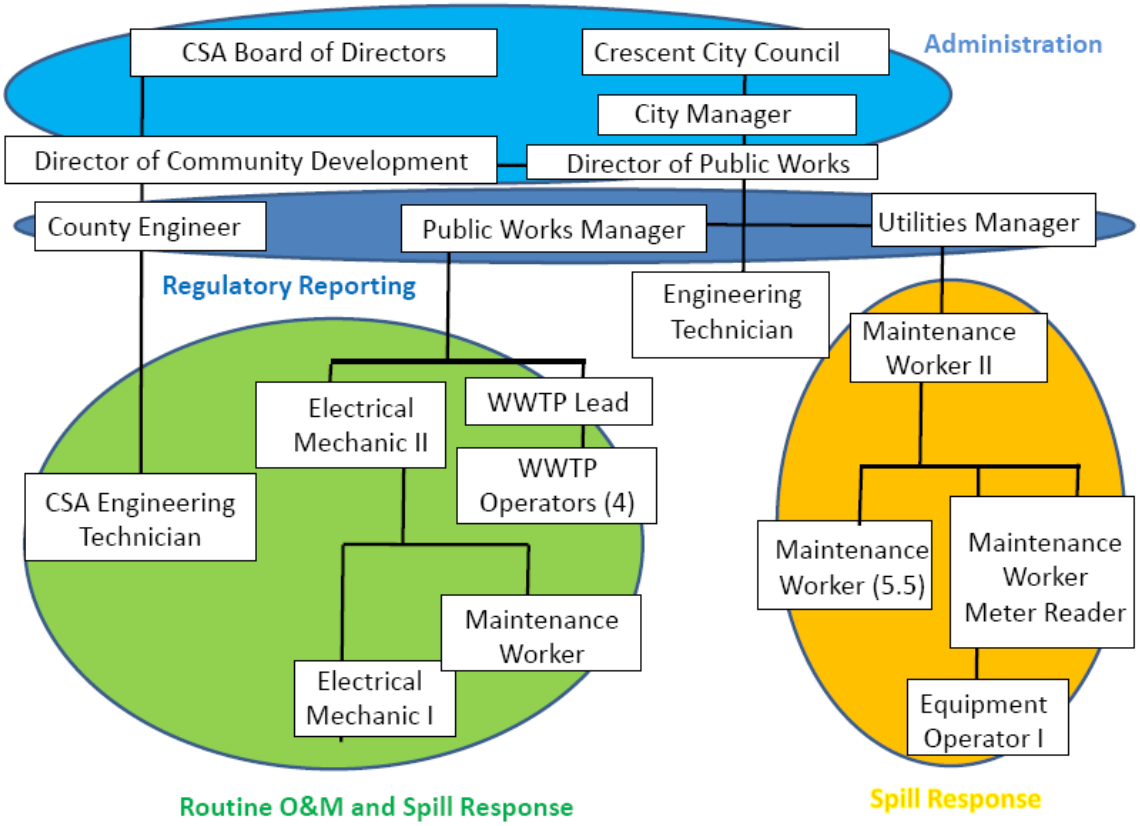
- The name of the responsible or authorized representative;
- The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. Include lines of authority as shown in an organization chart or similar document with a narrative explanation; and
- 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 Boards and other agencies if applicable.

2.2 Organization

The County Service Area No. 1 (CSA) owns and operates the wastewater collection system within the County. The Crescent City Public Works Department provides all maintenance and emergency response services, under contractual agreements, with the CSA but does not fund, operate or have control over the CSA collection system.

The CSA has one employee who helps administer the CSA, along with the County Engineer. The Crescent City Department of Public Works is made up of many positions including the Director of Public Works, Utilities Director/Associate Engineer, Engineering Technician, Water/Wastewater Operations Technician, and the Public Works Maintenance Crews, which is comprised of two work crews with a Lead Person for each work crew. The Crescent City Treatment Facility is made up of several positions including, the Treatment Plant Supervisor, several Operators, and the Laboratory Director with an assistant. Since the City of Crescent City is the agency that is responsible for the maintenance and emergency response for the CSA facilities we have included their lines of authority in addition to the CSA's.

The lines of authority are from the Del Norte County Board of Supervisors through the Director of Community Development, to each individual position. Each position within the CSA's and Crescent City's organization has specific and clearly defined responsibilities and authorities that are designed to meet the CSA's goals for the wastewater program and collectively cover all of the SSMP elements. This ensures that each element of the program is properly addressed and accomplished.



The City is not responsible for the organization of Del Norte County staff or for implementing the SSMP within the County. Del Norte County owns and operates its own collection systems within its political jurisdiction and has prepared a SSMP program that describes the relationship of the CSA to the Crescent City program. To assure the implementation of their respective SSMP programs, periodic meetings have been setup between the City's Director of Public Works and the County Engineer.

The CSA's organizational goal is to clearly define responsibility and authority for accomplishing each program work element. This is accomplished through organization charts, coordination with Crescent City, work assignments, and position descriptions.

Each position is responsible for its own work assignments. Principal positions within the CSA include the County Engineer, which oversees all CSA operations. County wide CSA support staff monitor flows, inspect lines, handles new service requests and ensures fiscal accountability. The County Engineer has the responsibility for the CSA collection system as shown in the following table. Accountability is assured by monitoring and reporting by the various positions at weekly staff meetings. The County Engineer oversees these meetings, and monitors the progress of various functions and activities within the SSMP.

Del Norte County		
Position	Current	Responsibility
Director of Community Development / Manager of CSA	Heidi Kunstal	Director of Community Development is responsible for administration of the Del Norte CSA wastewater collection system.
County Engineer	Jim Barnts (707) 464-7229 work [redacted]	The County Engineer is the duly authorized representative who oversees all facets of the CSA's wastewater and storm water collection systems. Duties include, but are not limited to, design, construction review, planning of capital improvement projects, overseeing GIS mapping, operation and maintenance.
Engineering Technician	Mike Peeples [redacted] (707) 464-7229 work [redacted]	Assists multi-functional centralized engineering services, which include design and construction liaison, planning and research. Also provides construction management services for sewerage system construction projects, including emergency sewer repairs, and pumping station rehabilitation. Assists in the design of rehabilitation and capital improvement projects.

Crescent City Department of Public Works		
Position	Current	Responsibility
Director of Public Works	Eric Wier (707) 464-9506 work [redacted]	The Director of Public Works is the duly authorized representative who oversees all facets of the City's wastewater and storm water collection system. Duties include, but are not limited to, design, construction review, planning of capital improvement projects, overseeing GIS mapping, operation and maintenance.
Utilities Manager	Tom Romesburg (707) 465-3129 work [redacted]	Operates and maintains the City's wastewater and storm water collection and conveyance systems, including pumping stations. Provides emergency response, notification, reporting and follow-up actions. Provides support for training, safety programs, and employee selection and provides technical support in maintenance optimization, planning, and design. Oversees daily activities and quality control for the crews in the field.
WWTP Lead Treatment Plant Operator	Jesse Wood (707) 465-3129 work [redacted]	Oversees operation of the City's wastewater treatment plant including daily activities and quality control for the crew.

Electrical Maintenance Operations Technician II	Dan Borges (707) 464-9506 work [redacted]	Maintains the City's water and wastewater collection system. Duties include troubleshooting and maintenance of all City systems.
Public Works Manager	Jason Wylie (707) 464-9506 work [redacted]	Assists multi-functional centralized engineering services, which include design and construction liaison, planning and research. Also provides construction management services for sewerage system construction projects, including emergency sewer repairs, and pumping station rehabilitation. Assists in the design of rehabilitation and capital improvement projects.
Sr. Public Works Maintenance Worker (Safety Coordinator)	Kim Smith (707) 464-9506 work [redacted]	Assists multi-functional centralized engineering services, which include design and construction liaison, planning and research. Also provides construction management services for sewerage system construction projects, including emergency sewer repairs, and pumping station rehabilitation. Assists in the design of rehabilitation and capital improvement projects.
Engineering Technician	Kevin Tupman (707) 464-9506 work [redacted]	Gathers flow information and inspection data for assessing the condition of the systems. Conveys flow and pipe information to GIS mapping division.
GIS Mapping	Fritz Ludemann (707) 464-9506 work [redacted]	Updates GIS maps per data collected from flow monitoring, smoke testing, Closed Circuit Television (CCTV), and structural and operation grading of pipes.
	PW Crews and WWTP Operators	Maintenance, rehabilitation, and some new sewer construction. Their duties include but are not limited to: routine cleaning, pump station maintenance, overflow response, and rehabilitating existing sewers.

2.3 Authorized Representative

The County Engineer, Jim Barnts, is the Legally Responsible Official (LRO) or duly authorized representative to prepare, certify and submit electronic spill reports to the RWQCB and SWRCB and to notify other government agencies.

2.4 SSO Reporting Chain of Communication

Sanitary system overflow (SSO) detection, notification, response and reporting processes will be described in Element 6 – Overflow Emergency Response Plan. The sanitary system overflow (SSO) detection, notification, and response process is discussed below.

The CSA and Crescent City operation and maintenance crews continually monitor the condition and performance of the collection system with the goal of identifying and fixing any potential problem before it becomes an SSO. In addition, the CSA and Crescent City have stepped up efforts to assess the condition of sewers in the collection systems. Once a spill is reported or observed, it immediately becomes the highest priority.

Citizens can report any problems with the CSA wastewater collection system 24 hours per day, 7 days per week. During normal business hours reports are made to Crescent City Public Works at 707-464-9506. After hours reports are made to the Del Norte County Sheriff's office by calling 707-464-4191. The Del Norte County Sheriff's office has an after-hours call list for the City Public Works Department. If calls are received by the Crescent City Police Department, Fire Departments or 911 they are routed to the Crescent City Department of Public Works during normal business hours or to the Del Norte County Sheriff's office after hours.

All SSO incidences are immediately reported to the Crescent City Director of Public Works and the Crescent City Utilities Director/Associate Engineer. A City crew is assembled, the problem is evaluated, a solution is found, and implemented.

If the SSO occurs in the CSA jurisdiction, the County Engineer will be notified immediately by the Crescent City Director of Public Works, Crescent City Utilities Director/Associate Engineer. The County Engineer or Engineering Technician will respond to all SSOs within the CSA jurisdictional boundaries.

The CSA and Crescent City emphasize timely and accurate notification and reporting. The chain of communication for reporting SSOs has been effective. The CSA and Crescent City maintain a minimum time in responding to an SSO and meets its legal obligation and social responsibility for notification and reporting.

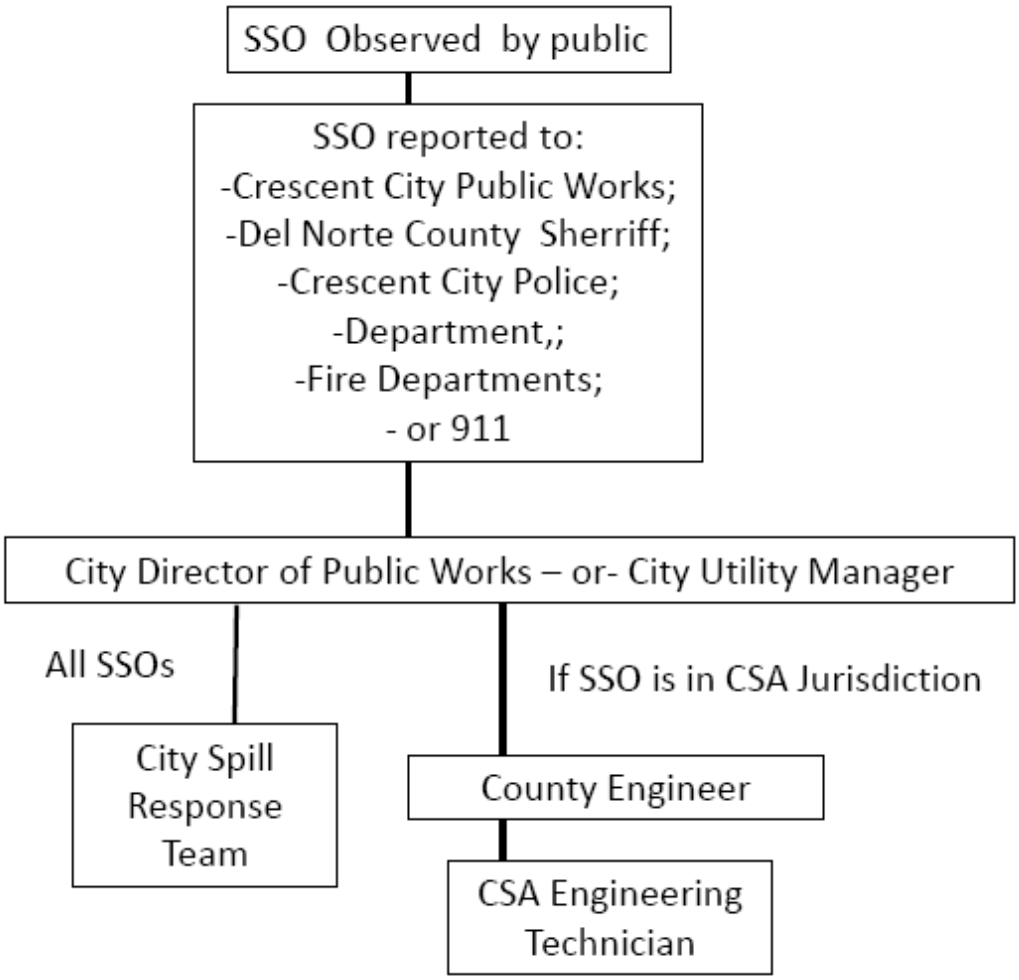
If the SSO occurs in the CSA jurisdiction the County Engineer makes sure the proper agencies are contacted starting with the County Director of Community Development.

If the SSO occurs in the Crescent City jurisdiction the Director of Public Works makes sure the proper agencies are contacted starting with the City Manager.

The decision is then made, depending on the SSO, to contact additional resources as needed (the order will also be determined by the nature of the event):

- Brian McNally - Del Norte County Environmental Health Specialist,
- Steve Wakefield, - Fire Chief – Crescent City Volunteer Fire Department and Crescent Protection Fire District
- Ivan Minsal - Crescent City Police Chief
- Erik Apperson - Del Norte County Sheriff
- Cindy Henderson - Manger, Office of Emergency Services
- Regional Water Quality Control Board, North Coast Region

The County of Del Norte CSA and Crescent City maintains a current after-hours call out list used by the Del Norte County Sheriff. Reporting chain of command is shown below:



ELEMENT 3: LEGAL AUTHORITY

This element of the SSMP discusses the County of Del Norte CSA's Legal Authority, including its uncodified ordinance and agreements with other agencies. This section fulfills the Legal Authority requirement for the WDR (Element 3).

3.1 Regulatory Requirements for the Legal Authority Element

The requirements for the Legal Authority element of the SSMP are summarized below. The CSA must demonstrate, through collection system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

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

3.2 County of Del Norte CSA's Legal Authority

The legal authority required for the SSMP is contained within County of Del Norte Ordinance 2011-008 "Regulations Pertaining to the Pretreatment of Industrial Wastewaters" and is included in Appendix D. County of Del Norte Ordinance 2011-008 contains;

> *The Board of Supervisors hereby adopts Ordinance No. 757 of the City of Crescent City, an uncodified ordinance referred to as the City of Crescent City Industrial Wastewater Pretreatment Ordinance, as that ordinance may be amended from time to time, by this reference.*

Ordinance No. 757 of the City of Crescent City, an uncodified ordinance is included at Appendix E

Based on County of Del Norte Ordinance 2011-008, Crescent City Ordinance No. 2010 - 757, and County of Del Norte County Code, the CSA fulfills the requirements of the SSMP as indicated below:

Prevent illicit discharges into its wastewater collection system (examples may include infiltration and inflow (I/I), storm water, chemical dumping, unauthorized debris and cut roots, etc.);

Illicit discharges into the wastewater collection system are prevented through enforcement of prohibitions listed in the City of Crescent City uncodified Ordinance No. 2010 – 757 Section 2.1 "Prohibited Discharge Standards". The City of Crescent City's uncodified Ordinance No. 2010 - 757 is very clear in regard to use of its wastewater system and control of infiltration and inflow. It has always been the policy of the CSA and Crescent City to have a separation of the storm and sanitary

sewer systems. Crescent City uncodified Ordinance No. 2010 – 757 Section 2.1, (B) (12) prohibits connections of storm drains, downspouts, area drains, storm sewer connections and other sources that could contribute infiltration and/or inflow to the system.

The County also has authority through County of Del Norte County Code as specified below:

County of Del Norte County Code Title: 15 - Utilities
Chapter: 08 - Sewer System-Definitions
Section: 560 - Uncontaminated water

> *"Uncontaminated water" means any wasted water of the community not contaminated or polluted with wastewater and which is suitable or could readily be made suitable for discharge to the municipal storm water drainage system. (Ord. 77-42 § 155, 1977.)*

Chapter: 28 - Sewer System-Use Restrictions
Section: 10 - Discharge of rainwater or uncontaminated water prohibited

> *No person shall discharge or cause to be discharged any rainwater, storm water, groundwater, street drainage, subsurface drainage, yard drainage, water from yard fountains, ponds or lawn sprays, cooling water, or any other uncontaminated water into any sewerage facility which directly or indirectly discharges to facilities owned by the district.*

The County of Del Norte County Code (DNCC) provides for the inspection of new and rehabilitated building sewers and mainline sewers to ensure that the installation meets the high performance standards of the County.

Chapter: 12 - Sewer System-General Provisions
Section: 70 - District inspector Manager authority

> *The manager may personally perform or employ some fit and qualified person or persons to perform the duties of inspecting the installation, connection, maintenance and use of all side sewers and public sewers, and facilities in connection therewith in said district, to be known as the "district inspector." (Ord. 77-42 § 211, 1977.)*

County of Del Norte County Code Title: 15 - Utilities
Chapter: 44 - Sewer System-Enforcement
Section: 90 - Power and authority of inspectors

> *The officers, inspectors, managers and any duly authorized employees of the district shall carry evidence establishing his position as an authorized representative of the district and upon exhibiting the proper credentials and identification shall be permitted to enter in and upon any and all buildings, industrial facilities and properties for the purposes of inspection, reinspection, observation, measurement, sampling, testing or otherwise performing such duties as may be necessary in the enforcement of the provisions of the ordinances, rules and regulations of the district.*

Chapter: 36 - Sewer System-Permits and Charges
Section: 230 - Sewer construction Inspection Certification of completion

All sewer construction work shall be inspected by an inspector acting for the district to insure compliance with all requirements of the district. No sewer shall be covered at any point until it has been inspected and passed for acceptance. No sewer shall be connected to the district's public sewer until the work covered by the permit has been completed, inspected and approved by the district inspector. If tests prove satisfactory and the sewer has been cleaned of all debris accumulated from construction operations, the inspector shall issue a certification of satisfactory completion. (Ord. 77-42 § 823, 1977.)

Plumbing on private properties is under the jurisdiction of the County Building Division, a Division of the Community Development Department. **DNCC Title 14, Chapter 4, Section 10** includes the incorporation of uniform industry codes including the California Plumbing Code based on the Uniform Plumbing Code. The California Plumbing Code prohibits the connection of storm water or surface water drains into the sanitary sewers.

The Del Norte County Building Division is responsible for enforcing the California Plumbing Code which prohibits the connection of storm water or surface water drains into the sanitary sewers.

The Del Norte County Building Division is responsible for ensuring new building construction and rehabilitation projects comply with plans and specifications. County standards do not allow connection of inflow sources into the wastewater conveyance and collection system.

Del Norte County CSA is responsible for controlling infiltration and connections of inflow sources in their jurisdiction.

Require that sewers and connections be properly designed and constructed;

County of Del Norte County Code Title: 15 - Utilities
Chapter: 24 - Sewer System-Design and Construction
Section: 10 - Design and construction standards

A. Minimum standards for the design and construction of sewers within the district shall be in accordance with district planning goals. District design standards heretofore or hereafter adopted by district engineer, with the consent of the board, may permit modifications or may require higher standards where unusual conditions are encountered. Reimbursement to developers for oversizing costs will be based upon real difference in costs due to oversizing or trench depth. Final cost to the district will be established by the manager. Modifications may include larger pipe diameters and increased depth of pipe. B. Three complete sets of "as-built" drawings showing the actual location of all mains, structures, wyes and laterals shall be filed with the district before final acceptance of the work. (Ord. 77-42 § 507, 1977.)

The Del Norte County Code establishes the requirements for the design and construction of sewers and connections. The Code requires that all sewers constructed in the County comply with the County's standard plans, specifications, policies and practices. The code gives the authority and responsibility to the County

Engineer to develop and enforce construction and design standards. These standards are continuously updated to incorporate new materials and construction methods to ensure that the completed installations meet the high performance standards of the County. Construction plans and technical specifications are prepared for each new or rehabilitation project that documents the standard of performance for the construction and the standards for acceptance. The County Board of Supervisors enacts changes to the County Code. The Engineering Division of the Community Development is responsible for enforcing technical compliance with the construction contracts and for testing and inspecting new sewer and rehabilitated sewer installations. The Building Division is responsible for reviewing, issuing permits and enforcing the California Plumbing Code for new and rehabilitated building sewer service connections.

The County Supervisors enacts changes to the DNCC. The Engineer Division is responsible for enforcing technical compliance with the construction contracts and for testing and inspecting new sewer and rehabilitated sewer installations.

The Del Norte County Building Division is responsible for reviewing, issuing permits and enforcing the California Plumbing Code for new and rehabilitated building sewer service connections.

Del Norte County has authority through County of Del Norte County Code to ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the CSA as seen below;

County of Del Norte County Code Title: 15 - Utilities
Chapter: 44 - Sewer System-Enforcement
Section: 150 - Access to facilities

> *The facilities of the district are considered to be critical facilities with regard to the health, safety and welfare of the general public. Access to these facilities must be maintained for use by authorized personnel of the district. Vehicular access to all sewer lift stations shall be maintained for use by authorized persons only and prohibited where posted with signage indicating "No Parking Any Time." Any persons obstructing any areas where parking is prohibited as provided herein shall be subject to civil liabilities pursuant to Section 15.44.200. (Ord. 98-012 § 2 (part), 1998.)*

Chapter: 08 - Sewer System-Definitions
Section: 280 - Local sewering agency

> *"Local sewering agency" means Del Norte County Service Area No. 1, or other public agency legally authorized to construct, maintain and operate a system of lateral or collecting sewers. (Ord. 77-42 § 127, 1977.)*

Limit the discharge of fats, oils, and grease and other debris that may cause blockages;

The CSA has adopted the Crescent City interceptor requirements.

