DRAFT

BURNEY WATER DISTRICT

SEWER SYSTEM MANAGEMENT PLAN

Revised 2022/2023 by District Staff and PACE Engineering, Inc.

Original Document Completed in 2017 by PACE Engineering, Inc.

TABLE OF CONTENTS

TABLES

FIGURES

PLATES AT END OF TEXT

APPENDICES AT END OF TEXT

ABBREVIATIONS

BMP	Best Management Practice
BWD	Burney Water District
CCTV	Closed-Circuit Television
CIP	Capital Improvement Plan
CIWQS	California Integrated Water Quality System
District	Burney Water District
FOG	Fats, Oils, and Grease
GIS	Geographic Information Systems
IIPP	Injury and Illness Prevention Plan
LRO	Legally Responsible Official
MRP	Master Reclamation Permit
NPDES	National Pollution Discharge Elimination System
OES	Office of Emergency Services
PACE	PACE Engineering, Inc.
SERP	Sewer Emergency Response Plan
SMP	Sewer Master Plan
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
WDR	Waste Discharge Requirements
WWTP	Wastewater Treatment Plant

BURNEY WATER DISTRICT
SEWER SYSTEM MANAGEMENT PLAN
MAY 2023

ELEMENT 1: GOALS AND INTRODUCTION

This Sewer System Management Plan (SSMP) has been prepared in compliance with requirements of the State Water Resources Control Board's (SWRCB's) General Waste Discharge Requirements (WDRs) Order No. 2022-0103-DWQ (Statewide WDR). These WDRs supersede the previous SWRCB Order No. 2006-0003-DWQ and amendments thereafter.

The SWRCB in the WDRs require all public wastewater collection system agencies in California with greater than one mile of sewers to be regulated under the statewide WDR. The SWRCB action, which applies to Burney Water District (BWD or District), also mandates the development of an SSMP and the reporting of Sanitary Sewer Overflows (SSO) using an electronic reporting system, California Integrated Water Quality System (CIWQS). On December 6, 2022, the SWRCB published the new statewide WDRs, which include additional requirements for the SSMP. Those requirements are addressed herein.

PACE Engineering, Inc. (PACE), together with BWD staff, prepared the original SSMP in February 2017. All changes to the SSMP since 2017 are summarized in Appendix D. The intent of this SSMP Update is to meet requirements of the Statewide WDR and be a meaningful document the District refers to for management of the wastewater collection system. The organization of this document is consistent with SWRCB requirements. The SSMP includes eleven elements, as follows:

1. Goals and Introduction
2. Organization
3. Legal Authority
4. Operation and Maintenance
5. Design and Performance Provisions
6. Spill Emergency Response Plan
7. Sewer Pipe Blockage Control Program
8. System Evaluation and Capacity Assurance Plan
9. Monitoring, Measurement, and Program Modifications
10. SSMP Audits
11. Communication Plan

This section provides background information on the purpose and organization of the SSMP and provides a brief overview of the BWD area and sewer system. This section fulfills the goals and introduction requirement (Element 1) of the SWRCB SSMP requirements.

The mission of BWD is to provide a safe and reliable water supply, environmentally safe disposal of wastewater, and responsible governance of pools and parks. In support of this mission, BWD has developed the following goals for operation and maintenance of the sewer system:

1. Avoid SSOs and respond to SSOs quickly and mitigate impact of the overflow to prevent public health hazards.
2. Provide excellent customer service through efficient system operation and effective communication strategies. Protect the investment in the collection system by maintaining adequate capacities and extending the useful life span of the system.
3. Avoid unnecessary damage to public and private property.
4. Use funds available for sewer operation in the most efficient manner and establish a capital improvement fund for the sewer system.
5. Convey wastewater to the wastewater treatment plant (WWTP) with a minimum amount of infiltration, inflow, and exfiltration.
6. Provide adequate capacity to convey peak flows.
7. Perform all operations in a safe manner to avoid personal injury and property damage.
8. Provide training for Wastewater Collection staff.
9. Meet all applicable regulatory notification and reporting requirements.

1.1 Regulatory Requirements for Goals and Introduction Element

The summarized requirements for this Element of the SSMP is to provide a plan and schedule as follows:

1. Properly manage, operate, and maintain all parts of the Enrollee's sanitary sewer system(s);
2. Reduce and prevent spills; and
3. Contain and mitigate spills that do occur.

The Plan must include a narrative Introduction section that discusses the following items:

- Regulatory Context - Provide a general description of the local sewer system management program and discuss SSMP implementation and updates.
- SSMP Update Schedule - Include a schedule for the Enrollee to update the SSMP, including the schedule for conducting internal audits. The schedule must include milestones for incorporation of activities addressing prevention of sewer spills.
- Sewer System Asset Overview - Provide a description of the Enrollee-owned assets and service area including, but not limited to:
    - Location, including county;
    - Service area boundary;
    - Population and community served;
    - System size, including total length in mile, length of gravity mainlines, length of pressurized (force) mains, and number of pump stations and siphons;
    - Structures diverting stormwater to the sewer system;
    - Data management systems;
    - Sewer system ownership and operation responsibilities between Enrollee and private entities for upper and lower sewer laterals;
    - Estimated number or percent of residential, commercial, and industrial service connections;
    - Unique service boundary conditions and challenge(s); and
    - Reference to the Enrollee's up-to-date map of its sanitary sewer system.

- **Prioritization of Corrective Action** - The findings of the condition assessments and capacity assessments must be used to prioritize corrective actions. Prioritization must consider the severity of the consequences of potential spills.

1.2 SSMP Update Schedule

The SSMP shall be internally audited by BWD at a minimum frequency of once every three years. The legally responsible official (LRO) shall submit an audit report into the online CIWQS Sanitary Sewer System Database per the requirements of the statewide WDRs. An internal audit form is included in Appendix F. Refer to Element 10 of this SSMP for more information regarding SSMP audits.

At a minimum, the SSMP should be updated every six years.

1.3 Sewer System Asset Overview

BWD is classified as a Special District and is located in northeastern Shasta County. The service area boundary consists of approximately 2,420 acres (3.8 square miles); however, the BWD sphere of influence includes areas outside the District service area boundary, such as Johnson Park, and is approximately 4,700 acres (7.4 square miles). BWD provides potable water, sewer, pool, and parks service to a community with a population of approximately 3,000 people. The District provides sewer service to approximately 1,275 residential connections, 75 commercial connections, and no industrial connections.

BWD's sewer system consists of approximately 22 miles of pipe, ranging from 6 to 15 inches in diameter, summarized in Table 1, and two lift stations (Main Lift Station on Black Ranch Road and Bartel Lift Station on Bartel Street). A map of the District's current sewer system is included in Plate 1. There are no siphons within BWD. The stormwater system within Burney is not connected to the BWD collection system, nor does it flow to the WWTP. BWD does not receive wastewater flow from areas outside of the District Boundary.

Table 1 – Collection System Components

Type	Size (inches)	Approximate Linear Feet
Gravity	6	71,690
Gravity	8	21,750
Gravity	10	3,860
Gravity	12	6,190
Gravity	15	7,140
Force Main	6	195
Force Main	8	2,860

BWD maintains its own sewer system and occasionally utilizes contract services for specialized maintenance, such as pump rebuilding or electrical repairs. The District utilizes work orders to track operation and maintenance activities of the collection system.