Chapter: 28 - Sewer System-Use Restrictions
Section: 50 - Grease oil and sand interceptors

Grease oil and sand interceptors are required when Grease, oil and sand interceptors shall be provided when, in the opinion of the manager, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand and other harmful ingredients except that such interceptors shall not be required for buildings used for residential purposes. All interceptors shall be of a type and capacity approved by the manager and shall be so located as to be readily and easily accessible for cleaning and inspection.

The CSA controls the discharge of "other debris" into the sewer system through Crescent City uncodified Ordinance No. 2010 – 757 Section 2.1 "Prohibited Discharge Standards".

Enforce any violation of its sewer policies;

The legal authority for enforcement of sewer standards is provided in the following section.

County of Del Norte County Code Title: 15 - Utilities
Chapter: 44 - Sewer System-Enforcement
Section: 10 – Violation Notice required Time limit for correction

Any person found to be violating any provision of Chapters 15.08 through 15.44, or any other ordinance, rule or regulation of the district, shall be served by an authorized person of the district with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. Said time limit shall be not less than two nor more than seven working days. The offender shall, within the period of time stated in such notice, permanently cease all violations. All persons shall be held strictly responsible for any and all acts of agents or employees done under the provisions of Chapters 15.08 through 15.44, or any other ordinance, rule or regulation of the district. Upon being notified by the district of any defect arising in any sewer, or of any violation of the ordinance codified in Chapters 15.08 through 15.44, the person or persons having charge of said work shall immediately correct the same. (Ord. 77-42 § 901, 1977.)

Chapter: 44 - Sewer System-Enforcement
Section: 30 – Disconnection Managers authority

As an alternative method of enforcing the provisions of Chapters 15.08 through 15.44, or any other ordinance, rule or regulation of the district, the manager shall have the power to disconnect the user or subdivision sewer system from the sewer mains of the district. Upon disconnection, the manager shall estimate the cost of disconnection from the reconnection to the system and such user shall deposit the cost, as estimated, of disconnection and reconnection before such user is reconnected to the system. The district shall refund any part of the deposit remaining after payment of all costs of disconnection and reconnection.

3.3 Agreements with Other Agencies

The Del Norte County CSA is a satellite collection system that discharges to the City of Crescent City WWTP. The CSA does have an agreement with the City of Crescent City. The CSA has adopted the most current version of Crescent City uncodified Ordinance No. 2010 – 757 which includes prohibitions and restrictions.

ELEMENT 4: OPERATION AND MAINTENANCE PROGRAM

4.1 Regulatory Requirements for the Operations and Maintenance Program Element

The WDR states that the CSA shall develop and implement an Operations and Maintenance (O & M) Program which should include the following:

- The CSA must maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments, manholes, pumping facilities, pressure pipes, valves, and applicable storm water conveyance facilities;
- The CSA must 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 program should have a system to document scheduled and conducted activities, such as work orders;
- The CSA must 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-term and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
- The CSA must provide equipment and replacement part inventories, including identification of critical replacement parts; and
- The CSA must provide training on a regular basis for staff in sanitary sewer system operations, maintenance, and require contractors to be appropriately trained.

4.2 Maps

The CSA has CAD mapping of their collection system. The CSA also relies on the City of Crescent City mapping system which covers the CSA collection system. The City of Crescent City provides all necessary mapping information services to the CSA. The CSA maintains an up to date comprehensive set of sewer maps (storm water and sanitary sewer) that show all the features of the CSA's collection system. These maps have been converted to a modern state-of-the-art CAD System. The CSA currently has all manholes and sewer mains in the CSA limit numbered and shown on GIS. The City's CAD system has the entire collection system including the CSA as well as other informational layers, developed with information from the City's maintenance and operations database. The City and CSA's goal is to actively use the GIS for system management, decision-making, and prioritization of work. The GIS is routinely updated to include system expansion, rehabilitation, and building lateral sewer changes.

The City of Crescent City uses GIS software to maintain a wastewater/stormwater atlas printed at a useable scale and indexed to a map Key (includes the CSA). I-pad versions of the atlas are kept in the wastewater office and in field vehicles. The wastewater/stormwater atlas issued to locate and identify wastewater and storm drainage structures and to aid in the response to a SSO.

4.3 Preventive Operations and Maintenance Program

All preventative operation and maintenance of the CSA is provided by agreement by the City of Crescent City. All of the Crescent City preventive operations and maintenance activities cover the CSA collection system. The Crescent City wastewater treatment plant (WWTP) staff performs a variety of scheduled, preventive, predictive, and breakdown maintenance on a diverse spectrum of equipment. The main goal of maintenance activities is to ensure equipment availability to meet plant process operation requirements.

The City utilizes a Computerized Maintenance Management System (CMMS) system to track and schedule both preventive and corrective maintenance activities that include the CSA collection system.

City of Crescent City Public Works Department currently performs all the every-other-year maintenance of the City and CSA gravity sewer mains. Each year, specific sewer lines are identified for routine cleaning by the City. The City's policy dictates that all City and CSA sewer mains will be cleaned at least once during any given five year period. Problematic sewer lines are cleaned more frequently based on past experience.

Sewer System (pipeline) Maintenance

CSA Sewer system maintenance is performed by Crescent City under agreement with the CSA. The City has a proactive and preventive maintenance program for the City and CSA sewer system. Preventive maintenance is focused on critical and problematic areas. Problem sewers are identified, prioritized, and scheduled for maintenance based on comprehensive review of the maintenance history and system characteristics of all the sewers in the City and CSA including overflows, blockages, excessive maintenance, age, material, condition, etc. Maintenance includes high velocity cleaning, visual inspections, and preventive repairs.

All SSOs caused by obstructions are inspected within 24-hours after the initial occurrence of an overflow. Closed circuit television (CCTV) may be used to identify any necessary repairs or special maintenance needs.

In addition to the preventive maintenance, the City implemented a proactive maintenance program where "non-problem" sewers are also scheduled for maintenance and cleaning (Sewer Basin Cleaning), but on a less frequent basis. The City has implemented this proactive maintenance program that provides cleaning and maintenance of the "non-problem" sewers at least once every five years in the City and CSA collection systems. Also, the City developed and implemented a system-wide manhole inspection program that is performed at least once every two year. Proactive maintenance is performed on a basin-by-basin approach in the City and CSA's collection systems.

Pumping Station Maintenance

The CSA currently owns and operates the following 15 sewage pump stations within the CSA's service areas.

1. Tedson Lift Station
2. Walmart Lift Station
3. Pebble Beach Pump Station
4. Small Lift Station
5. Modoc Lift Station
6. Hodge Lift Station
7. Roy Lift Station
8. Elk Valley Lift Station
9. Olive Lift Station
10. Burtschell Lift Station
11. Seawood Lift Station
12. Pacific Lift Station
13. Oregon Lift Station
14. Madison Lift Station
15. Northcrest Lift Station

All of the pump stations utilize an emergency alarm system for monitoring power failure, high wet well conditions. The alarm system is monitored 24 hours per day through a Supervisory Control and Data Acquisition (SCADA) computer system, which notifies key City personnel of a problem which will be installed in the next 12-months. The City employees then respond to the emergency as required in the City and CSA collection systems.

The City has a routine preventive operation and maintenance program for all sewage pumping stations in the City and CSA collections systems. All pumping stations have the capability to have portable backup emergency generators attached to them. Generally each pumping station is visually inspected weekly to assured proper function. When there is a problem with the pumping stations be it mechanical or a power outage, the sewage will reach a predetermined level to trip an alarm at the Wastewater Treatment Plant. A crew is assembled, the problem is evaluated, and a solution is implemented. If the alarm is activated after hours, an automatic dialing system dials staff until someone is reached. City staff will then assemble a crew, the problem is evaluated, and a solution is implemented. These actions have significantly reduced overflows caused by power outages. Operation and maintenance crews weekly monitor the condition and performance of the system with the goal of identifying and fixing a potential problem before it becomes an SSO. In addition, the City has stepped up its efforts to assess the condition of sewers in the collection system. Once a spill is reported or observed, it immediately becomes the highest priority.

Citizens can phone 24 hours per day, 7 days per week to report any problems with the wastewater collection system.

All overflow incidences are immediately reported to the City Director of Public Works and the Utilities Manager, and County Engineer (if the SSO is in the CSA). A City crew is assembled, the problem is evaluated, a solution is found, and implemented.

The CSA and City emphasize timely and accurate notification and reporting of SSOs in the City / CSA collection systems. The chain of communication for reporting SSOs has been effective. The City / CSA maintain a minimum time in responding to an SSO and meet their legal obligations and social responsibility for notification and reporting.

Root Control
The City and CSA has had some problems with roots mainly in laterals. If inspection determines roots are an issue in a line, subcontractors will use a cutter to eliminate the issue.

Odor Control
The CSA and City receives very few odor complaints per year typically associated with lift stations. Any odor complaints will be addressed quickly by the City.

Non-Routine Maintenance
The CSA utilizes contract services for emergency cleaning and a combination of contract and in-house services for cleaning of known trouble spots. Non-routine maintenance activities include investigation and response to any complaints regarding a manhole overflow, missing or shifted manhole covers, manhole covers that are excessively noisy, residential plumbing problems, lift station malfunction, unexpected sewer odor, etc. Sewer complaints are investigated and appropriate actions are taken to resolve the source of the problem.

Special Needs Maintenance
The City has a hot spot sewer cleaning program for identified problematic line segments in the City and CSA collection systems. The hot spot sewer cleaning program prevents blockages and SSOs with a monthly or every 2-week cleaning cycle. Frequencies of cleaning cycles may be adjusted based on the observations during the sewer cleaning. The frequency will be increased for line segments with moderate to heavy accumulations and decreased for line segments with lesser accumulations.

Emergency Maintenance
The CSA's collection system facilities have periodically experienced blockages and/or SSOs that require unplanned maintenance under emergency conditions. The City has developed emergency maintenance procedures contained within their *Sanitary Sewer Overflow and Backup Response Plan*, for more information. Refer to Element 6. The City has on call personnel available 24-hours a day weekends and holidays who will respond to emergencies in the City and CSA collections systems.

Information Systems/Data Collection
The City currently tracks maintenance activities in the City and CSA collection system using CMMS work orders.

4.4 Rehabilitation and Replacement Program

Based on an agreement between the CSA and the City, the City utilizes a combination of inspection activities to assess the condition of sewer assets in the City and CSA collection systems including:

- Routine aboveground and underground inspections of the collection system facilities, and lift stations to identify defects, damage or other identified problems;
- The City has a goal of inspecting the entire system with CCTV by 2020;

- Manhole inspections using CCTV are scheduled to be completed by 2020;
- A flow monitoring capacity analysis was performed for the Facilities Plan; and
- Smoke testing and dye testing may be used to monitor and reduce I/I.

Recent Projects and Advancements Planned and Implementation

- Funding and acquisition of a new CCTV inspection system with grants is in progress;
- Complete rehabilitation of all but three CSA lift stations including the installation of chopper pumps, and new valves and pumps, and new control panels; and
- SCADA master plan complete with hardware and software has been funded and in progress.

The Short Term

The structural condition of the collection system is determined and tracked. CCTV inspections with the goal of having the entire collection system (including the CSA) inspected by the end of 2020. The condition of each sewer from manhole to manhole is evaluated and categorized shortly after the inspection. A five-category system is used to rank the relative condition of the sewer. The sewers that need urgent repair (Category 5 sewers) are given the highest priority for repair and replaced within one year of categorization. Those in a condition that require structural improvement within five years (Category 4 sewers) are scheduled for replacement or rehabilitation as appropriate funds become available. Category 4 sewers are CCTV-inspected each year until fixed. This data is used to set priorities, budgets, and schedules for timely repairs. Planning, design, and construction projects are scheduled based on a prioritized order that focuses on the most critical needs first. In addition to CCTV inspection, the City physically inspects each manhole with a goal of inspecting every manhole on a five-year frequency. This information is also used to identify short-term rehabilitation needs in the City and CSA collection systems.

Follow-up inspections are conducted at a location of overflows with CCTV to identify the extent of necessary repairs or any special maintenance needs.

The City and CSA are in the process of developing a list of sewer sections that are classified as Category 5 indicating a need for short term rehabilitation and replacement projects. The City and CSA will complete the list identifying short term and long term replacement and rehabilitation projects in the City and CSA collection systems by 2020.

Long Term

The City conducts comprehensive and systematic inspections and assessments of all components of the City and CSA wastewater collection system. Inspections are used to identify problems requiring repair and to identify and prioritize necessary collection system improvement (rehabilitation and upgrade) projects. The City uses state-of-the-art closed circuit television (CCTV) equipment to inspect and assess the condition of secondary sewers and some of the primary sewers, depending on size and flow levels. The CCTV inspections are prioritized by staff using a ranking system that incorporates age, size, construction material, and known problem sewers. The City has a general objective to visually inspect and document the condition of each of the manholes in the City and CSA on a five-year cycle.

These CCTV inspections together with physical inspections provide up-to-date data that are used by the City to evaluate the hydraulic and structural condition of the City and CSA collection systems. From this assessment, deficiencies are identified and evaluated. Improvement projects identified from this evaluation are then scheduled.

The City is in the process of developing a list of sewer sections that are classified as Category 4 and 3 indicating a need for long term rehabilitation and replacement projects in the City and CSA collection systems. The City will complete the list identifying short term and long term replacement and rehabilitation projects by 2020.

4.5 Training

CSA staff is limited to a single position (Engineering Technician). The CSA Engineering Technician participates in the Crescent City staff training program. City crews and the CSA Engineering Technician are trained in the proper operation and maintenance of all new major mobile equipment and facilities by the contractor/manufacturer. Written operation and maintenance manuals are used as resource material for initial start-up training as well as new staff training.

Safety training is an integral part of the City's program. Every staff member receives formal safety training. Crews are trained in confined space entry as well hazardous materials management, as required by regulations.

The City has certified staff trained by the National Association of Sewer Service Companies (NASSCO) in its Pipeline Assessment and Certification Program (PACP). The PACP evaluation program uses a five category-based condition rating system based on the types and severity of defects. The categories range from Category 1, excellent, to Category 5, immediate replacement condition. The condition ratings trigger a follow-up action that includes either rehabilitation within a certain time frame or a follow-up inspection. Rehabilitation projects are developed and scheduled for implementation on a prioritized basis with other identified needs. Category 1 and 2 condition sewers are in excellent to good condition and are scheduled for continued inspections and monitoring. Category 3 condition sewers are considered to be in fair condition and are scheduled for follow-up inspections every five years until repairs have been completed. Category 4 condition sewers are in a condition that requires close monitoring and may require rehabilitation within five years and are included in planning, design, and construction scheduling. Preventive measures are intensified, as appropriate, to avoid emergency situations and follow-up inspections are conducted annually. Category 5 condition sewers are considered in an immediate replacement condition. These are sewers where a pipe failure has already occurred or there is a full flow obstruction/blockage and immediate repairs are initiated.

The CSA currently requires contractors to have all State and Federal required trainings and certifications and to comply with contractor safety requirements.

4.6 Contingency Equipment and Replacement Parts Inventory

City crews maintain the pumping stations and perform repair or replacement of all sewer pipelines in the City and CSA collection systems. The City maintains an inventory of equipment, replacement parts, and supplies. A structured process is followed to ensure an up-to-date accounting and complete inventory of equipment and replacement parts for their specific duties. Parts that are needed for pumping station preventive

maintenance are identified ahead of time for each specific maintenance task. Parts are secured prior to the start of the preventive maintenance. Redundancy is provided for key pumping station equipment and all pumping stations have backup power available to minimize the risk of a complete pumping station shutdown. In advance of severe storms the City pre-deploys the VAC-Con® truck to known trouble spots in the City and CSA collection system. As a backup, City managers have credit authority to purchase needed materials and supplies from local vendors of non-stock items when they are critically needed. There has been little need to purchase parts through this means, which attests to the City's readiness.

The City maintains equipment such as sump pumps, portable generators, traffic control and night lighting systems, etc., in a ready state for immediate deployment in an emergency.

The CSA and City have adequate funding, staff, facilities, and equipment to quickly respond to routine or emergency maintenance needs. The City has a fleet of trucks and equipment used in the operation and maintenance of the over 17 miles of public sewers, and 21 pumping stations, and can quickly minimize impacts and mitigate emergency conditions. The City and CSA have staff and contractors with Vactor trucks available under contract who can respond 24-hours a day.

City crews operate out of the centrally located maintenance yard and the wastewater treatment plant. The geographical locations allow efficient operations and ready response to the City and CSA collection systems. The City maintenance yard is fully equipped with modern equipment and spare parts. The City tracks the use and maintenance history of each vehicle and piece of equipment and replaces them based on a schedule of service time and use. General services and scheduled maintenance on fleet vehicles as well as replacement is based on operating records of the equipment.

ELEMENT 5: DESIGN AND PERFORMANCE PROVISIONS

The intent of this section of the SSMP is to document the CSA's design and performance provisions.

5.1 Regulatory Requirements for the Design and Performance Provisions

The WDR requires that the Design and Performance element of the SSMP provide the following:

- The CSA must have design and construction standards and specifications for the installation of new sewer systems, lift stations and other appurtenances; and for the rehabilitation and repair of existing sewer systems; and
- The CSA must have procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

5.2 Standards for Installation, Rehabilitation and Repair

New and rehabilitated sewer systems and pumping stations are designed and constructed to meet or exceed the performance standards in the industry.

County of Del Norte County Code Title: 15 - Utilities
Chapter: 24 - Sewer System-Design and Construction
Section: 10 - Design and construction standards

> *A. Minimum standards for the design and construction of sewers within the district shall be in accordance with district planning goals. District design standards heretofore or hereafter adopted by district engineer, with the consent of the board, may permit modifications or may require higher standards where unusual conditions are encountered. Reimbursement to developers for oversizing costs will be based upon real difference in costs due to oversizing or trench depth. Final cost to the district will be established by the manager. Modifications may include larger pipe diameters and increased depth of pipe. B. Three complete sets of "as-built" drawings showing the actual location of all mains, structures, wyes and laterals shall be filed with the district before final acceptance of the work. (Ord. 77-42 § 507, 1977.)*

The Del Norte County Code establishes the requirements for the design and construction of sewers and connections. The Code requires that all sewers constructed in the County comply with the County's standard plans, specifications, policies and practices. The code gives the authority and responsibility to the County Engineer to develop and enforce construction and design standards. These standards are continuously updated to incorporate new materials and construction methods to ensure that the completed installations meet the high performance standards of the County. Construction plans and technical specifications are prepared for each new or rehabilitation project that documents the standard of performance for the construction and the standards for acceptance. The County Board of Supervisors enacts changes to the County Code.

5.3 Standards for Inspection and Testing of New, Rehabilitated, and Repaired Facilities

The Engineering Division of the Community Development is responsible for enforcing technical compliance with the construction contracts and for testing and inspecting new sewer and rehabilitated sewer installations. The Building Division is responsible for reviewing, issuing permits and enforcing the California Plumbing Code for new and rehabilitated building sewer service connections.

The County Supervisors enact changes to the DNCC. The Engineering Division is responsible for enforcing technical compliance with the construction contracts and for testing and inspecting new sewer and rehabilitated sewer installations.

The Del Norte County Building Division is responsible for reviewing, issuing permits and enforcing the California Plumbing Code for new and rehabilitated building sewer service connections.

All sewage collection system facilities are designed to meet permit requirements of the various federal, state and local agencies. In addition, environmental documents are prepared to comply with the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), or both as appropriate. This process ensures that new and rehabilitated facilities are designed to the highest of industry standards.

Design

All gravity sewer line systems within the City of Crescent City and CSA are designed to meet state standards for the State of California. Pipe sizes are determined by the ultimate service area and available slope. All gravity sewer line plans are designed by registered civil engineers and reviewed and approved by the City of Crescent City or CSA prior to construction.

Construction:

Qualified contractors, who must have a Class ‘A’ general contractor’s license when working within the City/County road right-of-way, construct all gravity sewer line systems. The contractors work is inspected by the City of Crescent City Public Works Department or CSA and tested for trench compaction and pipeline integrity in compliance with the State of California recommendations. Connections to the gravity sewer system are not permitted until final approval by the City of Crescent City Public Works Department or CSA, and recorded drawings have been filed.

ELEMENT 6: OVERFLOW EMERGENCY RESPONSE PLAN

The intent of this section of the SSMP is to document the CSA's Overflow Emergency Response Plan (OERP). The City of Crescent City, under agreement with the CSA, provides overflow emergency response services in the CSA collection system. Following an SSO response by Crescent City staff, the CSA will be responsible for contracting sewer repair services if necessary.

6.1 Regulatory Requirements for the Overflow Emergency Response Plan

The CSA shall develop and implement an OERP that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

- Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
- A program to ensure appropriate response to all overflows;
- 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 Adopted Amended Monitoring and Reporting Requirements State Water Resources Control Board Order Number WQ 2013-0058-EXEC. All SSOs shall be reported in accordance with this Order, the California Water Code, other State Law, and other applicable Regional Water Board WDR or National Pollution Discharge Elimination System (NPDES) permit requirements. The SSMP should identify the officials who will receive immediate notification;
- Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
- Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
- A program to ensure that all reasonable steps are taken to contain untreated wastewater and prevent discharge of untreated wastewater to waters of the United States and 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 City of Crescent City, under agreement with the CSA, provides overflow emergency response services in the CSA collection system. The City's Overflow Emergency Response Plan is included in Appendix F and complies with the above requirements.

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ELEMENT 7: FATS, OILS AND GREASE (FOG) CONTROL PROGRAM

The intent of this section of the SSMP is to document the CSA's FOG Program and identify program additions. The City of Crescent City, under agreement with the CSA, provides FOG Control services in the CSA collection system. The City of Crescent City has a FOG Control Policy and approved a FOG ordinance that they apply to dischargers in the CSA.

7.1 Regulatory Requirements for the FOG Program

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

- An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
- 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;
- The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
- 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;
- Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance;
- An identification of sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for each section; and
- Development and implementation of source control measures, for all sources of FOG discharged to the sewer system, for each sewer system section identified above.

7.2 Public Education and Outreach Program

The City of Crescent City has developed a FOG Control Policy that was adopted by the CSA is included in Appendix G. Public education and outreach occurs at the time of the FOG inspections that take place at a frequency based on individual facility compliance history. FOG inspections are performed in the City and CSA service areas. During the initial FOG inspection process the City representative provided operators with copies of the City's FOG Control Policy and Ordinance. The City representative discussed the importance of FOG control and answer questions. Additionally the City has post FOG information on its webpage.

7.3 FOG Source Control

The City of Crescent City has developed and implemented a FOG Control Policy in the City and CSA service areas that is included in Appendix G. Implementation of the FOG Control Policy included the following steps:

- Development of a FOG source list;
- Perform initial inspections;
- Follow-up inspections to verify maintenance;
- Create FOG records system for the retention of site specific FOG information; and
- Perform semi-annual FOG inspections and maintain records.

7.4 Disposal of FOG

FOG discharge to the sewer is prohibited. Users are required to properly dispose of pretreatment wastes (brown grease) and cooking grease (yellow grease). Neither City nor the CSA has a registration system for FOG waste haulers. The City of Crescent City WWTP does not accept trucked or hauled waste at this time.

The City and CSA do not own or operate a FOG disposal facility. Licensed FOG hauling contractors are available for the Crescent City and CSA areas and are required to dispose of grease to a certified disposal facility. The frequency of cleaning for a FSE's grease control device will be on a case by case basis and therefore a schedule for FOG disposal will also be on a case by case basis. A list of FOG pumping and/or FOG waste hauling contractors in Del Norte County is provided in Appendix H.

7.5 Legal Authority for FOG Program

Legal authority for the CSA FOG Program is contained within County of Del Norte Ordinance 2011-008, Crescent City Ordinance No. 2010 - 757, and County of Del Norte County Code.

Prevent illicit discharges into its wastewater collection system (examples may include infiltration and inflow (I/I), storm water, chemical dumping, unauthorized debris and cut roots, etc.);

County of Del Norte County Code,
Title: 15 - Utilities
Chapter: 08 - Sewer System-Definitions
Section: 410 - Sanitary sewer

> "Sanitary sewer" means a sewer which carries sewage and to which storm, surface and groundwater are not intentionally admitted. (Ord. 77-42 § 140, 1977.)

Title: 15 - Utilities
Chapter: 28 - Sewer System-Use Restrictions
Section: 10 - Discharge of rainwater or uncontaminated water prohibited

> *No person shall discharge or cause to be discharged any rainwater, storm water, groundwater, street drainage, subsurface drainage, yard drainage, water from yard fountains, ponds or lawn sprays, cooling water, or any other*

uncontaminated water into any sewerage facility which directly or indirectly discharges to facilities owned by the district. (Ord. 77-42 § 601, 1977.)

Title: 15 - Utilities
Chapter: 28 - Sewer System-Use Restrictions
Section: 30 - Industrial wastewater discharges prohibited

No industrial wastewaters shall be discharged to a trunk sewer or to a sewer discharging directly or indirectly to a trunk sewer until a permit for industrial wastewater discharge has been approved and issued by the district.

Title: 15 - Utilities
Chapter: 28 - Sewer System-Use Restrictions
Section: 40 - Discharge of certain wastes prohibited

No person shall discharge, cause or permit to be discharged into any public sewer wastes prohibited by resolution of the board in conformance with Section 15.12.060. (Ord. 77-42 § 603, 1977.)

Crescent City Uncodified Ordinance No. 757 Section 2.1 “Prohibited Discharge Standards".

Limit the discharge of fats, oils, and grease and other debris that may cause blockages;

Crescent City Uncodified Ordinance No. 757 Section 2.1 “Prohibited Discharge Standards"

Crescent City Uncodified Ordinance No. 767 Section 3.5 “Interceptor Requirements"

Enforce any violation of its sewer policies;

County of Del Norte County Code,
Title: 15 - Utilities
Chapter: 44 - Sewer System-Enforcement
Section: 10 – Violation Notice required Time limit for correction

Any person found to be violating any provision of Chapters 15.08 through 15.44, or any other ordinance, rule or regulation of the district, shall be served by an authorized person of the district with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. Said time limit shall be not less than two nor more than seven working days. The offender shall, within the period of time stated in such notice, permanently cease all violations. All persons shall be held strictly responsible for any and all acts of agents or employees done under the provisions of Chapters 15.08 through 15.44, or any other ordinance, rule or regulation of the district. Upon being notified by the district of any defect arising in any sewer, or of any violation of the ordinance codified in Chapters 15.08 through 15.44, the person or persons having charge of said work shall immediately correct the same. (Ord. 77-42 § 901, 1977.)

Additional CSA enforcement authority is provided in Crescent City Uncodified Ordinance No. 2010 – 757;

- Section 10 “Administrative Enforcement Remedies”;

- Section 11 “Judicial Enforcement Remedies”; and
- Section 12 “Supplemental Enforcement Action”.

7.6 Requirements to Install Grease Removal Devices

County of Del Norte County Code,
Title: 15 - Utilities
Chapter: 28 - Sewer System-Use Restrictions
Section: 50 - Grease oil and sand interceptors required when

> *Grease, oil and sand interceptors shall be provided when, in the opinion of the manager, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand and other harmful ingredients except that such interceptors shall not be required for buildings used for residential purposes. All interceptors shall be of a type and capacity approved by the manager and shall be so located as to be readily and easily accessible for cleaning and inspection. (Ord. 77-42 § 604, 1977.)*

Additional CSA enforcement authority is provided in Crescent City uncodified Ordinance No. 2010 – 757; Section 3.5 (A) “Interceptors"

7.7 Authority to Inspect Grease Producing Facilities

County of Del Norte County Code,
Title: 15 - Utilities
Chapter: 12 - Sewer System-General Provisions
Section: 70 - District inspector Manager authority

> The manager may personally perform or employ some fit and qualified person or persons to perform the duties of inspecting the installation, connection, maintenance and use of all side sewers and public sewers, and facilities in connection therewith in said district, to be known as the "district inspector." (Ord. 77-42 § 211, 1977.)

Additional CSA enforcement authority is provided in Crescent City uncodified Ordinance No. 2010 – 757; Section 7.1 “Right of Entry: inspection and Sampling"

7.8 Identification of Grease Problem Areas and Sewer Cleaning

The City of Crescent City is developing a list of problem areas, primarily caused by grease blockages in the City and CSA collection areas.

ELEMENT 8: SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

This section of the SSMP discusses the CSA's capacity management measures, and recommended capacity improvement projects.

8.1 Regulatory Requirements for the System Evaluation and Capacity Assurance Plan

The WDR requirements for the System Evaluation and Capacity Assurance element of the SSMP are summarized below:

Evaluation: The CSA must identify actions needed to evaluate those portions of the sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows, estimates of the capacity of key system components, hydraulic deficiencies, and the major sources that contribute to the peak flows associated with overflow events.

Design Criteria: Where design criteria do not exist or are deficient, the agency should undertake the evaluation identified in the Evaluation section above to establish appropriate design criteria.

Capacity Enhancement Measures: The agency must identify the steps needed to establish a short- and long-term Capital Improvement Plan (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.

Schedule: The agency shall develop a schedule of completion dates for all portions of the CIP developed in the Evaluation, Design Criteria and Capacity Enhancement Measures sections above. This schedule shall be reviewed and updated at least every five years.

8.2 Capacity Evaluation

The CSA not only has the legal authority to control sources of I/I, it has implemented an aggressive program to eliminate overflows. The CSA, recognizing its social and regulatory responsibility to protect the health and safety of its citizens, has developed and continues to refine a substantial multitask, multiphase program to upgrade its wastewater collection system. The City's capital improvement program includes a full time crew dedicated to the reconstruction of the wastewater collection system in the City and CSA areas. The City and CSA has, and continues to invest in a substantial effort in identifying and documenting areas of high infiltration/inflow.

The City has prepared the Crescent City Wastewater Facilities Plan which contains the technical information required by this Element. Based on the Wastewater Facilities Plan, the City's collection system has hydraulic capacity to convey current peak dry weather flows. Dry weather Sanitary Sewer Overflows are possible due to blockages although

they rarely if ever occur. The City and CSA has virtually eliminated dry weather overflows resulting from power outages or equipment failures at the pumping stations due to the availability of portable backup generators, well stocked and centrally located maintenance yard, and a trained available crew.

If the flows are unusually high, it is normally not a capacity issue. The cause of the high flows is immediately determined through field investigations or flow analysis. The cause may be from a blockage, structural failure, unusually high discharges, or from continued growth in the basin. Once the cause has been determined, the solution, be it cleaning, maintenance, or rehabilitation will be scheduled and implemented on a priority basis.

8.3 Recommended Capacity Projects

The City and CSA have recently upgraded all but three of the wastewater lift stations which increases the sewer system capacity and reliability. The remaining three lift stations are funded and scheduled for upgrade this winter.

Short Term

The structural condition of the City and CSA collection systems is determined and tracked. CCTV inspections have been increased with the goal of having the entire collection system (including the CSA) inspected by the end of 2020. The condition of each sewer from manhole to manhole is evaluated and categorized shortly after the inspection. A five-category system is used to rank the relative condition of the sewer. The sewers that need urgent repair (Category 5 sewers) are given the highest priority for repair and replaced within one year of categorization. Those in a condition that require structural improvement within five years (Category 4 sewers) are scheduled for replacement or rehabilitation as appropriate funds become available. Category 4 sewers are CCTV-inspected each year until fixed. This data is used to set priorities, budgets, and schedules for timely repairs. Planning, design, and construction projects are scheduled based on a prioritized order that focuses on the most critical needs first. In addition to CCTV inspection, the City physically inspects each manhole every two years. This information is also used to identify short-term rehabilitation needs.

Follow-up inspections are conducted at the location of an overflow with CCTV within 24 hours of an overflow to identify the extent of necessary repairs or any special maintenance needs.

Long Term:

The City conducts comprehensive and systematic inspections and assessments of all components of the City and CSA wastewater collection systems. Inspections are used to identify problems requiring repair and to identify and prioritize necessary collection system improvement (rehabilitation and upgrade) projects. The City uses state-of-the-art closed circuit television (CCTV) equipment to inspect and assess the condition of secondary sewers and some of the primary sewers, depending on size and flow levels. The CCTV inspections are prioritized by staff using a ranking system that incorporates age, size, construction material, and known problem sewers. The City visually inspects and documents the condition of each of the manholes in the City and CSA on a two year cycle.

These CCTV inspections together with physical inspections provide up-to-date data that are used by the City to evaluate the hydraulic and structural condition of its collection

system and the CSA collection system. From this assessment, deficiencies are identified and evaluated. Improvement projects identified from this evaluation are then scheduled.

The City has certified staff trained by the National Association of Sewer Service Companies (NASSCO) in its Pipeline Assessment and Certification Program (PACP). The PACP evaluation program uses a five category-based condition rating system based on the types and severity of defects. The categories range from Category 1, excellent, to Category 5, immediate replacement condition. The condition ratings trigger a follow-up action that includes either rehabilitation within a certain time frame or a follow-up inspection. Rehabilitation projects are developed and scheduled for implementation on a prioritized basis with other identified needs. Category 1 and 2 sewers are in excellent to good condition and are scheduled for continued inspections and monitoring. Category 3 condition sewers are considered to be in fair condition and are scheduled for follow-up inspections every five years until repairs have been completed. Category 4 condition sewers are in a condition that requires close monitoring and may require rehabilitation within five years and are included in planning, design, and construction scheduling. Preventive measures are intensified, as appropriate, to avoid emergency situations and follow-up inspections are conducted annually. Category 5 condition sewers are considered in an immediate replacement condition. These are sewers where a pipe failure has already occurred or there is a full flow obstruction/ blockage and immediate repairs are initiated.

This overall process starts with the flow monitoring with the newly installed SCADA infrastructure, the hydraulic model, and condition assessment as described under other program elements. Field-gathered data is recorded in the City's electronic data management programs. This data is displayed in GIS map overlays, tables and other forms for evaluation and decision-making. When the pipe capacity determined by the hydraulic model is inadequate or a sewer is in need of rehabilitation, the problem segment is evaluated. The results of the evaluation are summarized in a hydraulic deficiency report. The report defines the problem; identifies and evaluates alternative solutions, considering current and future structural, hydraulic, and operational needs; and recommends a preferred solution.

Using the hydraulic model and projected flows undersized pipes have been identified through the year 2057. Please see the Wastewater Facilities Plan for further discussion.

Crescent City Department of Public Works and CSA determines the ongoing needs for gathering data on current system performance, evaluating the hydraulic, structural, and operational condition of facilities, and planning system improvements.

ELEMENT 9: MONITORING, MEASUREMENTS, AND PROGRAM MODIFICATIONS

This section of the SSMP discusses parameters the CSA tracks to monitor the success of the SSMP and how the CSA plans to keep the SSMP current.

9.1 Regulatory Requirements for the Monitoring, Measurements, and Program Modifications

The WDR requirements for the Monitoring, Measurement, and Program Modifications element of the SSMP are summarized below:

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

9.2 Monitoring Information

The CSA will maintain information that can be used in SSMP performance monitoring through the CIWQS database administered by the State and Regional Water Quality Control Boards to track information under the statewide general SSO order. All CIWQS information is available through the Public Reports portal at:
http://www.waterboards.ca.gov/water_issues/programs/ciwqs/publicreports.html

9.3 Performance Measures

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

- Total number of SSO locations per year;
- Volume of spilled wastewater recovered per year compared to total volume of wastewater spilled; and
- Volume of spilled wastewater discharged to surface waters per year compared to total volume of wastewater spilled per year.

These parameters were selected because they are straightforward, quantitative, and focused on results. These parameters are also available to both CSA staff and the public at all times through the CIWQS system.

Additional performance measures include programs that the CSA is developing for implementation as a result of the SSMP development process. These programs include:

Future Activity and Schedule	Completion Date
The CSA has a goal of CCTV inspection of their entire sewer system.	2020
Manhole inspections using CCTV are scheduled to be completed;	2020
Complete the list identifying short term and long term replacement and rehabilitation projects.	2020

9.4 Performance Monitoring and Program Changes

The SSMP should be updated periodically to maintain current information, and programs need to be enhanced or modified if they are determined to be less effective than needed. The CSA will annually evaluate the performance of the wastewater collection system using the performance measures listed in Section 9.3. The CSA will review the successes and needed improvements of the SSMP as part of the SSMP audit, described in Element 10 performed every 2-years.

CSA staff will update critical information, such as contact numbers and the SSO response chain of communication, as needed. A comprehensive SSMP update will occur every 5 years, as required by the SWRCB.

ELEMENT 10: SSMP PROGRAM AUDITS

The intent of this section of the SSMP is to document the CSA's auditing program.

10.1 Regulatory Requirements for the SSMP Program Audits

The WDR requirements for the SSMP Program Audits element of the SSMP are summarized below:

The CSA 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 CSA's compliance with the SSMP requirements, including identification of any deficiencies in the SSMP and steps to correct them.

10.2 SSMP Audits Discussion

The CSA will audit its SSMP every two years. The first audit will be completed prior to September 1, 2019 and will cover calendar years 2017 and 2018. The audit will determine whether the SSMP meets the current requirements of the WDR, whether the SSMP reflects the CSA's current practices, and whether the CSA is following the SSMP.

The audit will be conducted by a team consisting of the CSA and the City's Public Works Department Staff. The audit team may also include members from other areas of the City, outside agencies, and/or contractors. The scope of the audit will cover each of the sections of the SSMP.

The results of the audit will be included in the Audit Report. The Audit Report may contain information about successes in implementing the most recent version of the SSMP and identify revisions that may be needed for a more effective program. Information collected as part of Element 9 Monitoring, Measurement, and Program Modifications will be used in preparing the audit. Tables, figures, and/or charts may be used to summarize information about these indicators.

The CSA will update its SSMP at least every five years. The first update will be completed on or before July 1, 2022.

The CSA will determine the need to update its SSMP more frequently based on the results of the biannual audits and the performance of its sanitary sewer system using information from the Monitoring and Measuring Program. In the event that the CSA decides that an update is warranted, the process to complete the update will be identified at that time. The CSA will complete the update within one year following identification of the need for the update.

The CSA Staff will seek the approval from the County Board of Supervisors for any significant changes to the SSMP. The authority for approval of minor changes such as employee names, contact information, or limited procedural changes is delegated to the County Engineer.

ELEMENT 11: COMMUNICATION PLAN

The intent of this section of the SSMP is to identify a plan to communicate information regarding the CSA's SSMP activities to the public. The plan includes a process for the public to receive SSMP information as well as provide input to the CSA on the SSMP.

11.1 Regulatory Requirements for the Communication Plan

The WDR requirements for the Communication Plan element of the SSMP are summarized below:

- The CSA 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 CSA as the program is developed and implemented; and
- The CSA shall create a plan of communication with systems that are tributary and/or satellite to the CSA's sanitary sewer system.

11.2 Communication Plan

The CSA has several methods for communicating information to and receiving information from the public. The following methods have been identified as alternatives that would be effective as part of the CSA's Communication Plan.

CSA Website – The CSA will evaluate the use of a webpage on the CSA's existing website to facilitate the transfer of information to the public regarding the SSMP. This webpage would include the entire SSMP, audit performance information, and associated information. The webpage would also serve as a venue for soliciting input from the public on the SSMP.

Monthly Water and Sewer Billing – An annual notice regarding the sanitary sewer system performance can be included in monthly water and sewer billings. The notice would contain general SSMP information. The notice could also refer the customers to the City website for additional details, if an SSMP webpage is implemented. The notice would be printed in both English and Spanish.

Notices in Public Spaces – Notices of the SSMP project could be posted and handouts made available in public spaces such as the Del Norte County Community Development Department (981 H Street, Suite 110, Crescent City, CA, 95531) and library.

Board of Supervisors Meetings – Del Norte County Board of Supervisors meetings are public meetings and televised on a local broadcast station. General SSMP information and updates on sanitary sewer system performance could be added as a regular discussion item on the Del Norte County Board of Supervisors agenda.

The CSA will provide a copy of the draft SSMP to the City of Crescent City for review and comments.

APPENDIX A
ORDER NO. 2006-0003, STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS (WDR)

STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

The State Water Resources Control Board, hereinafter referred to as "State Water Board", finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as "Enrollees".

2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.

3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.

4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.

6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.

7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.

8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.

9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).

10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.

11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

    - The discharges are produced by the same or similar operations;
    - The discharges involve the same or similar types of waste;
    - The discharges require the same or similar treatment standards; and
    - The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

    This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:
    a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
    b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
    c) Establish consistent and uniform requirements for SSMP development and implementation;
    d) Provide statewide consistency in reporting; and
    e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.

17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.

18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
    a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
    b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
    c. Occurs during, or as a result of, the treatment or disposal of wastes.

19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.

20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute "existing facilities" as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.

22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.

23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
   (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
   (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
   (iii) 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.

2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.

4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is http://ciwqs.waterboards.ca.gov. This online database is maintained on a secure site and is controlled by unique usernames and passwords.

5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.

6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.

7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
    a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
    b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
    c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. Deadlines for Application – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.

2. Applications under the general WDRs – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.

2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.

2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:

    (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
    (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
    (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
    (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.

3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.

4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.

6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:

   (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;

   (ii) The Enrollee can identify the cause or likely cause of the discharge event;

   (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.

   (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;

   (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
   - Proper management, operation and maintenance;
   - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
   - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
   - Installation of adequate backup equipment; and
   - Inflow and infiltration prevention and control to the extent practicable.

   (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

(vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.

7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

   The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

   (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
   (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
   (iii) Cleanup of debris at the overflow site;
   (iv) System modifications to prevent another SSO at the same location;
   (v) Adequate sampling to determine the nature and impact of the release; and
   (vi) Adequate public notification to protect the public from exposure to the SSO.

8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.

9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.

10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.

11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.

13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

(i) **Goal**: The goal of the 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 SSOs, as well as mitigate any SSOs that do occur.

(ii) **Organization**: 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)).

(iii) **Legal Authority:** 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 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 fats, oils, and grease and other debris that may cause blockages, and

(e) Enforce any violation of its sewer ordinances.

(iv) **Operation and Maintenance Program**. The 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 Preventative 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

(e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

(v) **Design and Performance Provisions**:

(a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and

(b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

(vi) **Overflow Emergency Response Plan -** Each Enrollee shall develop and implement an overflow emergency response plan 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 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.

(vii) **FOG Control Program:** 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.

(viii) **System Evaluation and Capacity Assurance Plan**: The Enrollee shall prepare and implement a capital improvement plan (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 plan 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.

(ix) **Monitoring, Measurement, and Program Modifications:** 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 preventative maintenance 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.

(x) **SSMP Program Audits** - 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.

(xi) **Communication Program** – 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.

14. Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

    In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

    State Water Resources Control Board
    Division of Water Quality
    Attn: SSO Program Manager
    P.O. Box 100
    Sacramento, CA 95812

    The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

Task and Associated Section	**Completion Date**			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage ***Section C***	6 months after WDRs Adoption			
Reporting Program ***Section G***	6 months after WDRs Adoption[1]			
SSMP Development Plan and Schedule ***No specific Section***	9 months after WDRs Adoption[2]	12 months after WDRs Adoption[2]	15 months after WDRs Adoption[2]	18 months after WDRs Adoption[2]
Goals and Organization Structure ***Section D 13 (i) & (ii)***	12 months after WDRs Adoption[2]		18 months after WDRs Adoption[2]	
Overflow Emergency Response Program ***Section D 13 (vi)***	24 months after WDRs Adoption[2]	30 months after WDRs Adoption[2]	36 months after WDRs Adoption[2]	39 months after WDRs Adoption[2]
Legal Authority ***Section D 13 (iii)***				
Operation and Maintenance Program ***Section D 13 (iv)***				
Grease Control Program ***Section D 13 (vii)***				
Design and Performance ***Section D 13 (v)***	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
System Evaluation and Capacity Assurance Plan ***Section D 13 (viii)***				
Final SSMP, incorporating all of the SSMP requirements ***Section D 13***				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program ***Section G***	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee's offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:

    a. Enter upon the Enrollee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;

    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and

d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.

2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.

3. All Enrollees must obtain SSO Database accounts and receive a “Username” and “Password” by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the “Collection System Questionnaire”, which collects pertinent information regarding a Enrollee’s collection system. The “Collection System Questionnaire” must be updated at least every 12 months.

4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

   Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:

    (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)

    (ii) An individual is a duly authorized representative only if:

        (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and

        (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.

2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.

2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

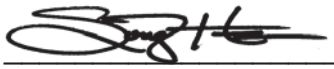
The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None



Song Her
Clerk to the Board

APPENDIX B
ORDER NUMBER WQ 2013-0058-EXEC

STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (hereafter State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general Waste Discharge Requirements (WDRs) for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code section 13263(i).