On average, the District has an SSO once per month. Milestones for preventing SSOs would be to eliminate SSOs within BWD altogether.

ELEMENT 2: ORGANIZATION

The intent of this section of the SSMP is to identify District staff who are responsible for implementing this SSMP, responding to SSO events, and meeting SSO reporting requirements. This section also includes the designation of the Authorized Representative/LRO to meet SWRCB requirements for completing and certifying spill reports. This section fulfills the Organization requirement (Element 2) of the SWRCB SSMP requirements.

2.1 Regulatory Requirements for Organization Element

The summarized requirements for this Element of the SSMP are as follows:

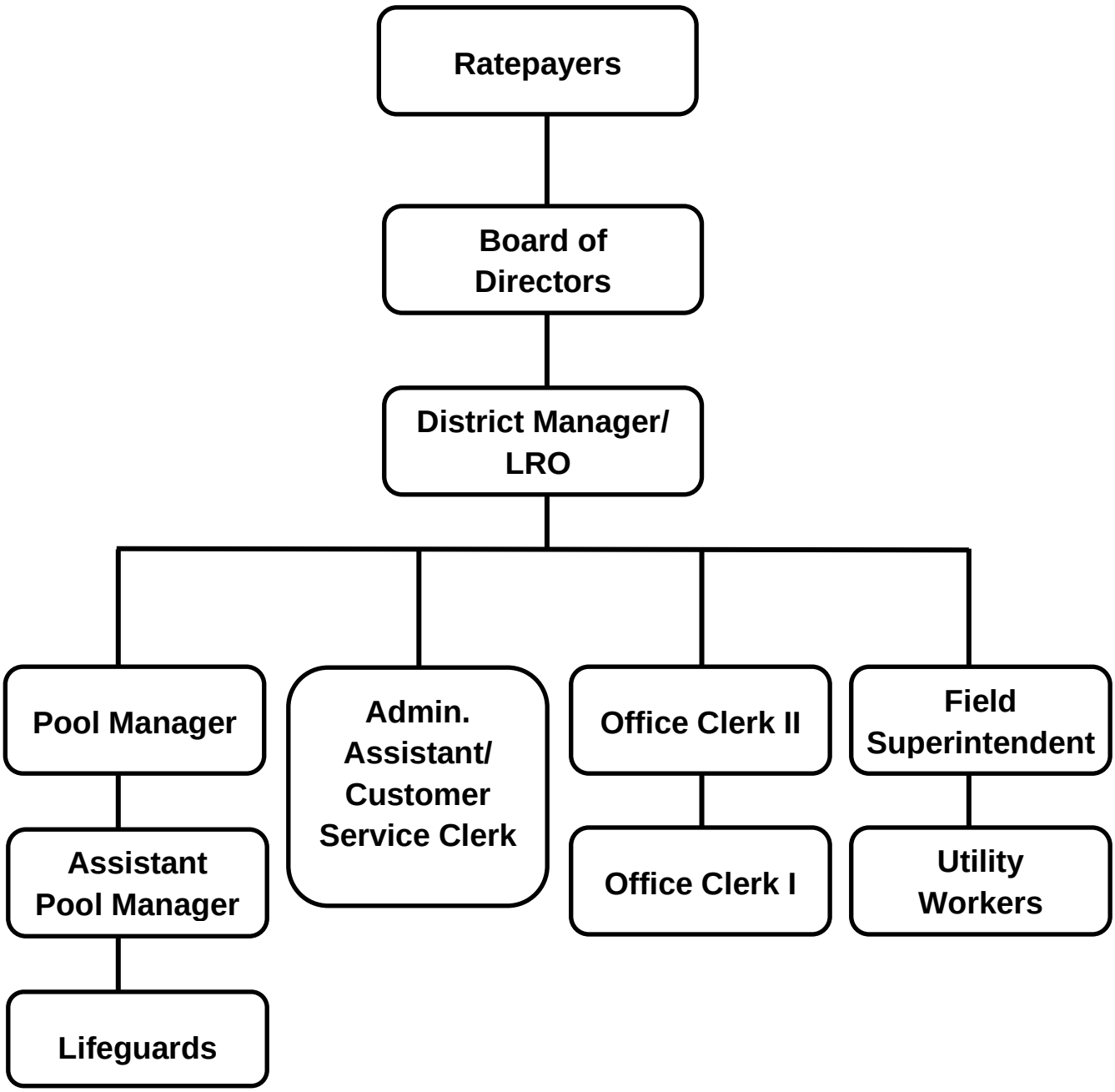
The collection system agency's SSMP must identify:

1. The name of the LRO.
2. 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.
3. 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 Quality Control Board, and/or State Office of Emergency Services (OES)].

2.2 Organization Discussion

This section discusses the organization and roles of wastewater staff, the authorized representative to the SWRCB, and key staff responsible for implementing and maintaining the SSMP. Names and contact information for all current staff is available in Appendix A.

Figure 1 – Organization Chart



2.2.1 Description of Responsibilities

Note: Only responsibilities relevant to sewer system operations are described below:

Board of Directors

Establish policy.

District Manager

Plans, organizes, directs, performs, and supervises all work activities of BWD, including maintenance and repairs of sewer infrastructure. The District Manager advises the Board of Directors on public works and/or engineering matters. The District Manager confers with contractors, engineers, and members of the general public on construction and maintenance problems and procedures. The District Manager prepares the budget, while the Board of Directors approves the budget. The District Manager prepares cost estimates and obtains approval of the Board of Directors for all impending public work other than normal repairs and maintenance. The District Manager aids contractors with plans and specifications for public work projects if approved by the Board of Directors.

Field Superintendent

Responsible for plant operations and collection system maintenance. The Field Superintendent supervises utility operators, schedules work assignments, and maintains records of assigned projects, supplies, and equipment. The Field Superintendent is responsible for maintaining written documents of all public works, records, maintenance schedules, and regulatory reports. The Field Superintendent also investigates sewer-related complaints from the general public and estimates needed equipment and equipment maintenance.

Utility Worker

Works as a member of a field maintenance crew to clean, unplug, and repair sewer lines and inspect lift stations. Utility Workers locate and lift manhole covers and operate power equipment. Utility Workers are responsible for scheduling sewer cleaning with outside contractors upon Board approval. Utility Workers are first responders who are responsible for underground service alerts.

2.2.2 Legally Responsible Official

The District's LRO and authorized representative in all wastewater collection system matters is the District Manager. The District Manager is authorized to certify electronic spill reports submitted to the SWRCB and can submit SSO reports to appropriate government agencies. The Field Superintendent and Utility Worker positions can also perform these functions when authorized by the District Manager. The name and contact information of the current District Manager who is the legally responsible official is included in Appendix A.