2. Water Code section 13193 *et seq.* requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) to gather Sanitary Sewer Overflow (SSO) information and make this information available to the public, including but not limited to, SSO cause, estimated volume, location, date, time, duration, whether or not the SSO reached or may have reached waters of the state, response and corrective action taken, and an enrollee's contact information for each SSO event. An enrollee is defined as the public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.

3. Water Code section 13271, *et seq.* requires notification to the California Office of Emergency Services (Cal OES), formerly the California Emergency Management Agency, for certain unauthorized discharges, including SSOs.

4. On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ, "Statewide Waste Discharge Requirements for Sanitary Sewer Systems"[1] (hereafter SSS WDRs) to comply with Water Code section 13193 and to establish the framework for the statewide SSO Reduction Program.

5. Subsection G.2 of the SSS WDRs and the Monitoring and Reporting Program (MRP) provide that the Executive Director may modify the terms of the MRP at any time.

6. On February 20, 2008, the State Water Board Executive Director adopted a revised MRP for the SSS WDRs to rectify early notification deficiencies and ensure that first responders are notified in a timely manner of SSOs discharged into waters of the state.

7. When notified of an SSO that reaches a drainage channel or surface water of the state, Cal OES, pursuant to Water Code section 13271(a)(3), forwards the SSO notification information[2] to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter

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[1] Available for download at:
http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf

[2] Cal OES Hazardous Materials Spill Reports available Online at:
http://w3.calema.ca.gov/operational/malhaz.nsf/$defaultview and http://w3.calema.ca.gov/operational/malhaz.nsf

and Cal OES is duplicative. To address this, the SSO notification requirements added by the February 20, 2008 MRP revision are being removed in this MRP revision.

8. In the February 28, 2008 Memorandum of Agreement between the State Water Board and the California Water and Environment Association (CWEA), the State Water Board committed to re-designing the CIWQS[3] Online SSO Database to allow "event" based SSO reporting versus the original "location" based reporting. Revisions to this MRP and accompanying changes to the CIWQS Online SSO Database will implement this change by allowing for multiple SSO appearance points to be associated with each SSO event caused by a single asset failure.

9. Based on stakeholder input and Water Board staff experience implementing the SSO Reduction Program, SSO categories have been revised in this MRP. In the prior version of the MRP, SSOs have been categorized as Category 1 or Category 2. This MRP implements changes to SSO categories by adding a Category 3 SSO type. This change will improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). This change will also assist enrollees in identifying SSOs that require Cal OES notification.

10. Based on over six years of implementation of the SSS WDRs, the State Water Board concludes that the February 20, 2008 MRP must be updated to better advance the SSO Reduction Program[4] objectives, assess compliance, and enforce the requirements of the SSS WDRs.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Water Code section 13267(f), Resolution 2002-0104, and Order 2006-0003-DWQ, the MRP for the SSS WDRs (Order 2006-0003-DWQ) is hereby amended as shown in Attachment A and shall be effective on September 9, 2013.

8/6/13
Date

Thomas Howard
Executive Director

[3] California Integrated Water Quality System (CIWQS) publicly available at http://www.waterboards.ca.gov/ciwqs/publicreports.shtml

[4] Statewide Sanitary Sewer Overflow Reduction Program information is available at: http://www.waterboards.ca.gov/water_issues/programs/sso/

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order 2006-0003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems" (SSS WDRs). This MRP shall be effective from September 9, 2013 until it is rescinded. The Executive Director may make revisions to this MRP at any time. These revisions may include a reduction or increase in the monitoring and reporting requirements. All site specific records and data developed pursuant to the SSS WDRs and this MRP shall be complete, accurate, and justified by evidence maintained by the enrollee. Failure to comply with this MRP may subject an enrollee to civil liabilities of up to $5,000 a day per violation pursuant to Water Code section 13350; up to $1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. The State Water Resources Control Board (State Water Board) reserves the right to take any further enforcement action authorized by law.

A. SUMMARY OF MRP REQUIREMENTS

Table 1 – Spill Categories and Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for Sanitary Sewer Overflow (SSO) definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of **any volume** resulting from an enrollee's sanitary sewer system failure or flow condition that: • Reach surface water and/or reach a drainage channel tributary to a surface water; or • Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of **1,000 gallons or greater** resulting from an enrollee's sanitary sewer system failure or flow condition that **do not** reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems **within a privately owned sewer lateral** connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION **(see section B of MRP)**	• 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**, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number.	Call Cal OES at: **(800) 852-7550**
REPORTING **(see section C of MRP)**	• Category 1 SSO: 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: 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: Submit certified report within 30 calendar days of the end of month in which SSO the occurred. • SSO Technical Report: 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: 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: Update and certify every 12 months.	Enter data into the CIWQS Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee's Legally Responsible Official(s).
WATER QUALITY MONITORING **(see section D of MRP)**	• 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 are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING **(see section E of MRP)**	• 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.

B. NOTIFICATION REQUIREMENTS

Although Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) staff do not have duties as first responders, this MRP is an appropriate mechanism to ensure that the agencies that have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any Category 1 SSO greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.

2. To satisfy notification requirements for each applicable SSO, the enrollee shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:

    i. Name of person notifying Cal OES and direct return phone number.
    ii. Estimated SSO volume discharged (gallons).
    iii. If ongoing, estimated SSO discharge rate (gallons per minute).
    iv. SSO Incident Description:
        a. Brief narrative.
        b. On-scene point of contact for additional information (name and cell phone number).
        c. Date and time enrollee became aware of the SSO.
        d. Name of sanitary sewer system agency causing the SSO.
        e. SSO cause (if known).
    v. Indication of whether the SSO has been contained.
    vi. Indication of whether surface water is impacted.
    vii. Name of surface water impacted by the SSO, if applicable.
    viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
    ix. Any other known SSO impacts.
    x. SSO incident location (address, city, state, and zip code).

3. Following the initial notification to Cal OES and until such time that an enrollee certifies the SSO report in the CIWQS Online SSO Database, the enrollee shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).

4. PLSDs: The enrollee is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the enrollee becomes aware of the PLSD.

C. REPORTING REQUIREMENTS

1. **CIWQS Online SSO Database Account:** All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS. These accounts allow controlled and secure entry into the CIWQS Online SSO Database.

2. **SSO Mandatory Reporting Information:** For reporting purposes, if one SSO event results in multiple appearance points in a sewer system asset, the enrollee shall complete one SSO report in the CIWQS Online SSO Database which 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 caused the SSO, and provide descriptions of the locations of all other discharge points associated with the SSO event.

3. **SSO Categories**

   i. **Category 1** – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that:

      a. Reach surface water and/or reach a drainage channel tributary to a surface water; or

      b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).

   ii. **Category 2** – Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee's sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.

   iii. **Category 3** – All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.

4. **Sanitary Sewer Overflow Reporting to CIWQS - Timeframes**

   i. **Category 1 and Category 2 SSOs** – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:

      a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three (3) business days of the enrollee becoming aware of the SSO. Minimum information that shall be reported in a draft Category 1 SSO report shall include all information identified in section 8.i.a. below. Minimum information that shall be reported in a Category 2 SSO draft report shall include all information identified in section 8.i.c below.

      b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within 15 calendar days of the end date of the SSO. Minimum information that shall be certified in the final Category 1 SSO report shall include all information identified in section 8.i.b below. Minimum information that shall be certified in a final Category 2 SSO report shall include all information identified in section 8.i.d below.

ii. **Category 3 SSOs** – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30). Minimum information that shall be certified in a final Category 3 SSO report shall include all information identified in section 8.i.e below.

iii. **"No Spill" Certification** – If there are no SSOs during the calendar month, the enrollee shall either 1) certify, within 30 calendar days after the end of each calendar month, a "No Spill" certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, "No Spill" certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 - July/August/September, and Q4 - October/November/December.

If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee shall still certify a "No Spill" certification statement for that month.

iv. **Amended SSO Reports** – The enrollee may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the enrollee may contact the SSO Program Manager to request to amend an SSO report if the enrollee also submits justification for why the additional information was not available prior to the end of the 120 days.

5. **SSO Technical Report**

The enrollee shall submit an SSO Technical Report in 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. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

i. **Causes and Circumstances of the SSO:**

a. Complete and detailed explanation of how and when the SSO was discovered.

b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).

c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.

d. Detailed description of the cause(s) of the SSO.

e. Copies of original field crew records used to document the SSO.

f. Historical maintenance records for the failure location.

ii. **Enrollee's Response to SSO:**

a. Chronological narrative description of all actions taken by enrollee to terminate the spill.

b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring:**

a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.

b. Detailed location map illustrating all water quality sampling points.

6. **PLSDs**

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

i. The enrollee is also encouraged to provide notification to Cal OES per section B above when a PLSD greater than or equal to 1,000 gallons has or may result in a discharge to surface water. For any PLSD greater than or equal to 1,000 gallons regardless of the spill destination, the enrollee is also encouraged to file a spill report as required by Health and Safety Code section 5410 et. seq. and Water Code section 13271, or notify the responsible party that notification and reporting should be completed as specified above and required by State law.

ii. If a PLSD is recorded in the CIWQS Online SSO Database, the enrollee must identify the sewage discharge as occurring and caused by a private sanitary sewer system asset and should identify a responsible party (other than the enrollee), if known. Certification of PLSD reports by enrollees is not required.

7. **CIWQS Online SSO Database Unavailability**

In the event that the CIWQS Online SSO Database is not available, the enrollee must fax or e-mail all required information to the appropriate Regional Water Board office in accordance with the time schedules identified herein. In such event, the enrollee must also enter all required information into the CIWQS Online SSO Database when the database becomes available.

8. **Mandatory Information to be Included in CIWQS Online SSO Reporting**

All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS which can be reached at CIWQS@waterboards.ca.gov or by calling (866) 792-4977, M-F, 8 A.M. to 5 P.M. These accounts will allow controlled and secure entry into the CIWQS Online SSO Database. Additionally, within thirty (30) days of initial enrollment and prior to recording SSOs into the CIWQS Online SSO Database, all enrollees must complete a Collection System Questionnaire (Questionnaire). The Questionnaire shall be updated at least once every 12 months.

i. **SSO Reports**

At a minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report for each category of SSO:

a. **Draft Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:

1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
2. SSO Location Name.
3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
5. Whether or not the SSO reached a municipal separate storm drain system.
6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
7. Estimate of the SSO volume, inclusive of all discharge point(s).
8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
9. Estimate of the SSO volume recovered (if applicable).
10. Number of SSO appearance point(s).
11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
12. SSO start date and time.
13. Date and time the enrollee was notified of, or self-discovered, the SSO.
14. Estimated operator arrival time.
15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.

b. **Certified Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a :

1. Description of SSO destination(s).
2. SSO end date and time.
3. SSO causes (mainline blockage, roots, etc.).
4. SSO failure point (main, lateral, etc.).
5. Whether or not the spill was associated with a storm event.
6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
7. Description of spill response activities.
8. Spill response completion date.
9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
11. Whether or not health warnings were posted as a result of the SSO.
12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
13. Name of surface water(s) impacted.
14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.

c. **Draft Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:

1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO.

d. **Certified Category 2 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:

1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-9, and 17 in section 8.i.b above for Certified Category 1 SSO.

e. **Certified Category 3 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:

1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-5, and 17 in section 8.i.b above for Certified Category 1 SSO.

ii. **Reporting SSOs to Other Regulatory Agencies**

These reporting requirements do not preclude an enrollee from reporting SSOs to other regulatory agencies pursuant to state law. In addition, these reporting requirements do not replace other Regional Water Board notification and reporting requirements for SSOs.

iii. **Collection System Questionnaire**

The required Questionnaire (see subsection G of the SSS WDRs) provides the Water Boards with site-specific information related to the enrollee's sanitary sewer system. The enrollee shall complete and certify the Questionnaire at least every 12 months to facilitate program implementation, compliance assessment, and enforcement response.

iv. **SSMP Availability**

The enrollee shall provide the publicly available internet web site address to the CIWQS Online SSO Database where a downloadable copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP is posted. If all of the SSMP documentation listed in this subsection is not publicly available on the Internet, the enrollee shall comply with the following procedure:

a. Submit an **electronic** copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor, Sacramento, CA 95814

D. WATER QUALITY MONITORING REQUIREMENTS:

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

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 enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
   i. Ammonia
   ii. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e-coli.

E. RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the enrollee for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The enrollee shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned including any required records generated by an enrollee's sanitary sewer system contractor(s).

2. SSO Records: The enrollee shall maintain records for each SSO event, including but not limited to:
   i. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not

result in SSOs. Each complaint record shall, at a minimum, include the following information:

a. Date, time, and method of notification.

b. Date and time the complainant or informant first noticed the SSO.

c. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.

d. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.

e. Final resolution of the complaint.

ii. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with section D.7 of the SSS WDRs.

iii. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.

3. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.

4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:

i. Supervisory Control and Data Acquisition (SCADA) systems

ii. Alarm system(s)

iii. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

F. CERTIFICATION

1. All information required to be reported into the CIWQS Online SSO Database shall be certified by a person designated as described in subsection J of the SSS WDRs. This designated person is also known as a Legally Responsible Official (LRO). An enrollee may have more than one LRO.

2. Any designated person (i.e. an LRO) shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.

3. Data Submitter (DS): Any enrollee employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of the enrollee if authorized by the LRO and registered with the State Water Board. However, only LROs may certify reports in CIWQS.

4. The enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by the enrollee to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

5. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Resources Control Board.

7/30/13
Date

Jeanine Townsend
Clerk to the Board

APPENDIX C
SSMP AUDIT REPORT, JUNE 2017

Biennial Sewer System Management Plan Audit Report

Name of agency	**Del Norte County County Service Area No. 1 (CSA)**
Date of audit	**February 28, 2017**
Date of SSMP	**June 2012**
SSMP Update Due Date	**June 2017**
Name of auditor	**Jim Barnts (Del Notre County CSA), Orrin Plocher (Freshwater Environmental Services)**

The purpose of the Sewer System Management Plan (SSMP) Audit is to evaluate the effectiveness of Del Norte County's CSA SSMP and to identify whether updates are needed. This document was designed to meet the requirements of State Water Resources Control Board Order No. 2006-0003-DWQ as revised by Order No. WQ 2013-0058-EXEC. Documentation of SSMP audits are kept on file at the Del Norte County Community Development Department, and an indication is made in the California Integrated Water Quality System (CIWQS) database that the audit was completed. This audit report format is modified from audit reports(s) developed by Bay Area Clean Water Agency (BACWA).

ELEMENT 1. GOALS

1. Are the goals stated in the SSMP still appropriate and accurate? **YES / NO**

ELEMENT 2. ORGANIZATION

2. Is the SSMP up-to-date with organization and staffing contact information? **YES NO**

Comment: Update SSMP to reference current Crescent City and County Staff.

ELEMENT 3. LEGAL AUTHORITY

3. Does the SSMP reference up-to-date information about legal authority? **YES / NO**

4. Does Del Norte County CSA have sufficient legal authority to control sewer use and maintenance? **YES NO**

Comment: County Ordinance 2011-008 adopts Crescent City Ordinance 757 and updates. The Board of Supervisors was authorized in the same County Ordinance to enter into a memorandum of understanding or similar agreement(s) with the City of Crescent City to provide for the administration and enforcement of this Ordinance. SSMP to reference the MOU or similar agreement regarding administration and enforcement of this Ordinance.

ELEMENT 4. OPERATIONS AND MAINTENANCE PROGRAM

4.a Map of the Sanitary Sewer System

5. Does the SSMP reference up-to-date information about maps? **YES / (NO)**

6. Are collection system maps complete, up-to-date, and sufficiently detailed? **(YES) / NO**

Comment: Need to provide updated information about the County GIS system and asset management capabilities.

4.b Preventative Maintenance Program

7. Does the SSMP contain up-to-date information about preventive operations and maintenance activities? **YES / (NO)**

8. Are Del Norte County's preventive maintenance activities sufficient and effective in reducing and preventing SSOs and blockages? **(YES) / NO**

Comment: Verify and document 2 week hotspot cleaning schedule. Update description of Crescent City program.

4.c Rehabilitation and Replacement Plan

9. Does the SSMP contain up-to-date information about the rehabilitation and replacement program? **YES / (NO)**

10. Does the SSMP contain up-to-date information about Closed Circuit Television (CCTV) inspections? **YES / (NO)**

11. Are scheduled inspections and the condition assessment system effective in identifying, prioritizing, and addressing deficiencies? **(YES) / NO**

12. Does the Capital Improvement Plan (CIP) address prioritized projects for collection system assets? **YES / (NO)**

Comment: Update information about CCTV inspection program, schedule, and goals. Verify condition ranking system. Include specific information regarding CIP.

4.d Training

13. Does the SSMP contain up-to-date information about existing training programs? **YES / (NO)**

14. Do supervisors believe their staff are sufficiently trained? **(YES) / NO**

15. Are staff satisfied with the training opportunities and support offered to them? **(YES) / NO**

Comment: Update training information to include description of staff training on equipment, and procedures, including safety, and SSO response procedures.

4.e Equipment and Replacement Part Inventories

16. Does the SSMP reference up-to-date information about equipment and replacement part inventories? **(YES) / NO**

ELEMENT 5. DESIGN AND PERFORMANCE PROVISIONS

17. Does the SSMP contain up-to-date information about design and construction standards? **YES / NO**

ELEMENT 6. SSO & BACKUP RESPONSE PLAN

18. Does the SSMP contain an up-to-date version of SSO Response Plan? **YES / NO**

19. Is the Response Plan effective in handling SSOs? (if **YES**, indicate specific information under the "Evaluation of the Effectiveness of the SSMP" section below) **YES / NO**

Comment: Update response plan information, update notification and reporting procedure.

ELEMENT 7. FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

20. Does the SSMP reference or contain up-to-date information about the CSA's FOG control program? **YES / NO**

21. Is the current FOG program effective in documenting and controlling FOG sources? **YES / NO**

22. Are all public outreach materials for the FOG program current? **YES / NO**

Comment: There have been no FOG caused SSOs since 2011.

ELEMENT 8. SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

23. Does the SSMP reference or contain up-to-date information about CSA's capacity assessment activities and documentation? **YES / NO**

24. Is the CSA sufficiently addressing hydraulic deficiencies? **YES / NO**

Comment: Update results of continuous flow monitoring. Update list of areas with capacity deficiencies and identify projects included in the CIP.

ELEMENT 9. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

25. Does the SSMP reference up-to-date information about the CSA's data collection and organization (e.g. use of CMMS, performance indicators, etc.)? **YES / NO**

26. Is CSA's data collection and organization sufficient to evaluate the effectiveness of the SSMP? **YES / NO**

ELEMENT 10. SSMP PROGRAM AUDITS

27. Will this SSMP Audit be completed by every two years starting in 2017? **YES / NO**

ELEMENT 11. COMMUNICATION PROGRAM

28. Is Crescent CSA's website up-to-date, including information related to providing an opportunity for public input on the SSMP? **YES / NO**

Comment: The current SSMP was not located on the County website.

Evaluation of the Effectiveness of the SSMP

Below is a summary of SSOs associated with the Del Norte County CSA wastewater collection system:

Del Norte County CSA
SSO Summary 2008 to 2016

Year	Number of SSOs	Total Volume	Recovered	% Recovery		Lift Station Malfunction	I/I	Debris	FOG
2008	1	30	0	**0.0%**			1		
2009	2	195	15	**7.7%**		1	1		
2010	3	125	15	**12.0%**		1	1		1
2011	5	550	430	**78.2%**		1		1	2
2012	1	12,000	0	**0.0%**			1		
2013	0	0	0	**NA**					
2014	0	0	0	**NA**					
2015	1	135	0	**0.0%**		1			
2016	2	4,000	0	**0.0%**			2		
				Total		4	6	1	3
				% of Total		29%	43%	7%	21%

Recent SSOs caused by excessive flow due to I/I creating a hydraulic deficiency and equipment failure. All lift stations have been rehabilitated and should result in more reliable operation, better communication (SCADA upgrade), and fewer or smaller SSOs.

APPENDIX D
DEL NORTE COUNTY UNCODIFIED ORDINANCE NO. 20110 - 008

BOARD OF SUPERVISORS
COUNTY OF DEL NORTE
STATE OF CALIFORNIA

ORDINANCE NO. 2011-008

An Ordinance of the Del Norte County Board of Supervisors Adopting Regulations Pertaining to the Pretreatment of Industrial Wastewaters

The Board of Supervisors of the County of Del Norte does ordain as follows:

SECTION 1. Findings. This Ordinance is passed and adopted based upon the findings stated in the Staff Report and the Board of Supervisors hereby makes said findings as more particularly described in said Staff Report, which is herein incorporated by reference (§ 65804(c)-(d) of the Government Code).

SECTION 2. Adoption by Reference. The Board of Supervisors hereby adopts Ordinance No. 757 of the City of Crescent City, an uncodified ordinance referred to as the City of Crescent City Industrial Wastewater Pretreatment Ordinance, as that ordinance may be amended from time to time, by this reference.

SECTION 3. Agreements with City. The Board of Supervisors is authorized to enter into a memorandum of understanding or similar agreement(s) with the City of Crescent City to provide for the administration and enforcement of this Ordinance.

SECTION 4. Repeal. The following sections of the Del Norte County Code are hereby repealed:

15.32.030 Industrial wastewater discharge Permit Requirements generally
15.32.040 Industrial wastewater discharge Permit Application
15.32.050 Availability of district facilities
15.32.060 Pretreatment of industrial wastewaters
15.32.070 Industrial wastewater discharge Permit Change of restrictions
15.32.080 Suspension of Permit Conditions
15.32.090 Revocation of Permit Conditions
15.32.100 Sampling, analyses and flow measurements
15.32.110 Prohibited discharges
15.32.120 Damage caused by prohibited wastewater

SECTION 5. Classification. This Ordinance is an uncodified ordinance.

SECTION 5. Severability. If any part of this Ordinance or its application is determined to be invalid by a court of competent jurisdiction, the Board of Supervisors intends that such invalidity will not affect the effectiveness of the remaining provisions or applications and, to this end, the provisions of this Ordinance are severable.

SECTION 6. Effective Date. This Ordinance will be effective 31 days following its final passage and adoption.

PASSED AND ADOPTED this 8th day of November 2011 by the Board of Supervisors of the County of Del Norte by the following polled vote:

AYES: Supervisors McClure, Finigan, Sullivan, Hemmingsen, McNamer
NOES: None
ABSENT: None
ABSTAIN: None

Leslie McNamer

LESLIE MCNAMER, Chair
Board of Supervisors

ATTEST:

JEREMI RUIZ, Clerk of the Board
of Supervisors, County of Del Norte
State of California

APPROVED AS TO FORM:

GRETCHEN STUHR, County Counsel

Date: November 8, 2011

I hereby certify that according to the provisions of Government Code Section 25103, delivery of this document has been made.

Clerk of the Board

By:

APPENDIX E
CRESCENT CITY UNCODIFIED ORDINANCE NO. 2010 - 757

BOARD OF SUPERVISORS
COUNTY OF DEL NORTE
STATE OF CALIFORNIA

ORDINANCE NO. 2011-008

An Ordinance of the Del Norte County Board of Supervisors Adopting Regulations Pertaining to the Pretreatment of Industrial Wastewaters

The Board of Supervisors of the County of Del Norte does ordain as follows:

SECTION 1. Findings. This Ordinance is passed and adopted based upon the findings stated in the Staff Report and the Board of Supervisors hereby makes said findings as more particularly described in said Staff Report, which is herein incorporated by reference (§ 65804(c)-(d) of the Government Code).

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SECTION 6. Effective Date. This Ordinance will be effective 31 days following its final passage and adoption.

PASSED AND ADOPTED this 8th day of November 2011 by the Board of Supervisors of the County of Del Norte by the following polled vote:

AYES: Supervisors McClure, Finigan, Sullivan, Hemmingsen, McNamer
NOES: None
ABSENT: None
ABSTAIN: None

Leslie McNamer

LESLIE MCNAMER, Chair
Board of Supervisors

ATTEST:

JEREMI RUIZ, Clerk of the Board
of Supervisors, County of Del Norte
State of California

APPROVED AS TO FORM:

GRETCHEN STUHR, County Counsel

Date: November 8, 2011

I hereby certify that according to the provisions of Government Code Section 25103, delivery of this document has been made.

Clerk of the Board

By:

APPENDIX F
OVERFLOW EMERGENCY RESPONSE PLAN

CITY OF CRESCENT CITY
SEWER OVERFLOW EMERGANCY RESPONSE PLAN

Prepared for:
City of Crescent City
377 J Street
Crescent City, California 95531

June 2017

Prepared by:
Orrin Plocher and Stan Thiesen
of

Freshwater Environmental Services

78 Sunny Brae Center
Arcata, California 95521
Phone (707) 839-0091

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LIST OF APPENDICES

1.0 INTRODUCTION

The purpose of the Sanitary Sewer Overflow Emergency Response Plan (OERP) is to support an orderly and effective response to Sanitary Sewer Overflows (SSOs). The OERP provides guidelines for responding to, cleaning up, and reporting SSOs that may occur within the collection system service area.

1.1 Regulatory Requirements for the Overflow Emergency Response Plan

The City shall develop and implement an OERP that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

- Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
- A program to ensure appropriate response to all overflows;
- 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 Adopted Amended Monitoring and Reporting Requirements State Water Resources Control Board Order Number WQ 2013-0058-EXEC. All SSOs shall be reported in accordance with this Order, the California Water Code, other State Law, and other applicable Regional Water Board WDR or National Pollution Discharge Elimination System (NPDES) permit requirements. The SSMP should identify the officials who will receive immediate notification;
- Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
- Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
- A program to ensure that all reasonable steps are taken to contain untreated wastewater and prevent discharge of untreated wastewater to waters of the United States and 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 City's overflow response requires full, immediate, and appropriate attention with the ultimate goal of minimizing impacts to public health and safety and the environment. Telephone calls to report overflows or other maintenance problems are answered 24-hours per day, 7-days per week. Crew leaders are immediately notified upon receipt of a reported sewage overflow and are instructed to respond immediately. Crew leaders are responsible for assessing the overflow, notifying supervisors, documenting the overflow, estimating the volume of the overflow, sampling and laboratory analysis, posting warning signs and following up. The highest priorities are to contain the overflow and to minimize or eliminate the volume of overflow that reaches the storm drain system, and to minimize or eliminate exposure to the public and impact on the public health. The city's objectives are designed to protect public health and safety, meet all regulatory reporting requirements, and ensure immediate and effective response.

1.2 Goals

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

- Respond quickly to minimize the volume of the SSO;
- Eliminate the cause of the SSO;
- Contain the spilled wastewater to the extent feasible;
- Minimize public contact with the spilled wastewater;
- Mitigate the impact of the SSO; and
- Meet the regulatory reporting requirements.

2.0 SSO NOTIFICATION PROCEDURE

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 *Sanitary Sewer Overflow and Backup Response Plan* contains the procedures for receiving sewage overflow/backup reports.

Public Observation

During normal business hours calls regarding SSOs are received by the Public Works Department (707) 764-9506. Public Works personnel will contact the Utilities Director who will dispatch responders. In cases when the Wastewater Superintendent is not available, the Lead Utility Worker will be contacted who will dispatch responders.

After normal working hours calls regarding SSOs are received by the Del Norte County Sheriff's office. The Sheriff's office will contact on-call wastewater staff using the Public Works Call list. The on-call wastewater staff will be the initial responder to SSOs. If the situation warrants, additional utility workers will be contacted to respond. In complex SSOs the Utilities Director and or the Director of Public Works will be contacted for additional support and guidance. Information from the SSO and SSO response will be provided by the responders to the Utilities Manager who will make the necessary regulatory reports. The regulatory notification responsibility and requirements are included in the *Sanitary Sewer Overflow and Backup Response Plan.*

Receipt of Alarm

The lift stations are monitored by an alarm system with autodialer. The autodialer system calls the "call-out" phone and then the County Sheriff if there is no response.

If the signal alarm in the wastewater treatment plant control room is activated, utility staff will be dispatched as initial responders.

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 who respond to emergency situations.

2.1 External SSO Notification Requirements

Category 1 SSOs

Category 1 SSO **less than 1,000 gallons** (discharged to surface water or spilled in a location where it probably will be discharged to surface water), the Wastewater Superintendent shall immediately notify the local health officer of the discharge :

Call Del Norte County Division of Environmental Health at: **(707)-445-6215.**

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 Wastewater Superintendent shall notify the State Office of Emergency Services (and

obtain a Spill Control Number) following, but *not later than 2 hours after becoming aware of the discharge:*

Call Cal OES at: **(800) 852-7550**

Cal OES forwards the SSO notification information to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter and Cal OES is duplicative.

2.2 External SSO Reporting Requirements

Category 1 SSO: 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: 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: Submit certified report within 30 calendar days of the end of month in which SSO the occurred.

Private lateral Sewer Discharges (PLSDs): PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

SSO Technical Report: 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: 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: Update and certify every 12 months.

3.0 SSO RESPONSE PROCEDURES

Sewer service calls and lift station alarms are considered high priority events that demand a prompt response to the location of the problem. The goals of the *Sanitary Overflow and Backup Emergency Response Plan* is to protect the public from hazards, identify source of overflow and determine ownership, perform cleanup and abatement, complete proper reporting procedures and provide good customer service. The *Sanitary Sewer Overflow and Backup Response Plan* provides detailed response procedures for the first responder and field crew responsible for identifying the source of the problem, correcting the cause of the overflow, and cleaning the surrounding area. A reporting form to be completed by the first responder is included in Appendix A.

3.1 Priorities

The first responder's priorities are:

- To follow safe work practices;
- To respond promptly with the appropriate equipment;
- 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 Utilities Director or the Public Works Director in the event of any SSO;
- To return the spilled sewage to the sewer system; and
- To restore the area to its original condition (or as close as possible).

3.2 Safety During Response

The first responder is responsible for following safety procedures on all jobs. 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.

The first responder must assess the scene for hazards to the responders and/or the public. After completing the job hazard analysis the responder will:

- Utilize control devices such as signs, cones, delineators, lights, barricades, when work encroaches in lane(s) of traffic, or in an area subject to pedestrian or vehicle traffic;
- Utilize Personal Protection Equipment such as gloves; hardhat; safety glasses; safety vest; and splash goggles as needed; and
- Utilize proper lifting, pulling and bending techniques when removing a sanitary sewer access cover to protect the responders back.

3.3 Initial Response

The first responder must respond to the reported location or lift station site and visually check for potential sewer stoppages or overflows. All sewer system calls require a response to the reported location of the event.

The first responder will:

- Note arrival time at spill site;
- Verify the existence of a sewer system spill or backup;
- Identify and assess the affected area and extent of spill;

- Contact caller if time permits; and
- Notify the Utilities Director and Director of Public Works in the event of a major SSO.

The SSO is considered major if the following conditions are present:

- The spill appears to be large, in a sensitive area, or there is doubt regarding the extent, impact, or how to proceed;
- The spill is in a public roadway and help with traffic control is needed to protect workers and the public; or
- If additional help is needed. The Utility Worker or Utilities Director will contact other employees, contractors, and/or equipment suppliers.

If spill is large or in a sensitive area, the responder will document conditions with photographs as time allows.

During the response to a major SSO City staff will need to decide whether to proceed with actions to restore the flow or to initiate containment measures. The guidance for this decision is:

- Small spills – proceed with restoring flow;
- Moderate or large spill where containment is anticipated to be simple – proceed with the containment measures; or
- Moderate or large spills where containment is anticipated to be difficult – proceed with restoring flow; however, call for additional assistance after 15 minutes without restoration of flow and implement containment measures.

3.4 Initial Spill Containment Measures

The first responder should attempt to contain the spilled sewage 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 overflowing sewage has entered the storm drainage system during dry weather, attempt to contain the spilled sewage by plugging downstream storm drainage facilities;
- Contain/direct the spilled sewage using dike/dam or sandbags; and
- Pump around the blockage/pipe failure/lift station.

3.5 Recovery and Cleanup

The recovery and cleanup phase begins when the flow has been restored and the overflow of sewage has been stopped. The City can use contract services for recovery and cleanup actions. Typically, the SSO recovery and cleanup procedures include an estimate of spill volume, recovery of spilled sewage and cleanup and disinfection of the area.

Estimate the Volume of Spilled Sewage

Wherever possible, document the estimate using photos of the SSO site before the recovery operation. Various detailed methods of spill volume estimating are included in (Appendix C).

Recovery of Spilled Sewage

Vacuum or pump the spilled sewage and discharge it back into the sanitary sewer system.

Cleanup and Disinfection

Cleanup and disinfection procedures should 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 should be modified as required for wet weather conditions. Where cleanup is beyond the capabilities of City staff, a cleanup contractor will be used.

Cleanup Involving Private Property

- Offer assistance with cleanup and advise resident or property owner of claim procedures; and
- Contact insurance for damage assessment.

Cleanup of Hard Surface Areas

- Collect all signs of sewage solids and sewage-related material either by hand or with the use of rakes and brooms;
- Wash down the affected area with clean water until the water runs clear. Take reasonable steps to contain and vacuum up the wash water;
- Disinfect all areas that were contaminated from the overflow using the disinfectant solution. Apply minimal amounts of the disinfectant solution using a hand sprayer. Document the volume and application method of disinfectant that was employed; and
- Allow area to dry. Repeat the process if additional cleaning is required.

Cleanup of Landscaped and Unimproved Natural Vegetation

- Collect all signs of sewage solids and sewage-related material either by 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 should be approximately three times the estimated volume of the spill;
- Either contain or vacuum up the wash water so that none is released; and
- Allow the area to dry. Repeat the process if additional cleaning is required.

Steps for Cleanup of Natural Waterways

- The Department of Fish and Game should be notified in the event an SSO impacts any surface water or riparian habitat. Fish and Game will provide the professional guidance needed to effectively cleanup spills that occur in these sensitive environments;
- Cleanup should proceed quickly in order to minimize negative impact. Sewage causes depletion of dissolved oxygen which will kill aquatic life; and
- Any water that is used in the cleanup should be de-chlorinated prior to use (chlorine compounds are toxic to aquatic life).

Wet Weather Cleanup Modifications

- Omit flushing and sampling during heavy storm events with heavy runoff where flushing is not required and sampling would not provide meaningful results.

3.6 Public Notification

Post signs and place barricades to keep vehicles and pedestrians away from contact with spilled sewage. Do not remove the signs until directed by the Director of Public Works.

Creeks and streams that have been contaminated as a result of an SSO should have signs posted at visible access locations until the risk of exposure has subsided to acceptable background levels. The warning signs should be checked every day to ensure that they are still in place.

In the event that an overflow occurs at night, the location should also be inspected the following day. The Utility Worker should look for any signs of sewage solids and sewage-related material that may warrant additional cleanup activities.

Major spills may warrant broader public notice. The Public Works Director will contact the City's designated Information Officer who will contact local media when significant areas may have been contaminated by sewage.

3.7 Water Quality Sampling and Testing

Water quality sampling and testing is required whenever 50,000 gallons or more of spilled sewage enters surface water to determine the extent and impact of the SSO. The water quality sampling procedures are:

- The first responder will collect samples if required. Samples should be collected as soon as possible after the discovery of the SSO event.
- The water quality samples should 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 should be collected near the point of entry of the spilled sewage and every 100 feet along the shore on impoundments (e.g. ponds).
- The City's laboratory and contract laboratory will analyze the samples to determine the nature and extent of the discharge. Additional samples will be taken to determine when posting of warning signs can be discontinued. The basic analyses should include total coliform, fecal coliform, biochemical oxygen demand (BOD), dissolved oxygen, and ammonia nitrogen.

4.0 SSO INVESTIGATION AND DOCUMENTATION

All SSOs should be thoroughly investigated and documented for use in managing the sewer system and meeting established reporting requirements. The procedures for investigating and documenting SSOs include a failure analysis investigation, SSO documentation, and post-SSO debriefing.

Failure Analysis Investigation

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.

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

- Reviewing and completing the SSO reporting Form (Appendix B);
- Reviewing past maintenance records;
- Reviewing available photographs;
- Conducting inspections to determine the condition of the line segment immediately following the SSO and reviewing the video and logs; and
- Interviewing staff who responded to the spill.

The product of the failure analysis investigation should be the determination of the root cause and the identification of the corrective actions.

SSO Documentation

The first responder will complete the Sanitary Sewer Overflow Reporting Form found in the Appendix A.

The Utilities Director or Director of Public Works will prepare a file for each individual SSO. The file should include the following information:

All SSOs

- Initial service calls information;
- Sanitary Sewer Overflow Reporting Form;
- Failure analysis investigation results; and
- SWRCB California Integrated Water Quality System (CIWQS) Report(s).

Large SSOs and/or SSOs to sensitive areas

- Volume estimate;
- Appropriate maps showing the spill location;
- Photographs of spill location; and
- Water quality sampling and test results.

Post SSO Event Debriefing

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

As soon as possible after major SSO events, all of the participants, from the person who received the call to the last person to leave the site, should meet to review the procedures used and to discuss what worked and where improvements could be made in responding to and mitigating future SSO events. The results of the debriefing will be recorded and tracked to ensure the action items are completed.

5.0 EQUIPMENT AND TRAINING

This section provides a list of specialized equipment that is required to support this Overflow Emergency Response Plan.

Digital Cell Phones/Cameras

A digital or disposable camera is required to record the conditions upon arrival, during cleanup, and upon departure.

Utilities Trucks

Utility body pickup trucks are required to store and transport the equipment needed to effectively respond to sewer emergencies. The equipment and tools should include spilled sewage containment and cleanup materials.

Portable Pumps and Hoses

Portable pumps and piping will be used to pump around failed facilities and to recover spilled sewage. Additional portable pumps and hoses are available through local rental agencies or contractors.

Response Equipment

1 VAC-Con® truck equipped with a high-pressure rodder.

1 Dedicated logbook(s) to document fieldwork activities.

1 Hydro flusher(s) are owned and/or leased by the City.

1 Video (CCTV) inspection vehicle(s) are owned and/or leased by the City.

4 Utility truck(s) are owned and/or leased by the City.

3 portable sewage pump(s) are owned and/or leased by the City.

4 portable generator(s) are owned and/or leased by the City.

Equipment designed to block the storm drain system, in an emergency, to prevent untreated or partially treated wastewater from reaching surface waters.

Spill Response Supplies

Spill response supplies and personal protective equipment are stored at the wastewater treatment plant. Spill response supplies includes booms, pads, absorbents, brooms, rakes. Personal protective equipment including gloves, boots, and other supplies are kept with the spill response supplies so that they are easy to locate during a response

5.1 Training

This section provides information on the training that is required to support this *Sanitary Sewer Overflow and Backup Response Plan*.

Initial and Annual Refresher Training

All Wastewater personnel and contractors who have a role in responding to, reporting, and/or mitigating a sewer system overflow will receive training. This includes employees who serve as the afterhours on-call maintenance crew member. All new employees and contractors receive training before they are placed in a position where they may have to respond. Current employees receive annual refresher training on this plan and the procedures to be followed.

SSO Response Drills

Periodic training drills are held to ensure that employees and contractors are up to date on the procedures, the equipment is in working order, and the required materials are readily available. The training drills should cover scenarios typically observed during sewer related emergencies (e.g. mainline blockage, mainline failure, force main failure, lift station failure, and lateral blockage). The results and the observations during the drills should be recorded and action items should be tracked to ensure completion. This training will also include desk simulation of SSO exercises to be incorporated with weekly safety and equipment training.

5.2 Record Keeping

Records should 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 should include date, place, content, name of trainer(s), and names of attendees. Records for the SSO response training will be maintained by the City Administrator.

APPENDIX A
SSO RESPONSE FIRST RESPONDER FORM

Crescent City
Sanitary Sewer Overflow Response
First Responder Form

Fill out this form as completely as possible. Take photographs of damaged and undamaged areas.

Date:	Location:
Time SSO was reported or discovered:	Discovered or reported by:
Time Staff Arrived on-site:	Staff Names:
Cleaning Contractor Contacted? Yes No	Contractor Name: Contractor Telephone: Time When Called:
Source of Spill (manhole, cleanout, etc.):	SSO Cause (Roots, FOG, Debris, etc.):
Approximate Amount of Spill:	How was the volume calculated?
Number of Pictures Taken:	Photo comments.
What cleanup method was used for the spill?	What cleanup equipment and materials were used for the spill?
Did any material enter a drainage channel or surface water? Yes No	Is this the location of previous spills? Yes No
Did any material enter the storm sewer system? Yes No	What efforts were used to protect storm water inlets and drainage ways?
What efforts were used to capture material from the storm water inlet and return it to the sewer system?	Was all the material recovered? Yes No

APPENDIX B
SSO RESPONSE REPORT FORM

Crescent City
Sanitary Sewer Overflow Response
Report Form

This Report is *(check one)*: ☐ Preliminary ☐ Final ☐ Revised Final

SPILL LOCATION	
Spill Location Name:	
GPS Latitude Coordinates:	GPS Longitude Coordinates:
Street Name and Number:	Street Direction (e.g., N, S, W, NE, SW, etc.):
Nearest Cross Street:	City: Zip Code:
County:	Spill Location Description:
SPILL DESCRIPTION	
Spill Appearance Point: ☐ Building/Structure ☐ Force Main ☐ Gravity Sewer ☐ Other Sewer System Structure ☐ Pump Station ☐ Manhole- Structure ID#:_____ ☐ Other (specify):	
Did the spill reach a drainage channel and/or surface water? ☐ Yes ☐ No	
If the spill reached a storm sewer, was it fully captured and returned to the Sanitary Sewer? ☐ Yes ☐ No	
Was this spill from a service lateral? ☐ Yes ☐ No If YES, name and address of facility:	
Final Spill Destination: ☐ Beach ☐ Building structure ☐ Other paved surface ☐ Storm drain ☐ Street/curb & gutter ☐ Surface water ☐ Unpaved surface ☐ Other *(specify)*:	
Estimated spill volume (in gallons):	Method calculated:
Est. volume of SSO recovered (gal):	Were photos taken? ☐ No ☐ Yes – how many?
Estimated volume of spill reaching surface water, drainage channel, or not recovered from a storm drain (gal):	
SPILL OCCURRANCE TIME	
SSO Reported to:	SSO Reported by:
Phone:	Estimated spill start date and time:
Date and time spill reported to sewer crew:	Date and time sewer crew arrived:
Estimated spill end date and time:	
Weather conditions prior 72 hours: ☐ Sunny Weather ☐ Cloudy Weather ☐ Measurable Rain ☐ Rain for Several Days	

CAUSE OF SPILL
SSO cause *(check all that apply)*: ☐ Debris/Blockage ☐ Flow exceeded capacity ☐Grease ☐ Operator error ☐ Roots ☐ Pipe problem/failure ☐ Pump station failure ☐ Rainfall exceeded design ☐ Vandalism ☐ Inflow/infiltration ☐ Animal carcass ☐ Electrical power failure ☐ Bypass ☐ Debris from laterals ☐ Construction Debris ☐ Other (specify):
If SSO is caused by a service lateral, please specify: This is the ☐Owner ☐Tenant ☐Manager Property contact: Contact telephone:
If SSO is caused by wet weather, choose size of storm: ☐1-yr ☐2-yr ☐5-yr ☐10-yr ☐50-yr ☐100-yr ☐>100-yr ☐Unknown
Diameter (in inches) of pipe at point of blockage/spill cause (if applicable):
Sewer pipe material at point of blockage/spill cause (if applicable):
Description of terrain surrounding point of blockage/spill cause: ☐ Flat ☐ Mixed ☐ Steep
SPILL RESPONSE
Spill response activities (check all that apply): ☐ Cleaned up ☐ Contained all/portion of spill ☐ TV inspection ☐ Restored flow ☐ Returned all/portion of spill to sanitary sewer ☐Other (specify):
Spill response completed (date & time): Name of impacted waters (if applicable):
Visual inspection result of impacted waters (if applicable):
Any fish killed? ☐ Yes ☐ No Any ongoing investigation? ☐ Yes ☐ No
Name of impacted beach (if applicable):_____Were health warnings posted? ☐ Yes ☐ No
Health warning/beach closure posting/details:
Were samples of impacted waters collected? ☐ Yes ☐ No If YES, select the analyses: ☐ DO ☐ Ammonia ☐ Bacteria ☐ Other
Recommended corrective actions: ☐ Add sewer to PM Program ☐ Adjust PM schedule ☐ Adjust PM method ☐ Rehab sewer ☐ Replace sewer ☐ Enforcement action against FOG source ☐ Other (specify):
NOTIFICATION DETAILS
CEMA (former OES) contacted date and time (if applicable): CEMA (former OES) Control Number (if applicable): Spoke to:

APPENDIX C
SSO VOLUME ESTIMATION GUIDE

SEWER SPILL ESTIMATION GUIDE

Developed by the Orange County Area Waste Discharge Requirements Steering Committee

Sewer Spill Estimation Guide

A Guide to Estimating Sanitary Sewer Overflow (SSO) Volumes

Developed by the Orange County Area
Waste Discharge Requirements Steering Committee
Orange County, CA

February 18, 2014
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Robert Kreg	(Former) Director of Support Services	South Coast Water District (Retired)

Disclaimer

This Sewer Spill Estimation Guide is freely offered to agencies to assist the user with the estimation process for a sanitary sewer overflow. Methods used for spill estimation and the estimate itself are solely the responsibility of the agency making the estimate. The authors or contributors to this Sewer Spill Estimation Guide do not accept any responsibility for the spill estimation methods used; their accuracy or any spill estimate determined through the use of this guide. Information found in this guide is commonly available on the internet and is also common practice with many cities and sewering agencies throughout Southern California.