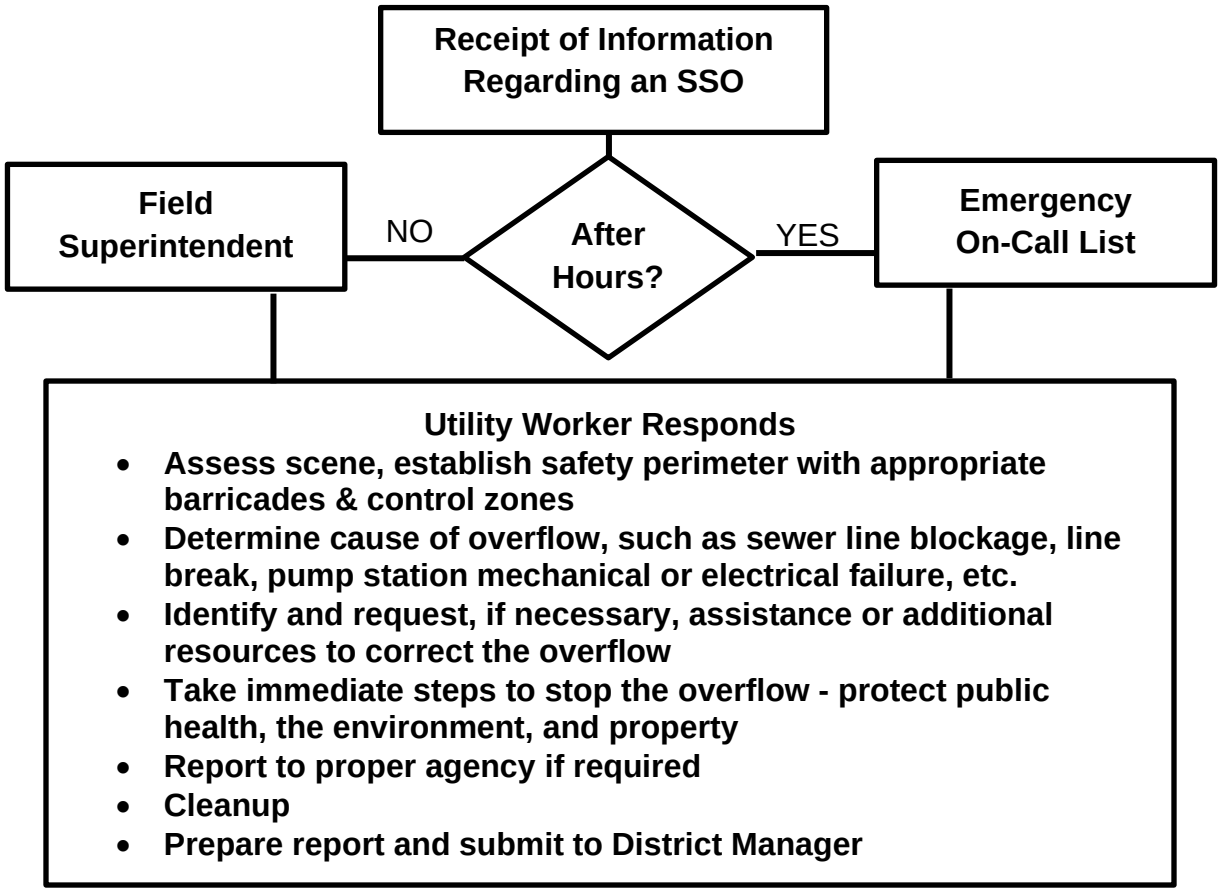
2.2.3 Responsibility for SSMP Implementation

The District Manager is responsible for implementing and maintaining all elements of this SSMP.

2.2.4 Chain of Communication for Responding to an SSO

The chain of communication for responding to an SSO is shown in Figure 2-2. Contact information for the chain of communication is shown in Table 2-2. An overview of BWD's Spill Emergency Response procedures can be found in Element 6: Spill Emergency Response Plan. Detailed information is given in the District's complete Spill Emergency Response Plan in Appendix B.

Figure 2 – SSO Responding Procedures Flow Chart



2.2.5 Chain of Communication for Reporting an SSO

Categorizing the chain of responsibilities for reporting SSOs to the various required regulatory agencies is shown in Figure 2-3, with reporting requirements indicated in Table 2. All SSOs are required to be reported to the SSO database regardless of the SSO volume. SSOs from private laterals are not required to be reported by the District; however, the District can voluntarily report these SSOs. An overview of SSO reporting can be found under Element 6: Spill Emergency Response Plan. Detailed information is given in the District's complete Spill Emergency Response Plan in Appendix B.

Figure 3 – SSO Reporting Procedures

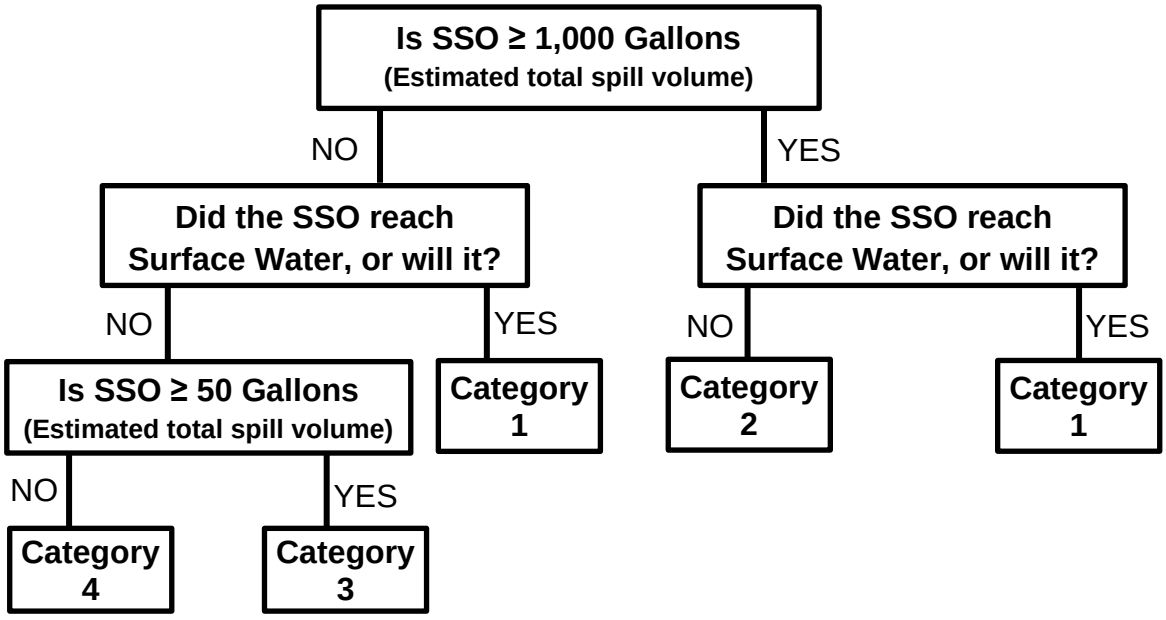


Table 2 – SSO Notification and Reporting Requirements

Category	Notification Contact	Notification Time Frame	Reporting
1	Office of Emergency Services	Within 2 hours	Within 18 hours of initial SSO notification, conduct water quality sampling for any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters
	Shasta County Health Department		
	Department of Fish and Wildlife		
	Regional Water Quality Control Board		
	CIWQS	Within 3 business days of becoming aware of the SSO	Submit draft Spill Report
		Within 15 calendar days of the spill end date	Submit certified Spill Report
		Within 45 calendar days after end date of spill	SSO Technical Report for any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters
2	Office of Emergency Services	Within 2 hours	
	Shasta County Health Department		
	CIWQS	Within 3 business days of becoming aware of the SSO	Submit draft Spill Report
		Within 15 calendar days of the spill end date	Submit certified Spill Report
3	CIWQS	Within 30 calendar days of the end of the month in which the SSO occurred	Submit certified Spill Report
4	CIWQS	Within 30 calendar days of the end of the month in which the SSO occurred	Certify estimated total spill volume and total number of Category 4 spills
		February 1 after end of the calendar year in which the spill occurred	Upload certified report of all Category 4 spills