No statewide or national standards issued by a regulatory agency exist at this time.

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SSO Volume Estimation

Accurate flow estimation is essential to determine the volume of a Sanitary Sewer Overflow (SSO). An accurate estimate of an SSO is required for reporting to the California Integrated Water Quality System (CIQWS) and to the local health care agency. The estimated volume of an SSO is used to determine the category of the SSO and can also be used in the calculation of penalties or fines from the State or Regional Water Quality Control Boards in California. Additionally, accurate flow estimation is important to determine the extent of the cleanup and its effectiveness.

Volume estimation is basically the flow rate (gallons per minute) times the amount of time (in minutes) the flow has occurred. Each SSO tends to be unique requiring different strategies for determining the volume of the SSO. Different methods can also be used for the same SSO acting as a check to ensure the most accurate estimate. The method(s) utilized will be determined by several factors including the type of SSO and the personnel responding. Some SSO volumes, due to terrain, rainfall or other factors, can be very difficult for field staff to determine and may require someone with additional expertise. There is no one method that works for all types of SSOs. The following are methods that may be utilized for SSO volume estimation. These methods are effective means of estimating a sewer spill volume during dry weather but may not be effective during rain events.

During rain events, infiltration and/or inflow into the collection system and runoff in the stormwater system, including the curb and gutter, can affect the SSO estimate. When estimating an SSO during a rain event, the SSO estimate is to include only the wastewater that left the collection system and not any waters that the wastewater comingled with after leaving the system. The same is true for any wash down water; although contaminated, the water is not considered part of the SSO estimate. Any water that infiltrated into the collection system upstream of the SSO and subsequently became part of the SSO is included in the SSO volume estimate.

Start Time

Determining the start time for an SSO is one of the most critical, yet can be one of the most difficult, factors to determine. Depending upon the location and time of day, an SSO may occur for some time before it is reported to the City or Agency or it may trickle for an extended period of time before being noticed. What is known is that the SSO started some time before the City or Agency was notified. It is common for SSOs to start and stop as flows in the pipeline routinely rise and fall because most blockages do not entirely block the flow in the pipe. Every effort should be utilized to determine the most accurate start time of each SSO. These efforts may include:

- If possible, contact the person who reported the SSO to determine when they became aware of the SSO.
- Make contact with residences or businesses in the area of the SSO to determine if there were any witnesses that could help establish the start time.
- Conditions change during the SSO. This is particularly true in remote areas out of public view. Initially, there may be an amount of toilet paper and solids around the spill site. This will increase the longer the SSO continues. After a few days to a week, these may form a light brown residue that may turn dark after a few weeks to a month.

Lacking direct evidence supporting a specific start time the operator should rely upon their experience and system flow characteristics based upon observed conditions to establish a reasonable estimated start time for the event. The agency's management staff should review the estimate before being finalized. Methods used to establish the start time should be documented.

Stop Time

The stop time is the time that wastewater stopped overflowing. For manhole covers in low areas, this is noted by water flowing back into the manhole through the vent holes and should be easy to determine by SSO response personnel. Care should be taken to accurately record the time that the SSO stopped.

Photographs

Take photographs of the spill event. Try to include objects of known size in the photographs to give a perspective of the extent of the spill. Photographs should include the initial spill, remediation efforts, clean up, and the spill area after the spill remediation has been completed. Photographs should be maintained with the spill report information.

Flow Rate

The flow rate is the volume of flow per unit time that is escaping from the collection system. SSOs do not always occur at a constant rate. This is because flows into the collection system are not constant and rise and fall throughout the day. Additionally, most blockages are not full blockages. Pressure buildup as the wastewater surcharges in the pipe can cause the blockage to clear or partially clear, resulting in changes to the flow rate.

To make an SSO volume estimate as accurate as possible, the onsite City or Agency employee should note the time and the amount of change of any significant differences in flow noticed during the event. For example, if the employee determines the flow rate escaping from the manhole is 100 gallons per minute when they arrive on scene but noticed that it has dropped to 50 gallons per minute five minutes later, their report should reflect that fact. The estimated flow rate and the time period for that flow rate should be recorded. During any one SSO event there could be multiple flow rates spread over the duration of the SSO.

Volume Estimation Methods

Visual or Eyeball Method

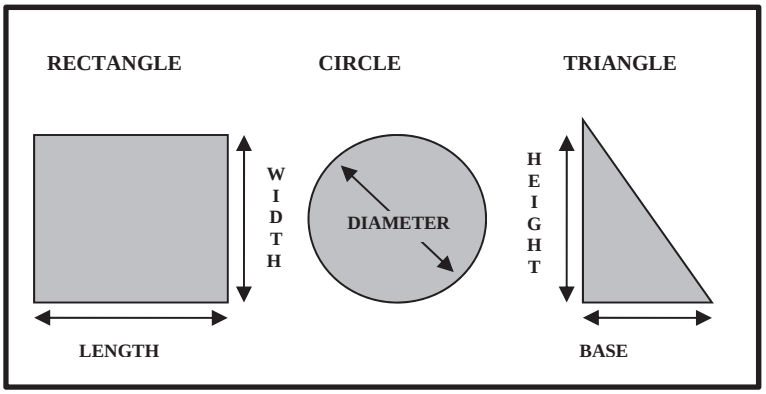
The volume of small spills can be estimated using an “eyeball estimate.” To use this method, imagine the amount of water that would spill from a bucket or a barrel. A full bucket may contain 1, 2 or 5 gallons and a barrel contains 55 gallons when full. If the spill is larger than 55 gallons, try to divide the standing water into barrels and then multiply by 55 gallons. This method is useful for contained spills up to approximately 200 gallons. This method can be useful on spills that occur on hard surfaces such as concrete or asphalt. Crews can be trained

by estimating the volume of a measured amount of potable water spilled upon concrete and asphalt surfaces.

Measured Volume

The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions, and the depth of the contained wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume.

Common Shapes and Dimensions



1. Sketch the shape of the contained wastewater.
2. Measure or pace off the dimensions.
3. Measure the depth at several locations and select an average.
4. Convert the dimensions, including depth, to feet.
5. Calculate the area:

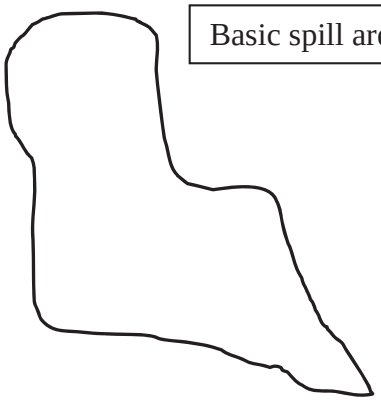
   Rectangle: Area = length (feet) x width (feet)

   Circle: Area = diameter (feet) x diameter (feet) x 3.14 divided by 4

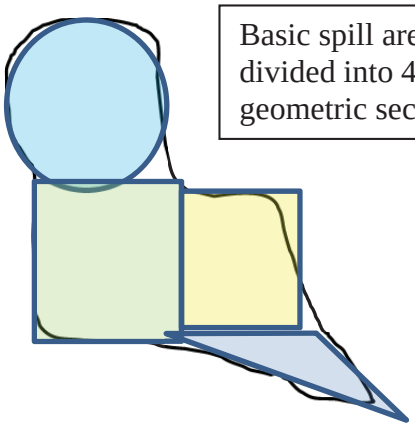
   Triangle: Area = base (feet) x height (feet) x 0.5
6. Multiply the area (square feet) times the depth (in feet) to obtain the volume in cubic feet.
7. Multiply the volume in cubic feet by 7.48 to convert to gallons

Not all SSOs will conform to a specific shape. When this occurs, break up the area of the SSO into various shapes or segments, then calculate the amount of wastewater spilled in each segment, adding them together to arrive at the total spill volume.

Example:

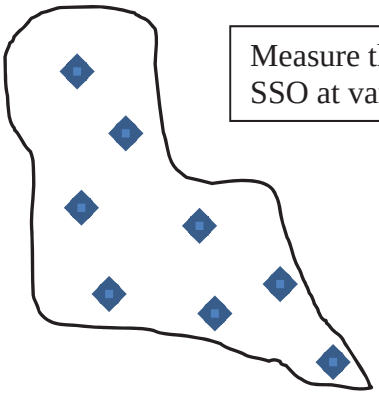


Basic spill area



Basic spill area divided into 4 geometric sections.

Determine the area of each of the geometric sections adding them all together to determine the total area of the spill.



Measure the depth of the SSO at various locations.

Where it is difficult to measure wet spots on asphalt, use a depth of 0.0026'or 1/32". For wet spots on concrete use depths of 0.0013'or 1/64" for reasonable estimates.

Inch to Feet Conversion:

Inches	to	Feet
1/8"	=	0.01'
1/4"	=	0.02'
3/8"	=	0.03'
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'

Sample Calculation:
A 20 ft x 20 ft square wet spot on concrete equals 3.9 gal and for asphalt is 7.8 gal.

Counting Connections

Once the location of the blockage has been established, the amount of the SSO could be estimated by counting the number of upstream connections. On the sewer atlas maps or GIS system, locate the pipeline where the SSO occurred. Count all of the developed parcels that are connected to the pipeline upstream of the blockage. The typical single family residential parcel may discharge 8 to 10 gallons of wastewater per hour during active times of the day. For a multi-family residential development such as an apartment or condo complex, count each apartment as a single family residential unit. Use the higher flow number (10 gallons per hour) during typical peak flow hours and the lower flow number (8 gallons per hour) during low flow periods. Multiply the number of connections times the average flow (8 to 10 gallons per hour) times the time period (duration) that the SSO occurred.

Example for an SSO occurring on a weekday at 8:00am:

Number of upstream connections	22
Estimated flow per parcel	10 gallons per hour
Duration of SSO event	45 minutes
Total spill estimation (22 x 10 x .75)	165 gallons

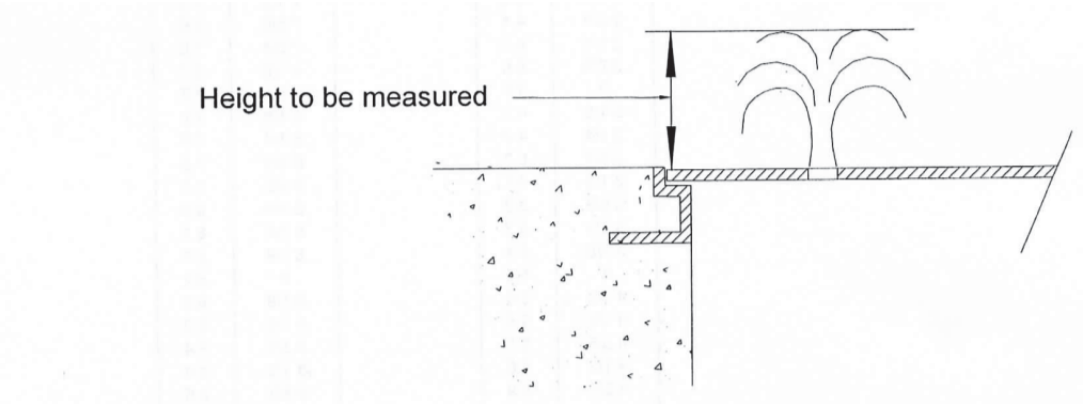
(22 connections x 10 gallons per hour x 45 minutes (.75 hour) = 165 gallons)

Data may be available in your drainage area from your capacity planners at your city or agency. Consult with them on reasonable flow amounts or rates of flow.

Pick and Vent Holes in Manhole Covers

Small SSOs will occur where the wastewater escaping from the manhole is isolated to the pick or vent holes in the cover. Larger SSOs may involve both the discharge from the pick and/or vent holes and the gap between the manhole cover and manhole frame. To estimate an SSO occurring from the manhole pick and vent holes, measure the height of the wastewater plume exiting the holes. Find that height and hole diameter on the manhole pick or vent hole chart to determine the flow rate escaping the pick/vent hole. Multiply the flow rate times the number of holes that are discharging wastewater. Once the total volume (gpm) has been determined,

multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.



Example: Measured height of plume exiting pick/vent hole is 1 inch from a ½-inch vent hole and there are 4 vent holes. The total volume per minute would be .94 gpm per hole (from attached chart) or 3.76 gpm total (.94 gpm x 4 holes) from the manhole cover. If the SSO lasted one hour, the total wastewater lost would be 226 gallons (3.76 x 60 = 225.6).

Number of pick holes	4
Flow from each pick hole	.94 gpm
Duration of SSO	60 minutes
Total SSO volume (.94 x 4 x 60=225.6)	226 gallons

Pick and Vent Hole Estimation Chart

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

Hole Dia. inches	Area sq. ft.	Coeff.of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax*Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(SQRT(2*32.2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
0.50	0.00136	0.945	0.70	0.662	1/16 th	0.063	0.005	0.0005	0.23	14
0.50	0.00136	0.945	0.70	0.662	1/8 th	0.125	0.010	0.0007	0.33	20
0.50	0.00136	0.945	0.70	0.662	1/4 th	0.250	0.021	0.0010	0.47	28
0.50	0.00136	0.945	0.70	0.662	one half	0.500	0.042	0.0015	0.66	40
0.50	0.00136	0.945	0.70	0.662	3/4 ths	0.750	0.063	0.0018	0.81	49
0.50	0.00136	0.945	0.70	0.662	1 inch	1.000	0.083	0.0021	0.94	56
0.50	0.00136	0.945	0.70	0.662	1 1/4 "	1.250	0.104	0.0023	1.05	63
0.50	0.00136	0.945	0.70	0.662	1 3/8"	1.375	0.115	0.0024	1.10	66
0.50	0.00136	0.945	0.70	0.662	1 1/2"	1.500	0.125	0.0026	1.15	69
0.50	0.00136	0.945	0.70	0.662	1 5/8"	1.625	0.135	0.0027	1.20	72
0.50	0.00136	0.945	0.70	0.662	1 3/4"	1.750	0.146	0.0028	1.24	74
0.50	0.00136	0.945	0.70	0.662	2 inches	2.000	0.167	0.0030	1.33	80
0.50	0.00136	0.945	0.70	0.662	2 1/4"	2.250	0.188	0.0031	1.41	84
0.50	0.00136	0.945	0.70	0.662	2 1/2"	2.500	0.208	0.0033	1.48	89
0.50	0.00136	0.945	0.70	0.662	2 3/4"	2.750	0.229	0.0035	1.56	93
0.50	0.00136	0.945	0.70	0.662	3 inches	3.000	0.250	0.0036	1.62	97
0.50	0.00136	0.945	0.70	0.662	3 1/4"	3.250	0.271	0.0038	1.69	101
0.50	0.00136	0.945	0.70	0.662	3 1/2"	3.500	0.292	0.0039	1.75	105
0.50	0.00136	0.945	0.70	0.662	3 3/4"	3.750	0.313	0.0040	1.82	109
0.50	0.00136	0.945	0.70	0.662	4.000	4.000	0.333	0.0042	1.88	113
Vent Hole										
0.75	0.00307	0.955	0.67	0.640	1/16 th	0.063	0.005	0.0011	0.51	31
0.75	0.00307	0.955	0.67	0.640	1/8 th	0.125	0.010	0.0016	0.72	43
0.75	0.00307	0.955	0.67	0.640	1/4 th	0.250	0.021	0.0023	1.02	61
0.75	0.00307	0.955	0.67	0.640	one half	0.500	0.042	0.0032	1.44	87
0.75	0.00307	0.955	0.67	0.640	3/4 ths	0.750	0.063	0.0039	1.77	106
0.75	0.00307	0.955	0.67	0.640	1 inch	1.000	0.083	0.0045	2.04	122
0.75	0.00307	0.955	0.67	0.640	1 1/4 "	1.250	0.104	0.0051	2.28	137
0.75	0.00307	0.955	0.67	0.640	1 3/8"	1.375	0.115	0.0053	2.39	144
0.75	0.00307	0.955	0.67	0.640	1 1/2"	1.500	0.125	0.0056	2.50	150
0.75	0.00307	0.955	0.67	0.640	1 5/8"	1.625	0.135	0.0058	2.60	156
0.75	0.00307	0.955	0.67	0.640	1 3/4"	1.750	0.146	0.0060	2.70	162
0.75	0.00307	0.955	0.67	0.640	2 inches	2.000	0.167	0.0064	2.89	173
0.75	0.00307	0.955	0.67	0.640	2 1/4"	2.250	0.188	0.0068	3.06	184
0.75	0.00307	0.955	0.67	0.640	2 1/2"	2.500	0.208	0.0072	3.23	194
0.75	0.00307	0.955	0.67	0.640	2 3/4"	2.750	0.229	0.0075	3.38	203
0.75	0.00307	0.955	0.67	0.640	3 inches	3.000	0.250	0.0079	3.53	212
0.75	0.00307	0.955	0.67	0.640	3 1/4"	3.250	0.271	0.0082	3.68	221
0.75	0.00307	0.955	0.67	0.640	3 1/2"	3.500	0.292	0.0085	3.82	229
0.75	0.00307	0.955	0.67	0.640	3 3/4"	3.750	0.313	0.0088	3.95	237
0.75	0.00307	0.955	0.67	0.640	4.000	4.000	0.333	0.0091	4.08	245
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0020	0.88	53
1.00	0.00545	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0028	1.25	75
1.00	0.00545	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0039	1.77	106
1.00	0.00545	0.960	0.65	0.624	one half	0.500	0.042	0.0056	2.50	150
1.00	0.00545	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0068	3.06	184
1.00	0.00545	0.960	0.65	0.624	1 inch	1.000	0.083	0.0079	3.54	212
1.00	0.00545	0.960	0.65	0.624	1 1/4 "	1.250	0.104	0.0088	3.96	237
1.00	0.00545	0.960	0.65	0.624	1 3/8"	1.375	0.115	0.0092	4.15	249
1.00	0.00545	0.960	0.65	0.624	1 1/2"	1.500	0.125	0.0097	4.33	260
1.00	0.00545	0.960	0.65	0.624	1 5/8"	1.625	0.135	0.0100	4.51	271
1.00	0.00545	0.960	0.65	0.624	1 3/4"	1.750	0.146	0.0104	4.68	281
1.00	0.00545	0.960	0.65	0.624	2 inches	2.000	0.167	0.0111	5.00	300
1.00	0.00545	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0118	5.31	318
1.00	0.00545	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0125	5.59	336
1.00	0.00545	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0131	5.87	352
1.00	0.00545	0.960	0.65	0.624	3 inches	3.000	0.250	0.0136	6.13	368

Pick and Vent Hole Estimation Chart - continued

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

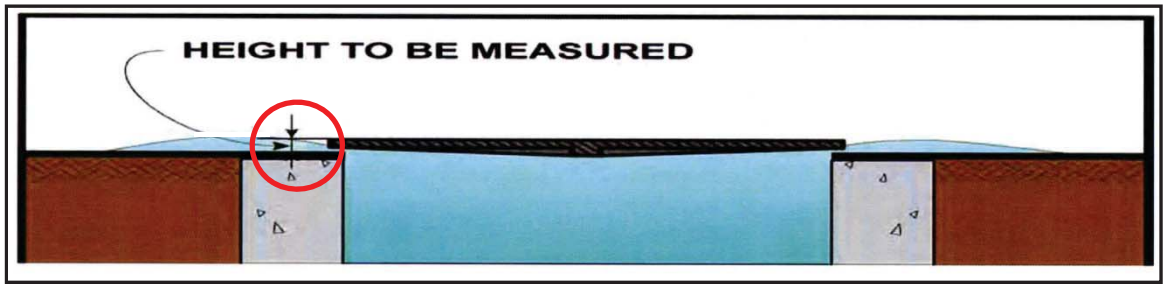
Hole Dia. inches	Area sq. ft.	Coeff.of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax*Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =ExBx*(SQRT(2*32.2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0142	6.38	383
1.00	0.00545	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0147	6.62	397
1.00	0.00545	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0153	6.85	411
1.00	0.00545	0.960	0.65	0.624	4.000	4.000	0.333	0.0158	7.08	425
Pick Hole semicircular area										
1.00	0.00273	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0010	0.44	27
1.00	0.00273	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0014	0.63	38
1.00	0.00273	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0020	0.89	53
1.00	0.00273	0.960	0.65	0.624	one half	0.500	0.042	0.0028	1.25	75
1.00	0.00273	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0034	1.53	92
1.00	0.00273	0.960	0.65	0.624	1 inch	1.000	0.083	0.0039	1.77	106
1.00	0.00273	0.960	0.65	0.624	1-1/2 inch	1.500	0.125	0.0048	2.17	130
1.00	0.00273	0.960	0.65	0.624	2 inches	2.000	0.167	0.0056	2.51	150
1.00	0.00273	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0059	2.66	159
1.00	0.00273	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0062	2.80	168
1.00	0.00273	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0065	2.94	176
1.00	0.00273	0.960	0.65	0.624	3 inches	3.000	0.250	0.0068	3.07	184
1.00	0.00273	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0071	3.19	192
1.00	0.00273	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0074	3.31	199
1.00	0.00273	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0076	3.43	206
1.00	0.00273	0.960	0.65	0.624	4.000	4.000	0.333	0.0079	3.54	213

Courtesy of OCSD: Created 5/17/99 and modified 5/15/14, as an estimating tool for field staff. This is based on flow through orifices assumptions. Your city or agency may want to develop a similar tool.

$Q=CA(2gh)^{.5}$ Where Q=cfs C=Cv x Cc A=area(sq. ft.) g=32.2 ft/sec/sec h= water height (ft.)