Table 3 – Contact Numbers for District SSO Chain of Communication

Contact	Position	Office Phone Number	Work Cell Phone
David Zevely	District Manager/ LRO	530-335-3582	530-238-7833
Mike Skelly	Field Superintendent	530-335-3582	530-238-7774
Keith Moore	Utility Worker	530-335-3582	530-238-7774
Valerie Rasmussen	SWRCB	530-224-6130	
Shasta County Health Department		530-225-5073	
Office of Emergency Services (CA State)		800-852-7550	
Department of Fish and Wildlife		530-225-2300	

ELEMENT 3: LEGAL AUTHORITY

This element of the SSMP discusses the District's Legal Authority, including its Sanitary Code. This section fulfills the Legal Authority requirement (Element 3) of the SWRCB SSMP.

3.1 Regulatory Requirements for Legal Authority Element

The requirements for this Element of the SSMP are summarized below:

The District must demonstrate, through collection system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

1. Prevent illicit discharges into the sanitary sewer system (examples may include but are not limited to storm water, chemical dumping, unauthorized debris, cut roots, etc.).
2. Control infiltration and inflow from satellite collection systems and laterals.
3. Require that mains and laterals be properly designed and constructed including all new and rehabilitated sewer systems and connections.
4. Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by BWD.
5. Limit the discharge of fats, oils, grease, and other debris that may cause blockages.
6. Enforce any violations of its sewer ordinances.

3.2 Legal Authority Discussion

BWD has the legal authority to:

1. Assign responsibility for private laterals.
2. Prevent illicit discharges.
3. Require proper design and construction of mains and laterals.
4. Access facilities owned by the District for maintenance, inspection, and repairs.
5. Limit the discharge of fats, oils, grease, and debris.
6. Enforce the provisions of Sewer Ordinance.

At the time of this SSMP, Sewer Ordinance No. 90-01 is the current Sewer Ordinance. The District intends to update this ordinance, in which case section numbers referenced herein

may change and will require updating. Refer to the most current Sewer Ordinance when reviewing BWD legal authority. BWD's Ordinances are not available online at the time of this update.

3.2.1 Sewer Ordinance No. 90-01

BWD Sewer Ordinance No. 90-01 was adopted by the District Board to establish rules and regulations pertaining to the use, maintenance, and charges for the sewage works within the boundaries of BWD to protect the health, safety, and general welfare of the citizens of the District.

Responsibility for Maintenance Laterals

BWD Sewer Ordinance No. 90-01 Section 9.02 establishes the owner as the responsible party for ownership and maintenance of the service lateral and cleanouts beyond the Shasta County right-of-way.

Prevention of Illicit Discharges

BWD Sewer Ordinance No. 90-01 Section 10.04 states that if substances are discharged and found to be in violation of Section 10 of the Ordinance, the owner shall immediately cease discharging, shall be subject to penalties as outlined, and shall bear the cost of all laboratory charges.

Proper Design and Construction of Sewers and Connections

BWD Sewer Ordinance No. 90-01 Section 3 contains all regulations required by the District as to material and manner of construction of the sewer system and connections.

Access for Maintenance, Inspection, and Repairs

BWD Sewer Ordinance No. 90-01 Section 9.01 states BWD shall own, operate, and maintain all sewer mains. BWD will exercise reasonable diligence and care to provide continuous operation of its sewage disposal facilities. The District shall have access to cleanouts at all times.

Limit Discharge of Fats, Oils, Grease, and Debris

BWD Sewer Ordinance No. 90-01 Section 5 requires “grease traps or interceptors be installed in all establishments which handle, prepare, cook, or serve foods or produce, or when in the opinion of the District Manager, an establishment may introduce grease into the sanitary sewer in quantities that can affect the proper functioning of the sewage works.”

Section 10 prohibits the discharge of any water or waste containing fats, wax, grease, or oils, whether emulsified or not, in excess of 100 mg/L or containing substances which may solidify or become viscous at temperatures below 60 degrees Fahrenheit.

Enforcement Measures

BWD Sewer Ordinance No. 90-01 Section 11 states all persons who are subject to the provisions of this Ordinance are also subject to the penalties as set forth in Section 11 for violations of this Ordinance.

ELEMENT 4: OPERATION AND MAINTENANCE

This element of the SSMP discusses the District's operation and maintenance program of BWD to manage the sewer system. This section fulfills the Operation and Maintenance Program requirement (Element 4) of the SWRCB SSMP.

For a detailed description of these activities performed at the WWTP, refer to the Operation and Maintenance Manual for the Water Pollution Control Facilities completed by CDM Inc., October 1975 (O&M Manual). This will soon be updated upon completion of the WWTP Improvement Project currently under construction.

4.1 Regulatory Requirements for Operation and Maintenance

The requirements for this Element of the SSMP are summarized below:

Maps

The District 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.

Preventative Maintenance

The District must describe routine preventative operation and maintenance activities by staff and contractors, including a system for scheduling regular inspection, maintenance, and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. Inspections should include regular visual inspection, including the use of closed-circuit television (CCTV). The preventative maintenance program should have a system to document scheduled and conducted activities, such as work orders.

Training

The District must provide training on a regular basis for staff in sanitary sewer system operation and maintenance and require contractors to be appropriately trained. The training must cover:

- The requirements of the statewide WDRs;
- The Enrollee's Spill Emergency Response Plan procedures and practice drills;

- Skilled estimation of spill volume for field operators; and
- Electronic CIWQS reporting procedures for staff submitting data.

Equipment

The District must provide equipment and replacement part inventories, including identification of critical replacement parts.

4.2 Map

Sewer system maps are on file at the BWD office. PACE and BWD created an updated Water and Sewer Atlas, which was most recently revised in 2021. BWD intends to convert their sewer mapping to web-based Geographic Information Systems (GIS) in the near future. The District Manager is responsible for updating maps as facilities are added and rehabilitated and as corrections are identified through field work. A copy of the most recent Water and Sewer Atlas is included in Plate 1.

4.3 Preventive Maintenance

The District currently does not have a formal written Preventive Maintenance Program beyond what is described herein. The District does perform weekly checks where known problems occur. Those areas are included in Appendix E.

Pipeline Cleaning Program

BWD received grant funding to complete cleaning and CCTV inspection of most of the collection system in 2016. BWD utilizes a trailer-mounted high-pressure sewer jetter to perform pipeline cleaning on the sanitary sewer system throughout the year. BWD is in the process of implementing a pipeline cleaning program to include a rotating schedule of cleaning. The goal of the rotating schedule is to clean and assess the condition of the entire system over a three- to five-year period. Specific sections of the system will be targeted for cleaning each year, then rescheduled again for cleaning in three to five years. BWD maintains records of all scheduled or emergency pipeline cleaning by way of request for service forms, call out forms, or daily field staff work reports at the BWD office. These records will be used to identify possible problem areas in the system and to maintain compliance with regulatory agencies.

Pipeline Monitoring Program

The funding BWD received launched the Pipeline Monitoring Program along with the aforementioned Pipeline Cleaning Program in 2016. A sewer video camera was used to inspect the majority of collection system pipelines after high-pressure cleaning to identify areas of the system that may require increased inspection and preventive maintenance activity or future repair or replacement. Those areas identified for immediate replacement are currently being replaced as part of the BWD 2021 Collection System Improvement Project. This should assist in reducing the need for emergency maintenance and possible SSO issues. At the time of this update, BWD has identified additional problem areas that require more frequent cleaning, those areas are listed in Appendix E. Inspection and cleaning will continue in the future, and areas deemed as potential problem areas, or where problems have already been identified, will be assigned a work order. BWD staff will repair or replace the affected portion of the system identified in the work order. All records of this maintenance will be documented and kept on file.

Preventive Root Maintenance Program

As part of the ongoing Pipeline Cleaning and Monitoring Programs, areas of the sanitary sewer system that are found to have root intrusion will be identified. Depending on the severity of the root intrusion, preventive maintenance activity frequency may be increased or the affected portion of the system may require repair or replacement. During the 2016 CCTV inspection, areas were identified that had major root balls. Those areas are summarized in Appendix E. BWD has not yet adopted an annual chemical root control program but will consider this option based on the findings of the Pipeline Cleaning and Monitoring Programs.

Fats, Oils, and Grease (FOG) Program

BWD has residential and commercial connections to the sanitary sewer system. There are a number of restaurants and community halls in town with fully functional kitchens. Only a small number have grease traps installed. The 2016 CCTV inspection did reveal portions of the collection with large amounts of grease deposits. Those sections are

summarized in Appendix E. As part of this SSMP update, BWD has developed a FOG Control Program and intends to implement it with adoption of the SSMP, see Element 7.

Lift Station Preventive Maintenance Program

BWD performs annual preventive maintenance and/or cleaning of the three lift stations in the system. Maintenance can include pressure washing the wet wells, visual inspections of the tank and all equipment, occasional addition of an environmentally friendly degreasing agent, and documenting any potential problems or damage requiring repair or replacement. Work orders are issued as needed, and BWD staff repair or replace the affected portions of the lift stations. All records of this maintenance are documented and kept on file.

System Blind Spots

There are a number of system blind spots in the BWD sanitary sewer system where an SSO could go unnoticed for a significant amount of time. BWD field staff routinely perform visual inspections of these locations in an attempt to identify flow blockages and other issues before they become an SSO. The following manholes are inspected weekly for backups:

- 184A
- 88
- 92I
- 271
- 66
- 202
- 5B
- 82A
- 209
- 41B
- 63A

Work Order System

BWD is in the process of implementing an electronic work order system to allow for documentation and the tracking of progress and potential hot spots within the system. A work order will be written for all repairs and maintenance done on the system prior to work being completed, with the exception of a system emergency where a work order will be written after the initial emergency has concluded or all repairs have been completed.

Work order records will be used to determine how much of the system was cleaned, repaired, or replaced during a year. The records will also identify the exact location of all work completed on the system and will identify areas more often affected than others.

Customer Complaints

If there is a customer complaint, a work order will be issued to allow BWD staff to investigate the nature of the complaint. The results of this investigation will remain documented at the BWD office. If there is no identifiable problem, this will be documented on the work order and kept on file. If a problem is identified, BWD staff will work to promptly resolve the problem. If the problem is identified in an area that is not property of BWD, the homeowner will be advised of the problem and on the procedures to follow to resolve the problem. If a homeowner does not resolve the problem, BWD may do so with all costs to include labor, materials, permits, and administration fees to be charged back to the homeowner. If the homeowner refuses to pay said costs, legal action and possible termination of services provided by BWD may be pursued to resolve the debt incurred to BWD.

4.4 Training

BWD trains employees on all equipment used in the sanitary sewer system according to manufacturers' recommendations and/or industry best practices. BWD developed an Injury and Illness Prevention Plan (IIPP) that includes associated safe working practices and required employee training. The District intends to update the IIPP and complete staff training on it. BWD uses outside trainers to maintain compliance with Cal-OSHA training requirements.

Training procedures specific to SSOs are included in the BWD Sewer Emergency Response Plan (SERP) included as Appendix B.

4.5 Equipment

BWD maintains an inventory of general equipment and emergency repair parts. A list of the major equipment available for responding to SSOs is included in the District's SERP. Specialty equipment, emergency repair parts, and contracted repair services can typically be obtained from local area vendors within a 24-hour period.

ELEMENT 5: DESIGN AND PERFORMANCE PROVISIONS

This element of the SSMP discusses the design and performance provisions for the District. This section fulfills the Design and Performance Provisions requirement (Element 5) of the SWRCB SSMP.

5.1 Regulatory Requirements for Design and Performance Provisions

The requirements for this Element of the SSMP are summarized below:

Design Criteria, Construction Standards, and Specifications

The District must identify design criteria, construction standards, and specifications for the installation, repair, and rehabilitation of new and existing sewer systems, lift stations, and other appurtenances of the BWD sewer systems.

Procedures and Standards

The District must have procedures and standards for inspecting and testing the installation of new, repaired, and rehabilitated sewers, pumps, and other appurtenances of the BWD sewer system.

5.2 Design Criteria, Construction Standards, and Specifications Discussion

BWD is in the process of obtaining grant funding to formalize design and construction standards that will be used by BWD staff and communicated to consulting engineers and/or developers as needed. BWD intends to adopt current City of Redding Design and Construction Standards and modify them to include BWD specific requirements and exceptions. BWD maintains current construction standards in Section 3 of Sewer Ordinance No. 90-01. Current standards include information on the material and manner of construction of sewer service laterals. The City of Redding Construction Standards include design, construction, and testing criteria for the installation of new sewer systems and pump stations.

5.2.1 Installation, Rehabilitation, and Repair

BWD shall only approve sewer construction plans that meet the requirements of the District's criteria. The District intends to adopt City of Redding Construction Standards Sections 300.00 through 390.00, which are applicable to the wastewater system and modify

them to include BWD requirements. The City of Redding Construction Standards include standard plans and specifications for the construction of sanitary sewers and appurtenances to ensure that sewer lines and connections are properly designed and constructed. The current version of the City of Redding published standards is included for reference in Appendix C. The construction standards are periodically updated as changes develop, which can be found on the City of Redding website.

5.3 Process and Standards Discussion

The process for testing and inspecting of new rehabilitated or repaired facilities is available within the City of Redding Construction Standards Sections 300.00, 300.10, and 300.50 that BWD intends to adopt. As written into the standards, all testing equipment and labor shall be provided by the contractor. Inspection shall be performed by BWD or its contracted engineer to ensure compliance has been achieved.