Manhole Ring

Some manhole covers in use today typically only have one pick hole forcing most of the wastewater to escape from the perimeter of the manhole cover during higher flow SSOs. To estimate the volume in this example, measure the observed height of the wastewater plume exiting the manhole cover. Find the height and manhole diameter on the Manhole with Cover in Place to determine the flow rate escaping the manhole. The chart has two columns, one for 24-inch diameter covers and one for 36-inch diameter covers. Wastewater will also be escaping from the pick hole and must be accounted for separately by following the instructions for estimating an SSO from pick/vent hole. Multiply the flow rate times the number of holes that are discharging. The total estimated rate (gpm) is determined by adding together the rate being lost (gpm) from around the cover with the rate being lost (gpm) from the pick and/or vent hole(s). Once the total rate (gpm) has been determined, multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.



Example: The measured height of the plume exiting the ring of a 36-inch manhole is 1 inch. The total volume per minute would be 13 gpm from around the ring of a 36-inch manhole cover (from the attached chart). (Calculate the amount exiting the pick hole(s) and add to the total being lost around the ring). If the SSO lasted one hour the total wastewater lost would be 780 gallons (13 x 60 = 780).

Estimated loss around ring (from chart)	13 gpm
Duration of SSO	60 minutes
Total SSO (without loss from pick hole)	780 gallons

(13 gal/min x 60 minutes = 780 gallons plus amount lost from pick hole(s))

ESTIMATED SSO FLOW OUT OF MH WITH COVER IN PLACE

24" COVER

Height of spout above M/H rim H in inches	S S O FLOW Q in gpm	in MGD	Min. Sewer size in which these flows are possible
1/4	1	0.001	
1/2	3	0.004	
3/4	6	0.008	
1	9	0.013	
1 1/4	12	0.018	
1 1/2	16	0.024	
1 3/4	21	0.030	
2	25	0.037	
2 1/4	31	0.045	
2 1/2	38	0.054	
2 3/4	45	0.065	
3	54	0.077	
3 1/4	64	0.092	
3 1/2	75	0.107	
3 3/4	87	0.125	
4	100	0.145	
4 1/4	115	0.166	
4 1/2	131	0.189	
4 3/4	148	0.214	
5	166	0.240	
5 1/4	185	0.266	
5 1/2	204	0.294	
5 3/4	224	0.322	6"
6	244	0.352	
6 1/4	265	0.382	
6 1/2	286	0.412	
6 3/4	308	0.444	
7	331	0.476	
7 1/4	354	0.509	
7 1/2	377	0.543	
7 3/4	401	0.578	8"
8	426	0.613	
8 1/4	451	0.649	
8 1/2	476	0.686	
8 3/4	502	0.723	
9	529	0.761	

36" COVER

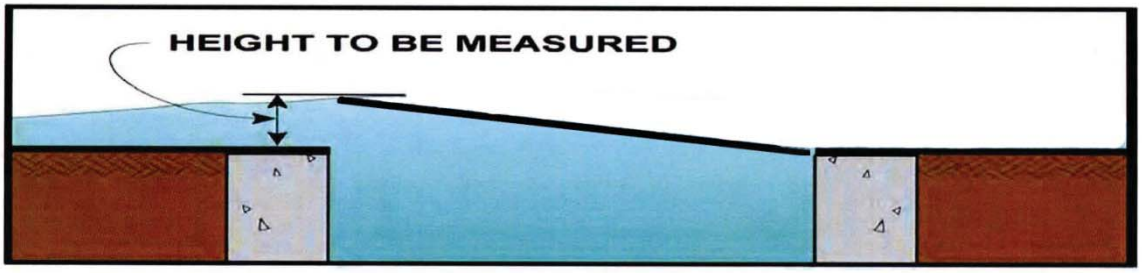
Height of spout above M/H rim H in inches	S S O FLOW Q in gpm	in MGD	Min. Sewer size in which these flows are possible
1/4	1	0.002	
1/2	4	0.006	
3/4	8	0.012	
1	13	0.019	
1 1/4	18	0.026	
1 1/2	24	0.035	
1 3/4	31	0.044	
2	37	0.054	
2 1/4	45	0.065	
2 1/2	55	0.079	
2 3/4	66	0.095	
3	78	0.113	
3 1/4	93	0.134	
3 1/2	109	0.157	
3 3/4	127	0.183	
4	147	0.211	
4 1/4	169	0.243	
4 1/2	192	0.276	
4 3/4	217	0.312	6"
5	243	0.350	
5 1/4	270	0.389	
5 1/2	299	0.430	
5 3/4	327	0.471	
6	357	0.514	
6 1/4	387	0.558	8"
6 1/2	419	0.603	
6 3/4	451	0.649	
7	483	0.696	
7 1/4	517	0.744	
7 1/2	551	0.794	
7 3/4	587	0.845	10"
8	622	0.896	
8 1/4	659	0.949	
8 1/2	697	1.003	
8 3/4	734	1.057	
9	773	1.113	

The formula used to develop Table 1 measures the maximum height of the water coming out of the maintenance manhole above the rim. The formula was taken from Hydraulics and Its Application by A.H. Gibson (Constable & Co. Limited).

Partially Covered Manhole

Sometimes an SSO will occur that only lifts one side of the manhole cover. This is especially true of manholes where the cover is on an incline with the cover lifting on the downward side of the manhole. To estimate the volume of an SSO under these conditions, calculate the area (in square feet) from where the wastewater is escaping and the velocity (in feet per second) that the wastewater is normally traveling in the sewer at half the pipe depth. The velocity is estimated from visual observation with 2 feet/second or less being a small velocity, 4 to 5 feet/second being a medium velocity, and 7 feet/second or higher being a large velocity. Velocities in the sewer above 7 feet/second may be strong enough to blow the manhole cover off. Higher velocities also tend to raise the manhole lid higher. Next, multiply by the duration

(in seconds) that the SSO occurred. Finally, multiply by 7.48 to determine the volume of the SSO in gallons. The formula is Volume (gallons) = Area (sq. ft.) x Velocity (ft/sec) x Time (in seconds) x 7.48 (gal/cu. ft.).



Example: The measured height of the plume exiting the side ring of a 24-inch manhole is 2 inches. Based upon the data provided in the Area Calculation Chart below, a 2-inch plume from one side of a 24-inch manhole cover provides 0.524 square feet of area. The velocity of the flow is estimated at 4 ft/sec (visual observation) with the assumed duration of the flow lasting for one hour. The total amount of the SSO is estimated at 56,441 gallons (.524 x 4 x 60 x 60 x 7.48 = 56,441)

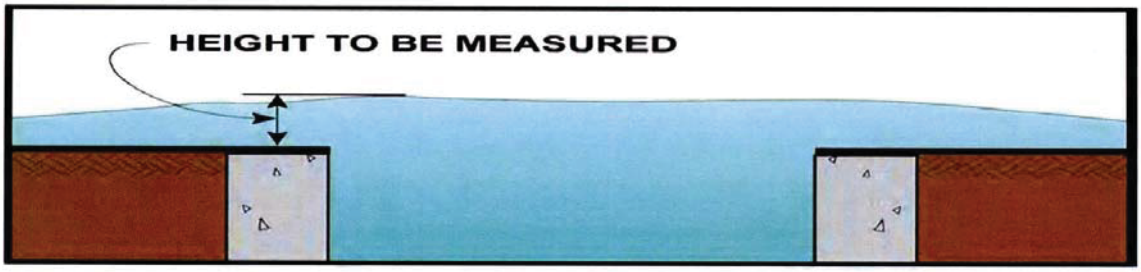
Height of plume	2 inches
Area for 24 inch manhole	0.524 square feet
Estimated velocity	4 ft/sec
Duration of SSO	60 minutes
Conversion from cu. ft. to gallons	7.48
Total estimated SSO volume	56,441 gallons

(.524 sq. ft. x 4 ft/sec x 60 minutes x 60 sec/min x 7.48 gal/cu ft = 56,441 gal)

Area Calculation Chart		
Height of Flow	24 Inch Manhole	36 Inch Manhole
.5 inches	0.131 sq. ft.	0.195 sq. ft.
1 inches	0.262 sq. ft.	0.391 sq. ft.
1.5 inches	0.393 sq. ft.	0.586 sq. ft.
2 inches	0.524 sq. ft.	0.782 sq. ft.
2.5 inches	0.655 sq. ft.	0.977 sq. ft.
3 inches	0.786 sq. ft.	1.173 sq. ft.
3.5 inches	0.917 sq. ft.	1.368 sq. ft.
4 inches	1.048 sq. ft.	1.564 sq. ft.

Open Manhole

In large events the force of the overflowing wastewater will have sufficient pressure and volume to unseat the cover from the frame and move the manhole cover away from the manhole. Typically, when the SSO rates reach approximately 7 cfs (approximately 3,000 gpm or about 4.32 mgd), there is sufficient flow and pressure to blow off the manhole cover. To estimate the volume of an SSO where the manhole cover has been removed, the average height of the plume of wastewater exiting the manhole must be measured. This measurement is from the pavement surface close to the manhole ring to the top of the plume. Take several measurements in several locations around the ring and average the findings. If possible, and being safe to protect yourself from the open manhole, find the average height of the plume for the size of the manhole lid (24-inch or 36-inch diameter) on the Area Calculation Chart to determine the rate of flow exiting the manhole. Multiply the flow rate expressed in gallons per minute from the chart multiplied by the duration of the SSO in minutes to determine the total volume of the SSO. A photo taken at a safe distance upon arrival may help you refine your estimate.



Example: Determine the observed height of the plume at several locations around the ring of the manhole and average the results. Determine the size of the manhole cover. If the average height of the plume exiting an open 24-inch diameter manhole is 2 inches, find 2 inches on the 24-inch Manhole Cover Removed Chart. Based upon the data provided in the Manhole Cover Removed Chart, the flow in gallons per minute would be 3,444 gpm. If the duration of the flow lasted for one hour (60 minutes), the total amount of the SSO would be estimated at 206,640 gallons (3,444 x 60 = 206,640).

Height of plume (average) on 24-inch manhole	2 inches
Estimated flow from chart	3,444 gpm
Duration of SSO	60 minutes
Estimated SSO total volume	206,640 gallons

(Est flow from chart 3,444 x 60 minutes = 206,640)

ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED

24" FRAME

Water Height above M/H frame H in inches	S S O FLOW Q in gpm	in MGD	Min. Sewer size in which these flows are possible
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	2.86	
1 5/8	2,396	3.45	18"
1 3/4	2,799	4.03	
1 7/8	3,132	4.51	
2	3,444	4.96	21"
2 1/8	3,750	5.4	
2 1/4	3,986	5.74	
2 3/8	4,215	6.07	
2 1/2	4,437	6.39	
2 5/8	4,569	6.58	24"
2 3/4	4,687	6.75	
2 7/8	4,799	6.91	
3	4,910	7.07	

36" FRAME

Water Height above M/H frame H in inches	S S O FLOW Q in gpm	in MGD	Min. Sewer size in which these flows are possible
1/8	49	0.07	
1/4	111	0.16	
3/8	187	0.27	6"
1/2	271	0.39	
5/8	361	0.52	8"
3/4	458	0.66	
7/8	556	0.8	10"
1	660	0.95	12"
1 1/8	1,035	1.49	
1 1/4	1,486	2.14	15"
1 3/8	1,951	2.81	
1 1/2	2,424	3.49	18"
1 5/8	2,903	4.18	
1 3/4	3,382	4.87	
1 7/8	3,917	5.64	21"
2	4,458	6.42	
2 1/8	5,000	7.2	24"
2 1/4	5,556	8	
2 3/8	6,118	8.81	
2 1/2	6,764	9.74	
2 5/8	7,403	10.66	
2 3/4	7,972	11.48	30"
2 7/8	8,521	12.27	
3	9,062	13.05	
3 1/8	9,604	13.83	
3 1/4	10,139	14.6	
3 3/8	10,625	15.3	36"
3 1/2	11,097	15.98	
3 5/8	11,569	16.66	
3 3/4	12,035	17.33	
3 7/8	12,486	17.98	
4	12,861	18.52	
4 1/8	13,076	18.83	
4 1/4	13,285	19.13	
4 3/8	13,486	19.42	

Disclaimer:
This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

Pictorial Reference

Currently there are two picture charts being widely used to assist with estimating SSO volumes. The older chart is the city of San Diego's Manhole Overflow Rate Chart with the newer chart being the CWEA Southern Section Collection Systems Committee (SSCSC) Manhole Overflow Gauge. Each chart is a pictorial depiction of how an overflowing manhole appears at a given flow rate. The SSCSC Manhole Overflow Gauge has an additional picture for each flow rate showing a wide angle view of the spill area. When using either of the pictorial reference charts, select which picture most accurately represents the SSO being estimated. Use the gpm of the associated picture multiplied times the duration of the SSO to determine the total spill volume. Example: If the selected picture shows 300 gpm and the duration of SSO is 55 minutes, the total estimated spill volume would be 16,500 gallons (300 gpm x 55 min).

Selected picture volume	300 gpm
Duration of SSO	55 minutes
Total estimated SSO	16,500 gallons
(300 gpm x 55 minutes = 16,500 gallons)	

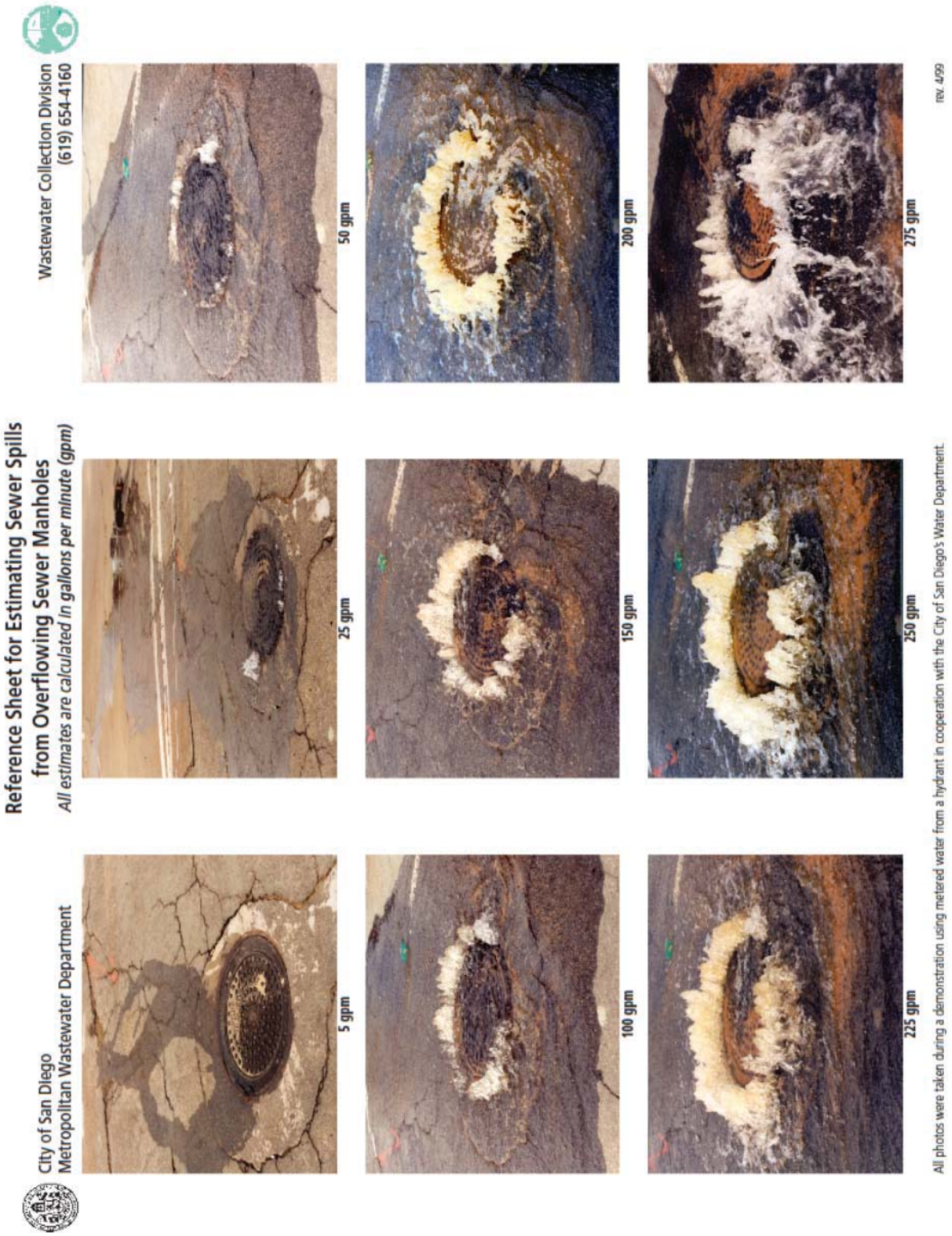
Note: Data was obtained at training facilities where potable water was metered and photos were taken at various flow rates.

Training facilities also exist at the Orange County Sanitation District in Fountain Valley, CA.

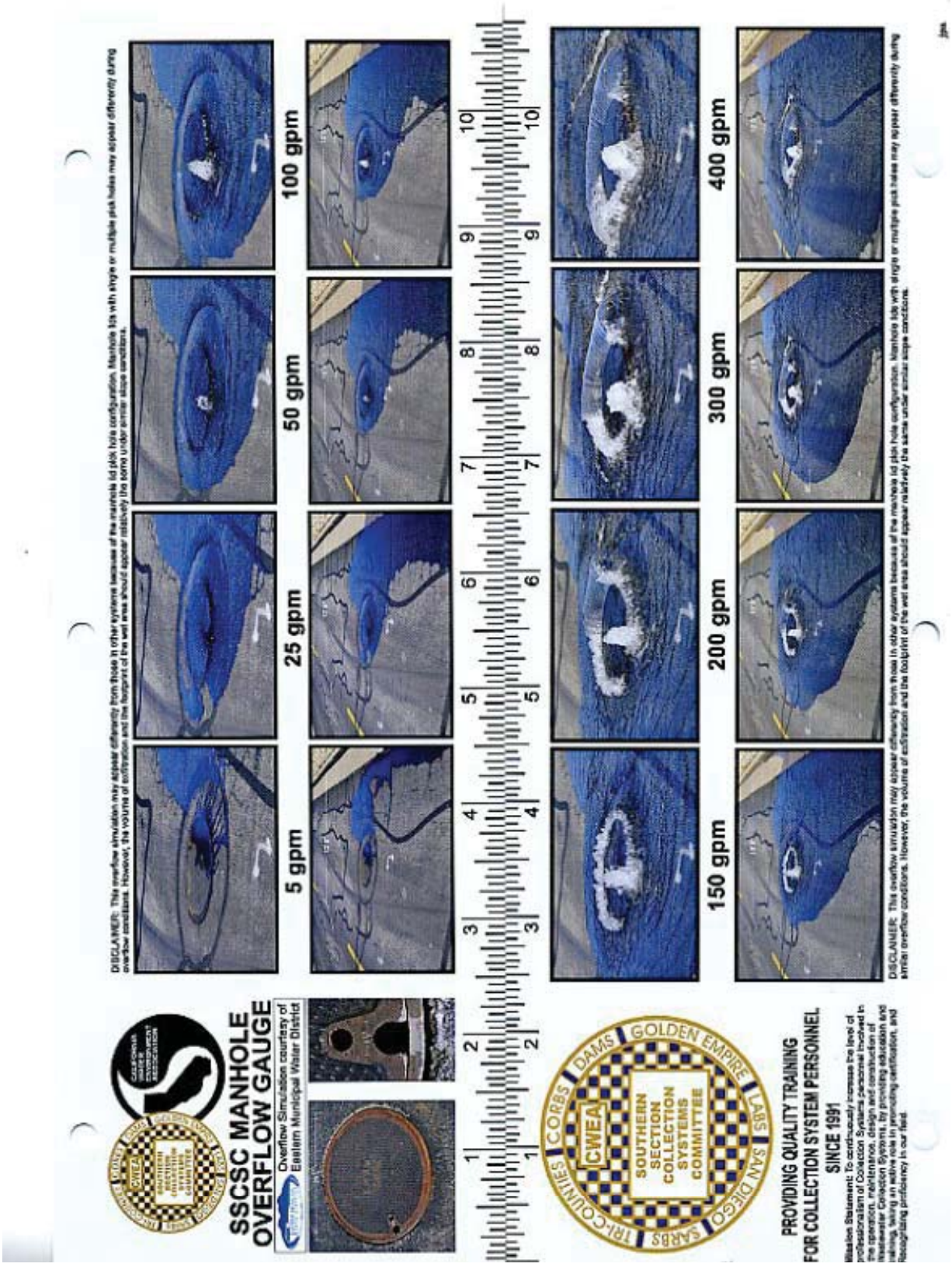
As a reference point, an 8-inch diameter sewer flowing half full at a velocity of 2.5 ft/sec would have a flow rate of about 192 gal/min. If fully blocked, the SSO rate would be 192 gpm. For a partial blockage, the SSO rate will be less.

Other agencies have developed above ground estimating tools such as frame and cover sets that can be pressurized using potable water and simple flow meters.

City of San Diego Manhole Overflow Picture Chart

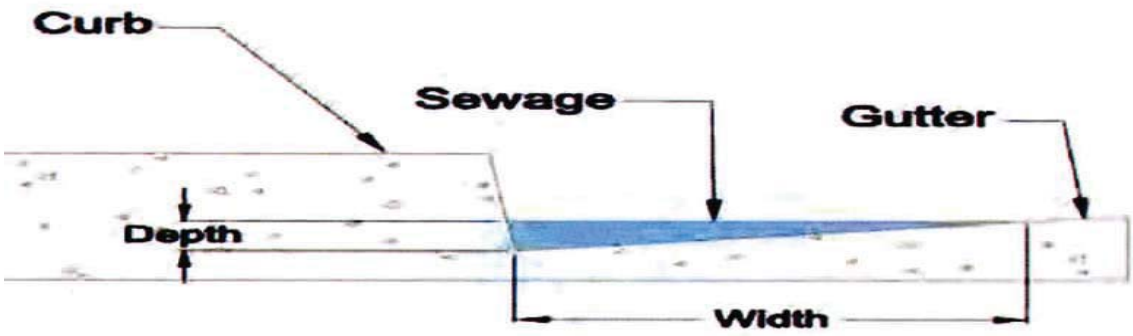


SSCSC Manhole Overflow Gauge



Gutter Flow (Simplified Version)

Although the traditional Manning's Equation is used to calculate flows in open channels, this simplified version can be used to measure SSOs that are flowing in open channels such as ditches, curb and gutter, etc. and still achieve reasonable estimations. Two things need to be determined to utilize this method of spill estimation, the cross sectional area of the channel and the velocity of the flow in the channel. First, determine the cross sectional dimensions of the channel (width and depth of flow) to determine the area of the flow. Then determine the velocity of the flow in the channel. To determine the velocity, drop a small floating object (ping pong ball, leaf, small piece of wood, etc.) into the flow and time how long it takes the object to travel a measured distance. This should be practiced several times in a non-SSO situation, and averaged to determine the flow velocity. The velocity of the flow multiplied by the cross sectional area of the flow multiplied by the duration of the SSO will result in the approximate volume of the SSO.