ELEMENT 6: SPILL EMERGENCY RESPONSE PLAN

The complete Spill Emergency Response Plan is attached in Appendix B. Refer to the SERP for fulfillment of the SWRCB SSMP Element 6 requirements.

ELEMENT 7: SEWER PIPE BLOCKAGE CONTROL PROGRAM

This section of the SSMP discusses the District's FOG and other pipe-blocking debris control measures, including identification of problem areas, focused cleaning, and source control. This section fulfills the Sewer Pipe Blockage requirement (Element 7) for the SWRCB SSMP.

The requirements for this Element of the SSMP are summarized below:

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

1. An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG and other pipe-blocking substances.
2. A plan and schedule for the disposal of FOG and other pipe-blocking substances 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 and other pipe-blocking material generated within a sanitary sewer system area.
3. The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages.
4. Requirements to install grease removal devices (such as traps or inceptors), design standards for grease removal devices, maintenance requirements, best management practice (BMP) requirements, record keeping, and reporting requirements.
5. Authority to inspect grease-producing facilities, enforcement authorities, and determination of whether the District has sufficient staff to inspect and enforce the FOG ordinance.

6. An identification of sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for each section.
7. Development and implementation of source control measures for all sources of FOG discharged to the sewer system for each sewer system section identified in (6) above.

7.1 Public Education Outreach Program

BWD will notify sewer customers of their new sewer pipe blockage control program in a variety of ways. Information on proper disposal of sewer pipe blockage and other SSO prevention measures, including installation of grease traps, backwater valves, sewer lateral maintenance, etc. will be distributed through publication of brochures, utility bill inserts, and/or individual notices to property owners annually. These notifications provide descriptions of grease control efforts that can be undertaken by homeowners and businesses alike. These methods are usually effective in relaying information to a community on proper disposal of sewer pipe blockage and other SSO prevention methods. Other effective ways to communicate with the public are being considered, such as use of the door hangers, participation in community events, the District's web page, and social media.

Sewer pipe blockage in the local sewer system can be a prime contributor to an SSO. Related health and safety issues can also result from the discharge of pharmaceuticals and pesticides into the wastewater collection system. Although not usually a causative factor in sewer overflows, these chemicals have the potential to be toxic and have disruptive environmental and biological effects. Preventing discharges of such chemical compounds into the sewers should be part of the community education and outreach program as well.

7.2 Disposal of Pipe-Blocking Substances

The sewer pipe blockage control program will inform sewer customers of proper disposal options through various public outreach efforts. If sewer pipe blockage is found in the public sewer system during scheduled cleaning operations or clearing of a blockage, the sewer pipe blockage is collected and removed from the system to a paved sludge drying bed for later hauling to the landfill. Sewer pipe blockage in liquid form is flushed down by hydro jetting to designated treatment facilities for disposal.

7.3 Legal Authority

The District's Sewer Ordinance, discussed in Chapter 3 herein, provides legal authority to prohibit illegal discharges, FOG blockages, and prevent SSOs. The District intends to update this ordinance in which case section numbers may change. Refer to the most current Sewer Ordinance when reviewing BWD legal authority. Sewer Ordinance No. 90-01 Section 10.01 prohibits discharge of "any water or waste containing fats, wax, grease, or oils, whether emulsified or not, in excess of one hundred (100) mg/L or containing substances which may solidify or become viscous at temperatures below 60 degrees F," as well as other materials that cannot be discharged into the sewer system.

Section 11.03 of Sewer Ordinance No. 90-01 states: "Any person found to be in violation of any provision of this Ordinance shall be served by the District with written notice stating the nature of the violation and provided a reasonable time limit for satisfactory correction. The offender shall, within the period of time stated in such notice, permanently cease all violation. Any person who shall continue any violation beyond the limit specified in the written notice above, shall be subject to disconnection from the District's services, including but not limited to the sanitary sewers upon five (5) days' written notice, or shall be fined an amount not exceeding five hundred ($500.00) dollars, or be imprisoned for not more than six (6) months in the county jail, or penalized by both fine and imprisonment for each violation. Each day in which any such violation shall continue shall be deemed a separate offense."

Although no industrial users currently exist in the District, any future discharges from industrial classification facilities will be controlled under the terms of an industrial wastewater discharge permit, which is issued and monitored by the District.

7.4 Requirements for Grease Removal Devices

BWD has residential and commercial properties connected to the sanitary sewer system. There are a number of restaurants and community halls in town with fully functional kitchens. Only a small number have grease traps installed.

The District requires all establishments that handle, prepare, cook, or serve foods or produce, or when in the opinion of the District Manager, an establishment may introduce grease into a sanitary sewer in quantities that can affect the proper functioning of the

sewage works, to install grease removal devices per the requirements of Section 5 of Sewer Ordinance No. 90-01. Grease removal devices are not required for private living quarters or dwelling units. All automotive service bays and repair shops that have floor drains connected to the sanitary sewer must have an approved grease trap or oil separator.

BMPs described below will be included in public outreach materials and reviewed with major contributors of FOG to the sewer system during routine grease trap inspections and on an as-needed basis.

Bulk or Dry Cleanup

- Practice using bulk and dry materials cleanup before using methods that use water.
- Remove bulk or other solid food and grease laden substances into a suitable container before rinsing or washing the initial containers or surfaces that will drain into the plumbing system.
- Keep drain screens in place and fully serviceable to avoid clogging drains or accumulating FOG or grit on the interiors of pipes.
- Do not pour grease, fats, or oils down the drain, nor place food scraps in the drain.
- Use food grade paper to soak up oils and grease and dispose of appropriately.
- Use paper towels to wipe down surfaces and work areas. Cloth towels require washing and thereby introducing FOG back into drains.
- Success of bulk or dry cleanup is dependent upon the behavior of individuals and their access to tools and materials for use in removing bulk and dry materials before washing.

Spill Prevention

- Preventing spills reduces the amount of waste that will require cleanup.
- A dry surface work place is safer for everyone in avoiding slips, trips, and falls.
- Capture bulk or dryer materials and place them into an appropriate container.
- Do not overfill containers and avoid spills.
- Cover any FOG container before transporting to the rendering storage container.
- Provide employees with proper tools to transport materials without spilling.

Maintenance

- Whatever method(s) are being used to collect, filter, and store FOG, ensure that equipment is regularly maintained.
- Employees should be aware of and trained to perform correct and scheduled cleaning procedures.
- A daily and weekly maintenance schedule is highly recommended.
- Contract with a responsible service company to regularly and thoroughly clean larger components and spaces requiring specialized equipment and skills (e.g., large hood filters, hot tanks, floor drain pipes, specialty tools).
- Smaller and less complex elements can be cleaned by hand by the user (e.g., small hood filters, counter/bench tops, sinks, storage areas, daily tools).
- Skim/Filter fryer grease daily and test the oil to determine when change is necessary. This extends the life of both the fryer and the oil. Build-up of carbon deposits on the bottom of the fryer acts as an insulator that forces the fryer to heat longer, thus causing the oil to break down sooner.
- Avoid discharging fryer oil into a drain or grease trap, but dispose into a rendering container for transport to a rendering company.
- Cleaning intervals depend upon the type of product being prepared and the typical deposition of materials experienced. The larger the volume produced and deposits incurred, the more frequent the cleaning. This may warrant setting up a system of high use, high deposition work to be done on certain equipment that is cleaned more frequently than others to confine maintenance efforts.

Grease Traps and Interceptors

- For grease traps and interceptors to be effective, the units must be properly sized, constructed, and installed in a location to provide an adequate retention time for settling and accumulation of the FOG.
- For information on properly locating, constructing, and sizing grease traps and interceptors, review Section 5.02 of Sewer Ordinance No. 90-01.
- Ensure all grease-bearing drains discharge to the grease trap/interceptor.
- No toilet or shower waste should be plumbed to the trap/interceptor.

Oil and Grease Collection/Recycling and Food Donations

- FOG consists of commodities that if handled properly can be treated as a valuable resource.
- Some rendering companies will offer services free of charge, and others will give a rebate on the materials collected. Contact local rendering representative for specific information and details.
- Use only covered rendering barrels and make sure all drain screens are installed.
- Use a three-compartment sink for dishware washing. Begin with a hot pre-wash, then a scouring detergent wash, and then a hot rinse. Each step should be trapped to capture non-emulsified FOG.
- Donations can reduce disposal costs. Ensure that edible food is not washed or flushed down the drain. Edible food waste may be donated to a local food bank. Inedible food waste can be collected by a garbage feeder that will use discards for feeding livestock.

7.5 Authority to Inspect

The District intends to update the current Sewer Ordinance to add the legal authority to inspect and enforce FOG compliance and ensure grease traps and interceptors are properly maintained and serviced. Sewer Ordinance No. 90-01 Section 10 contains language that prohibits the discharge of any substance that can harm the sewage works, the sewage treatment plant, and the health, safety and general welfare of the public. To complete these inspections and enforce FOG noncompliance, the District may need to hire additional staff or partner with the Fire Department to complete grease interceptor and fire code inspections simultaneously.

Inspection and public outreach to system users with grease traps, or those needing them, is a critical component of the District's source control program. Owners are required to maintain, at their expense, grease traps and interceptors in continuous and efficient operation at all times. Sewer Ordinance No. 90-01 grants the District legal authority to prohibit illegal discharges, FOG blockages, and SSOs. The District intends to update the Ordinance to include the following: specific language regarding the District's authority to inspect grease traps, and specific details as to when a grease trap is required; what to do

about illegal connections, including having an amnesty clause allowing time to come into compliance; and requiring proof of maintenance upon request of those who have grease traps. The Field Superintendent will determine the source of FOG blockages and other pipe-blocking substances, and the District Manager will work with the owner to determine the cause and appropriate remedy. Enforcement will be conducted as needed in response to the problem identified by BWD.

7.6 Cleaning Schedule for Identified Blockage-Prone Sewer Segments

The District has identified some segments of the collection system as prone to FOG and other pipe-blocking substances and has labeled them as hot spots. These hot spots are included in Appendix E will be included in the preventive maintenance program. Portions of the collection system with persistent sewer pipe blockage problems will be inspected and cleaned more frequently, depending on the magnitude of the problem. If these areas continue to have blockage problems, BWD may implement regular use of an environmentally friendly degreasing agent for FOG as part of this program. Consideration of this or other degreasing options will primarily be based on findings of the Pipeline Cleaning and Monitoring Programs.

7.7 Source Control Measures

As part of the sewer pipe blockage control program, the District will develop and implement source control measures. Source control measures will include identifying effective maintenance for each hot spot location, public outreach, enforcement, and maintenance activities described previously in this element. These activities will be reviewed and amended as needed and as conditions change.

ELEMENT 8: SYSTEM EVALUATION, CAPACITY ASSURANCE, AND CAPITAL IMPROVEMENTS

This section of the SSMP discusses the District's System Evaluation, Capacity Assurance, and Capital Improvement Program. This section fulfills the System Evaluation, Capacity Assurance, and Capital Improvements requirement (Element 8) for the SWRCB SSMP.

The requirements for this Element of the SSMP are summarized below:

- **System Evaluation and Condition Assessment** - The District 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 (CIP) that addresses proper management and protection of 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 CIP.

- **Capacity Assessment and Design Criteria -** The District must 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 the system) associated with conditions similar to these causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity), and major sources that contribute to the peak flows associated with overflow events. Where design criteria do not exist or are deficient, the District must establish appropriate design criteria. The capacity assessment must consider:

    - Data from existing system condition assessments, system inspections, system audits, spill history, and other available information;
    - Capacity of flood-prone systems subject to increased infiltration and inflow, under normal local and regional storm conditions;

- Capacity of systems subject to increased infiltration and inflow due to larger and/or higher-intensity storm events as a result of climate change;
- Increases of erosive forces in canyons and streams near underground and above-ground system components due to larger and/or higher-intensity storm events;
- Capacity of major system elements to accommodate dry weather peak flow conditions, and updated design storm and wet weather events; and
- Necessary redundancy in pumping and storage capacities.

- **Capital Improvement Plan -** The District must establish a short- and long-term CIP to address identified hydraulic deficiencies including prioritization, alternatives analysis, and schedules. The CIP may include increase in pipe size, I/I reduction programs, increase and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding. The District shall develop a schedule of completion dates for all portions of the CIP. This schedule shall be reviewed and updated as needed. The CIP should include joint coordination between operation and maintenance staff and engineering staff/consultant during planning, design, and construction of CIP and interagency coordination with impacted utility agencies.

8.1 System Evaluation and Condition Assessment

BWD has implemented a rehabilitation and replacement program to update, repair, and replace infrastructure that is no longer working at the highest level of efficiency. The CIP is discussed in Element 8, and complete details can be found in the BWD Sewer Master Plan (SMP) completed by PACE in January 2014 and in the 2017 Wastewater Collection and Treatment Improvement Project Planning Grant Project Report.

Projects are categorized as immediate-term, near-term, intermediate-term, or long-term projects. Projects will be determined based on the financial impact on BWD. If the yearly allotted budget will not allow for the cost of a repair, and it does not need to be immediately corrected, it will be deemed a long-term project. Long-term projects will also include any rehabilitation or repair that will require the use of finances from an outside source or future revenues.

Significant capital improvements will be addressed as long-term projects. To assist in funding future long-term projects, a sewer capital improvement reserve fund has been set up to aid in financing future growth-related projects. The District intends to set up another reserve fund for existing equipment replacement when rates have been increased to fund such an account.

The final step of the rehabilitation and replacement plan will be to continually reevaluate areas after rehabilitation has been completed. This will allow for proper maintenance, upkeep, and an estimated time that future repair or replacement may need to take place. It will allow BWD to see from start to completion, the time necessary to make such repairs or replacements and will allow for better estimates of funds needed to continue such projects. It will also allow BWD to evaluate the effectiveness of repairs and replacements to assure optimal efficiency of the system as a whole.