$Q = V \times A$

Flow (gal/min) = Velocity (ft/sec) x Area (ft^2) x 7.48 gal/cu ft x 60 sec/min

Example: If the cross section triangular area of the spill is calculated at .5 sq.ft. with the velocity measured at .25 ft. per second, the flow would be .125 cubic feet per second. Multiply times 449 (one cubic foot per second equals 449 gallons per minute) to determine the gallons per minute (56 gpm). If the SSO lasted for 35 minutes the total estimated spill volume would be 1,964 gallons.

Simplified Cross Section Area of the SSO	
Estimated Triangular Area	0.5 square feet
Estimated Velocity	.25 feet per second
Duration of the SSO	35 minutes
Gallons per minute per cubic foot per second conversion	449
Total estimated spill volume	1,964 gallons

(Area .5 sq.ft. x Est velocity .25 ft. per sec. = .125 cfs x 449 = 56 gpm x 35 minutes = 1,964 estimated gallons spilled)

Gutters on steep hillsides will flow at higher velocities. Practice your estimating on flatter areas and steeper areas of your service area.

Bucket Method

This method can be used for small spills due to partial blockages where the entire flow stream could be captured in a bucket. Estimate how many minutes it takes to fill the bucket. Dividing the volume of the bucket (in gallons) by the elapsed time to fill the bucket (in minutes). This provides the flow rate in gallons per minute (gpm). Once the gpm has been established, multiply the gpm by the total time duration in minutes of the SSO until it stopped to determine the total estimated volume of the SSO.

Example: If it takes 30 seconds (.5 minutes) to fill a 5 gallon bucket and the total spill duration was 20 minutes, the total spill volume would be 200 gallons. (5gal/.5 min = 10 gpm x 20 min = 200 gal).

Time to fill a 5 gallon bucket	30 seconds (.5 minute)
Duration of SSO	20 minutes
Estimated spill volume	200 gallons

(5 gallons every 30 seconds equals 10 gallons per minute x 20 minutes = 200 gallons)

You can practice visual estimating by filling a bucket of known volume for a measured time from a garden hose.

Pipe Size

To calculate an SSO based upon pipe size requires the diameter of the pipe, the depth of flow in the pipe downstream of the blockage during and after the blockage, and the flow velocity in the pipe. This method calculates the amount of flow in the pipe at the same time of the day during the blockage compared to the amount of flow normally in the pipe to determine how much flow had been lost over time.

To use this method, measure the flow depth at the nearest manhole downstream from the blockage. Record the depth reading. Once the blockage has been cleared and the flow stabilized, measure the flow depth at the same manhole as before and record the reading. The attached chart can be used on various size pipelines where the velocity is 2.0 feet per second. Pipelines of other rates will have to be calculated.

To use the attached chart, find the depth of the flow during the blockage in column 1. Follow the row across to the diameter of the pipe where the blockage has occurred. The number listed will be the flow rate in gallons per minute for pipelines with a velocity of 2 feet per second. Next find the flow depth after the blockage has been removed and the flow stabilized. Move across the chart to the proper pipe size and record the flow rate for a free flowing pipeline. Subtract the flow rate from the blocked pipe from the flow rate of the free flowing pipe. The remainder will be the flow rate lost. Multiply the flow rate lost times the duration of the SSO to determine the total flow volume lost. Example: If the flow depth during the blockage of a 10-inch pipe was 1 inch, the flow rate would 25 gpm. After the blockage was cleared and the flow stabilized, the flow depth was now 5 inches then the flow rate would be 240 gpm. To determine the amount lost, subtract the gpm (pipe blocked) from the gpm (pipe cleared) (240 gpm – 25 gpm = 215gpm) leaving the flow rate of the SSO. Multiply the remaining flow rate multiplied by the duration of the SSO in minutes to estimate the total volume of the SSO.

Flow Depth Inches	8 " PIPE	10" PIPE	12" PIPE	15" PIPE	18" PIPE	21" PIPE	24" PIPE
1	20 GPM	25 GPM	30 GPM	35 GPM	40 GPM	45 GPM	50 GPM
2	60	70	80	85	95	105	125
3	110	125	135	150	175	185	210
4	160	180	200	235	260	285	320
5	190	240	280	315	360	380	445
6	260	310	355	415	455	500	555
7	290	370	425	495	570	620	695
8	320	430	500	600	680	760	815
9		465	575	690	800	890	965
10		490	625	775	905	1005	1120
11			685	870	1020	1135	1275
12			715	935	1130	1260	1410
13				1020	1240	1415	1580
14				1070	1345	1520	1690
15				1105	1425	1650	1850
16					1495	1760	1990
17					1550	1880	2110
18					1595	1980	2285
19						2050	2410
20						2115	2530
21						2160	2630
22							2700
23							2765
24							2820

Note: the chart assumes V = 2.0 feet per second and n = 0.013

1. Record the time that spill was reported.
2. Record the flow, in inches, downstream of the spill or blockage. Record the pipe size in inches. Determine flow rate in gallons per minute (GPM) using chart above.
3. Re-establish flow and allow stabilizing. Record the time that flow stabilizes and the depth of flow, in inches. Determine flow rate using chart above.
4. Subtract the flow rate calculated in #2 from the flow rate calculated in #3.
5. Multiply the result of 4 by the minutes elapsed from notification to stopping overflow.
6. Report total amount in gallons on the SSO Report.

Note: The above chart is only for pipelines of the diameters shown and flowing at a velocity of 2.0 ft/sec.

Metered Flow

Estimates of the amount of wastewater spilled from a continuously metered system can be achieved utilizing upstream and downstream flow meters located close to the point where the wastewater escaped. Flow meters may be located at strategic locations throughout the wastewater collection system or at the intake or discharge of wastewater pump or lift stations. Flow metering usually occurs on pressure systems. If a spill is suspected on a metered upstream wastewater line, check the flow meter readings for abnormalities and note the time they start. Also check the flow meter readings at the downstream flow meter. If the downstream readings are lower than usual, the difference may be the amount of wastewater being lost to a spill. Abnormal pumping cycles for pump or lift stations located downstream from the spill can also be used to estimate the volume of a spill. Portable flow meters could also be installed in gravity sewers after a SSO event to help verify average flows at various times of the day when full or partial blockages may have occurred. You should also perform

this on the same day of the week that the SSO occurred. This is also a good way to understand how flows will change during the day in various parts of your system.

Rain Events

Previous examples of methods throughout the document were all in dry weather situations. Rain events cause substantial difficulties for SSO responders in establishing an accurate estimate of an SSO. Infiltration into the sewer system will increase, sometimes dramatically, the system flow including the amount of the SSO. When estimating the SSO amount during a rain event, the estimate is to include only the amount of wastewater that left the collection system (this includes any clear water inflow and/or infiltration (I&I) that entered the collection system upstream of the SSO) and not any waters that the wastewater comingled with after leaving the system. Although the comingled waters are considered contaminated by the SSO and may be involved in the cleanup, they should not be considered in the estimate of the volume of sewage spilled for the event. Consult with your city or agency management or your site-specific procedures to be used during wet weather SSOs.

Saturated Soils

Spills that have occurred on or migrated to grassy or dirt areas can be estimated if the area is dry and is not regularly irrigated like a field or dirt parking lot. This method is effective only during dry weather and not during or after a rain event. To estimate how much wastewater has been lost to the soil, first determine how many cubic feet of soil has been wetted. First determine the size of the area where the spill occurred. This is done in the same manner as for spills that occurred on hard surfaces and as discussed in the Measured Volume Method. Next determine how deep the soil has been saturated. To determine the depth of the soil saturation, dig several test holes with a round point shovel until dry soil is reached. Measure the depth of each hole and determine the average depth of the saturated soil. Multiply the area of the spill (in square feet) times the average depth of the soil saturation to determine the amount (in cubic feet) of saturated soil. Different types of soils will retain moisture in different amounts. Water will penetrate sandy soils quicker than clay soils and clay soils are capable of holding more moisture than sandy soils. Use an average of 18% moisture content when estimating the amount of wastewater that has saturated the soil.

Example: If the spill was contained in a dry dirt or grassy area of 10 feet by 20 feet, the area of the spill would be 200 square feet if it was a perfect rectangle (assumed). If the wastewater penetrated the soil to an average depth of 3 inches, the total amount of saturated soil would be 50 cubic feet (10 x 20 x .25 = 50 cf.). To determine the amount of wastewater suspended in the wetted soil, multiply the 50 cubic feet times 7.48 gallons per cubic foot (50 cf x 7.48 gal/cf = 374 gallons). Next multiply the gallons times the average amount of moisture the soil can hold (use 18% as a rough estimate or calculate the soil moisture) to determine the actual estimated amount of wastewater that has saturated the soil (374 gal x .18 = 67.3 gallons of wastewater contained in the soil for the area of the spill). Add the amount of wastewater estimated to be contained in the soil with the amount of surface wastewater that was removed to achieve an estimated total amount of the wastewater spill.

Simple method to calculate soil moisture content:
Equipment needed: One coffee filter; a funnel; a graduated measuring cup; a jar or bottle. Place the coffee filter into the funnel. Place the funnel into the mouth of the jar or bottle. Place one cup of clean dry soil from the spill site onto the coffee filter. Pour one cup (8 ounces) of water onto the soil and allow the water to drain into the jar. Once the water has stopped dripping from the funnel, remove the funnel and measure the amount of water in the jar. The difference between the amount of water in the jar and the 8 ounces originally poured over the soil is the amount of moisture the soil retained.

Example: If six and one half ounces (6.5) remained in the jar, one and one half ounce (1.5) or 18.75% remained in the soil. The soil moisture content would be 18.75%.

Combo Truck or Vacuum Truck Recovery

When the spill is contained to a specific area and recovered by a combo or vacuum truck, the amount recovered can be used in calculating the amount of the original spill. If the spill is contained on a hard surface, estimate the total spill volume by what was captured by the combo or vacuum truck plus the amount that could not be captured. To estimate the amount not captured by the combo or vacuum truck, use the Measured Volume Method. For wet spots on concrete, use a depth of 0.0013 ft. or 1/64 inch. For wet stains on asphalt, use a depth of

0.0026 ft. or 1/32 inch. If the spill is contained on soil, use the Saturated Soils Method to determine how much of the spill soaked into the soil and add to the amount captured by the combo or vacuum truck.

Conversion Factors

1.0 cfs = .6463 mgd

One cubic foot of water (cf) = 7.48 gallons

One cubic foot of water per second (cfs) = 448.8 gallons per minute

A cylinder 1 foot in diameter and one foot deep = 5.87 gallons

A 1 square foot triangle 1 foot deep = 3.25 gallons

One inch or 1/12 ft = .083 feet

Volumes Recovered with Trucks or Pumped to Tanks

Level gauge on truck or

Known volume of the full tank or

Number of full tank trucks used during large SSO events

Use your agency's approved conversion factors, if available.

References

California Environmental Protection Agency

http://www.calepa.ca.gov/

State Water Resources Control Board

http://www.swrcb.ca.gov/

Sanitary Sewer Overflow (SSO) Reduction Program

http://www.swrcb.ca.gov/water_issues/programs/sso/index.shtml

Sample Worksheet

(City or Agency Name)

SSO Volume Estimation Worksheet

SSO Address/Location: _____ **Date:** _____

SSO Volume Method of Estimation (check appropriate box and provide appropriate information for method used below)

Pictorial Reference Flow Rate Chart (San Diego Chart ☐ CWEA Ruler ☐)
Vent or Pick Holes ☐ Eyeball estimate ☐

Measured volume ☐ Counting Connections ☐ Manhole Ring ☐ Partially Covered Manhole ☐ Open Manhole ☐

Bucket Method ☐ Pipe Size Method ☐ Gutter Flow Method ☐ Metered Flow ☐
Rain Event Method ☐

Saturated Soils Method ☐ Combo/Vacuum Truck Recovery Method ☐

Spill Start Date: _____ Spill Start Time: _____

Spill End Date: _____ Spill End Time: _____ Total Est. Spill Volume (gal): _____

Provide a detailed description of the method(s) used to determine the SSO estimate. (Use additional sheets as needed)

Signed: _____ **Date:** _____

APPENDIX D
TRAINING DOCUMENTS

Crescent City
Overflow Emergency Response Plan - Training Log

Instructions: Following annual training on the **Crescent City Overflow Emergency Response Plan**, responders, staff with responsibilities within the plan, and contractors that respond to overflows should sign and date below. Individuals are encouraged to provide any comments regarding the necessity to update or modify the plan.

Training Date	Employee/ Contractor Name	Signature	Comments

Questions: Contact Tom Romesburg, Utilities Manager (707) 464-9506

Crescent City
Overflow Emergency Response Plan - Training Log

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Training Date	Employee/ Contractor Name	Signature	Comments

Questions: Contact Tom Romesburg, Utilities Manager (707) 464-9506

Crescent City
Overflow Emergency Response Plan - Training Test

Instructions: Following annual training on the **Crescent City Overflow Emergency Response Plan**, responders, staff with responsibilities within the plan, and contractors that respond to overflows should answer the questions below. Individuals are encouraged to provide any comments regarding the necessity to update or modify the plan.

1) What are the goals of the **Crescent City** OERP?

_____

_____

_____

_____

_____

_____

2) What are the priorities of a first responder to a SSO?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

3) How do you locate the nearest stormwater inlet that could be impacted by the SSO?

_____

4) How do you know the location of the outfall of a stormwater conduit impacted by an SSO?

_____

5) What SSOs trigger a Failure Analysis Investigation?

_____

6) What is determined by the Failure Analysis Investigation?

_____

_____

7) Who receives a copy of the Failure Analysis Investigation report?

_____

8) Where are the materials stored for responding to an SSO?

_____

9) What conditions constitute a Category 1 SSO?

_____

10) If a large SSO occurs and **Crescent City** needs outside equipment or resources who do you call? and what are their 24-hour phone numbers?

_____

APPENDIX G
FOG CONTROL POLICY

Crescent City, Oils and Grease (FOG) Policy

Policy Objectives:

To set forth policies, procedures and requirements governing the installation and maintenance of grease and oil interceptors for Food Service Establishments (FSEs).

To protect the sewer collection system from grease accumulation and blockages that may cause sanitary sewer overflows (SSOs) in violation of the cities NPDES Permit, which can create public health hazards and subject the City to administrative penalties.

Authority:

Crescent City Uncodified Ordinance No. 767 Section 3.5 “Interceptor Requirements")

Crescent City Uncodified Ordinance No. 757 Section 3.2 “Additional Pretreatment Measures”

Assigned Responsibility:

Pretreatment Coordinator or delegate.

Applicability:

This policy shall apply to all Food Service Establishments (FSEs) within the Crescent City service area.

Definitions:

Fats, Oils, and Greases (FOG): Organic polar compounds derived from animal and/or plant sources that contain multiple carbon chain triglyceride molecules.

Grease Interceptor: Any plumbing appurtenance or appliance that intercepts fats, oil and grease from a wastewater discharge.

> **A. Hydromechanical Grease Interceptor:** A plumbing appurtenance or appliance that intercepts fats, oil and grease from a wastewater discharge and is identified by flow rate, and separation and retention efficiency. The design incorporates air entrainment, hydromechanical separation, interior baffling, and/or barriers in combination.
>
> > **1. Grease Removal Device:** Any hydromechanical grease interceptor that automatically, mechanically removes FOG from

the interceptor, the control of which are either automatic or manually initiated.

2**. Grease Trap:** A device designed to retain grease from one to a maximum of four fixtures.

3**. Trapzilla or Approved Equal:** A polyethylene large capacity hydromechanical grease interceptor.

B. Gravity Grease Interceptor: A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept FOG from a wastewater discharge and is identified by volume, retention time, baffles, a minimum of two compartments, a minimum total volume of 750 gallons, and gravity separation. Gravity grease interceptors are generally installed outside.

Food Service Establishment (FSE): Those establishments primarily engaged in activities of preparing, serving, or otherwise making food available for consumption by the public. FSEs include but are not limited to restaurants, commercial kitchens, caterers, hotels, schools, hospitals, prisons, correctional facilities, and care institutions.

Best Management Practice (BMP): Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to reduce the FOG discharges.

FOG Requirements:

A. All FSEs where food is being prepared or kitchenware is being washed shall install an appropriate type and sized grease interceptor approved by the Pretreatment Coordinator.

B. Existing FSEs with planned plumbing improvements or tenant improvement plans subject to a building permit shall be evaluated during the building permit process and shall install an appropriately sized grease interceptor if one is not already in place. If a grease interceptor is required, these facilities shall first obtain approval of device type and size from the Public Works Director or the Pretreatment Coordinator for proper device type and size prior to receiving a building/plumbing permit.

Newly constructed FSEs shall install an appropriately sized gravity grease interceptor in conformance with California Plumbing Code (CPC) Chapter 10. All such facilities shall obtain prior approval from the Public Works Director or the Pretreatment Coordinator for sizing prior to receiving a building permit.

C. All existing food service establishments that are determined by the Public Works Director or the Pretreatment Coordinator, to have a reasonable potential to adversely impact the City's sanitary sewer system will be required to install an appropriately sized grease interceptor or upgrade their current system to conform to the requirements of this policy. Facilities with undersized or nonfunctional grease interceptors as determined by the City will be required to install an appropriately sized grease interceptor or upgrade their current system to conform to the requirements of this policy. FSEs will be notified of their obligation to fulfill applicable requirements within 90 days or time period specified in a written notice.

Plan Review:

All building plans for the new construction of FSEs, as well as alterations of an existing FSE that require a building permit shall be approved by the Public Works Director or the Pretreatment Coordinator prior to issuance of the building permit.

Alternative Pretreatment Technology:

A. Devices required under this Policy shall be installed unless the Public Works Director or the Pretreatment Coordinator authorizes the installation of alternative pretreatment technology. The installation of alternative pretreatment technology will be considered where the installation of a grease interceptor is not feasible due to physical constraints or other considerations.

B. Alternative pretreatment technology includes, but is not limited to, devices that are used to trap, separate and hold grease from wastewater and prevent it from being discharged into the sanitary sewer. All alternative pretreatment technology must be appropriately sized and approved by the Public Works Director or the Pretreatment Coordinator.

Installation Requirements:

A. Grease interceptor sizing and installation shall conform to the current editionof the California Plumbing Code or other codes adopted by the City of Crescent City.

B. Waste lines leading from sinks, drains, and other fixtures or equipment in FSEs where grease may be introduced into the sanitary sewer system may be required to be connected to a grease interceptor.

C. Gravity grease interceptors shall be constructed in accordance with the City Standard. The minimum size gravity grease interceptor allowed is

750 gallons. If more than one interceptor will be installed to achieve the required storage capacity, the interceptors shall be installed in series. All interceptors except the final one shall be designed as a single chamber interceptor. Gravity grease interceptors shall not be located in a food or utensil handling area.

D. Trapzilla Hydromechanical Grease Interceptors or Approved Equal shall be a minimum size of 75 gallons per minute unless specifically authorized by the Public Works Director or the Pretreatment Coordinator.

E. Grease interceptors shall be installed at a location where they are easily accessible for inspection, cleaning, and removal of intercepted grease.

F. Grease traps are not allowed in new construction and remodels unless specifically approved by the Public Works Director or the Pretreatment Coordinator. Approval shall only be granted in instances where the installation of a gravity grease interceptor, grease removal device, Trapzilla (or Approved Equal), or alternative pretreatment technology is not feasible. Grease traps shall not be located, in a food or utensil handling area.

G. Sanitary wastes shall not be discharged to a grease interceptor.

H. No food waste disposal unit or dishwasher shall discharge into any hydromechanical grease interceptor.

1. Existing facilities with food waste disposal units that discharge to hydromechanical grease interceptors or discharge directly to the sanitary sewer shall remove the food waste disposal unit or connect it to a gravity grease interceptor with a minimum size of 1,000 gallons.

2. Existing facilities with dishwashers that discharge to hydromechanical grease interceptors shall re-route the dishwasher to discharge directly to the sanitary sewer or with the approval of the Public Works Director or the Pretreatment Coordinator may discharge to a gravity grease interceptor with a minimum size of 750 gallons.

Maintenance Requirements:

A. All grease interceptors/devices shall be maintained in efficient operating condition in conformance with City's Ordinances. Accumulated grease and sediment shall be removed as required. At a minimum gravity grease interceptors and grease traps shall be cleaned when the volume of sediment and grease equals or exceeds 25% of the total depth of the sediment, water, and grease layers.

B. Grease Removal Devices, Trapzillas (or Approved Equals), and Alternative Pretreatment Technologies shall be cleaned and maintained in accordance with the manufactures' recommendations.

C. No collected waste shall be introduced into the sanitary sewer.

D. All grease interceptors shall be kept free of non-food waste including but not limited to grit, rocks, gravel, sand, eating utensils, cigarettes, trash, towels, and rags.

E. The addition chemicals, enzymes, emulsifiers, live bacteria or other grease cutters or additives used for purposes of grease reduction to a grease interceptor is specifically prohibited.

F. If the Public Works Director or the Pretreatment Coordinator determines that a grease interceptor is not being properly cleaned and maintained, the City may mandate a maintenance program. Maintenance programs shall include but are not limited to mandatory cleaning frequencies. Facilities that fail to adhere to a mandated maintenance program may be required to install additional grease interceptors.

APPENDIX H
FOG PUMPING AND/OR FOG WASTE HAULING CONTRACTORS IN DEL NORTE COUNTY

Fats Oils and Grease Disposal Facilities, Del Norte County, California

Cal-Ore Grease Trap Services
2151 Northcrest Dr.
Crescent City, CA 95531
(707) 954-0422

North State Rendering
600 Standard Veneer Rd.
Crescent City, CA 95531
(707) 465-6634

Roto-Rooter
17498 Carpenterville Rd.
Brookings, OR 97415
(541) 469-7557