Since completion of the SMP, BWD received funding to launch the Pipeline Monitoring Program. CCTV inspection was completed, following jetting cleaning, to inspect and assess the condition of the entire gravity collection system. The results of the CCTV inspection are summarized in the 2017 Project Report.

The 2017 Project Report recommended completion of the majority of immediate and near-term improvements from the SMP. Due to limited funding available at the time, this only included replacement of the worst sections of pipeline that were identified during review of the CCTV results. Construction funding was subsequently received, and construction is now currently underway to complete the following collection system-related improvements: lining or replacement of approximately 2,700 feet of 6-inch through 12-inch pipelines; replacement of five open-cut spot repairs; eleven internal patch repairs; and rehabilitation of four manholes. Subsequent collection system improvement projects will be required in the future to address the next most-immediate system needs.

8.2 Capacity Assessment and Design Criteria

District design criteria is discussed in more detail in Element 5 of this SSMP. According to the hydraulic modeling completed as part of the SMP, the collection system in general appears to have adequate capacity for existing conditions and projected flows, with a couple

of exceptions. One sewer segment within the existing collection system currently shows some signs of surcharging during peak rain events in the model, although this has not been observed in the field and requires further consideration for corrective action in order to increase sewer capacity (i.e., Park Avenue sewer). Another sewer shows a potential for blockage and possible overflow due to apparent deficiencies in sewer grade and construction (i.e., Bartel Street sewer). For a full summary of collection system capacity and conditions, refer to the BWD SMP.

As part of future growth, analysis will need to be done to determine the need to increase capacity of the infrastructure to maintain compliance with this SSMP and all other state regulations. Projected future growth for the next 60 years is discussed in the BWD SMP.

8.3 Prioritization of Corrective Action

The need for sewer improvements has been determined using the best available information regarding existing design capacity and flow conditions. As described in the SMP, improvements have been scheduled into the four different time periods listed below:

1. Immediate-Term (Present to 2022): Improvements where existing capacity is clearly less than the calculated theoretical and are thus needed as soon as possible, or are needed to improve safety or performance of existing facilities (preferably completed within 5 to 10 years). These improvements are currently being completed in the Wastewater Collection and Treatment Improvement Project.
2. Near-Term (2022 to 2032): Other improvements that are marginal in capacity, or will be over the theoretical capacity in the next 10 to 20 years, or are needed to improve performance or efficiency.
3. Intermediate-Term (2032 to 2052): Improvements that are marginal in capacity, or will be over the theoretical capacity in the next 20 to 40 years, or are needed to improve performance or efficiency.
4. Long-Term (2052 to 2072): Remaining improvements that are theoretically needed to have adequate capacity to meet proposed 60-year development. Scheduling of these sewer facilities will likely be more definite in future Master Plan updates.

A preliminary cost estimate for the staged WWTP and general sewer collection system improvements is shown in Table 7 of the BWD SMP. Funding for these improvements will

likely come from wastewater revenues in combination with grants and low-interest loans. Growth-related improvements will come from capacity charges, local improvement costs, and service connection fees as determined in the Estimates of Cost and Financial Considerations section of the BWD SMP. Refer to the SMP for details of the CIP.

As previously discussed herein, since completion of the SMP, grant funding was obtained for planning, design, and construction of a significant Wastewater Collection and Treatment Improvement Project. Construction of most SMP immediate- and near-term recommended improvements is currently underway. Unfortunately, due to funding limitations in place at the time of funding acquisition, not all needed improvements are able to be completed. As such, subsequent grant funding applications and improvement projects to address existing system deficiencies are anticipated for years to come.

ELEMENT 9: MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

This section of the SSMP outlines the process that the District will follow to evaluate the effectiveness of the SSMP and to identify updates that may be needed for a more effective program. This section fulfills the Monitoring, Measurement, and Program Modifications requirement (Element 9) for the SWRCB SSMP.

The requirements for this Element of the SSMP are summarized below:

The District shall:

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

9.1 Monitoring, Measurement, and Program Modifications Discussion

BWD maintains complaint and blockage records in a hard copy format, maintains hard copy logs of cleaning and other preventive maintenance activities, and records problems (e.g., excessive debris, observed manhole defects) identified through regular sewer maintenance activities on work order forms. The District intends to develop a formal process of electronically maintaining records of these activities.

BWD will evaluate the performance of the wastewater collection system at least annually. BWD will update the data and analysis in this section at the time of evaluation. BWD may use other performance measures in the evaluation. BWD will prioritize the actions and initiate changes to this SSMP and the related programs based on results of the evaluation.

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

1. Total number of SSOs.
2. Number of SSOs by each cause (roots, grease debris, pipe failure, capacity, pump station failures, and other).
3. Portion of sewage contained compared to total volume spilled.
4. Volume of spilled sewage discharged to surface water.
5. Actual effectiveness of preventive maintenance measures.

BWD will create a baseline from the above criteria as soon as the preventive maintenance program is implemented. Trends will be added when the quantity of data is adequate to determine effectiveness of the SSMP.

ELEMENT 10: SSMP AUDITS

This section of the SSMP outlines who will audit the SSMP and how often. This section fulfills the SSMP Audit requirement (Element 10) for the SWRCB SSMP.

Requirements for the SSMP Audits Element of the SSMP are summarized below:

The District 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 three years, and a report must be prepared, kept on file, and submitted within six months. This audit shall focus on evaluating the effectiveness of the SSMP and the District's compliance with the SSMP requirements, including identification of any deficiencies in the SSMP and steps to correct them.

10.1 SSMP Audit Discussion

BWD will complete audits of the SSMP every three years. Audits will be completed internally using the form in Appendix F. The audits will include:

1. Review of progress made on development of SSMP elements.
2. Identification of successes of implementing SSMP elements and needed improvements.
3. Description of system improvements during previous three years.
4. Description of system improvements planned for the next three years.
5. A report summarizing the findings of the audit that will be submitted within six months of the audit.
6. A statement that the sewer system operators input on the audit has been considered.
7. An evaluation of the effectiveness to prevent spills.

Completed audit documents and findings will be kept on file. Name and contact information of staff involved in the audit as well as follow-up actions will also be recorded.

ELEMENT 11: COMMUNICATION PLAN

This section of the SSMP outlines the process involved in communicating with interested members of the public regarding the development, implementation, and performance of this plan. This section fulfills the Communication Program requirement (Element 11) for the SWRCB SSMP.

Requirements for this Element of the SSMP are summarized below:

The District shall communicate on a regular basis with the public on the development, implementation, and performance of the SSMP. The communication system shall provide the public with the opportunity to provide input to the District as the program is developed and implemented. The District shall also create a plan of communication with systems that are tributary and/or satellite to the District's sanitary sewer system.

The District shall develop a communication plan that describes the District's procedures to communicate with the public regarding spills and discharges resulting in closures to public areas or that enter the public drinking water.

11.1 Communication Plan Discussion

BWD will report the performance of the SSMP and results of the internal audit to the Board of Directors every three years at regularly scheduled meetings in which the public is welcome to provide comments and input. The performance information will be included in the minutes of that public meeting. Performance information will include the performance indicators listed in the SSMP under Element 9: Monitoring, Measurement, and Program Modifications.

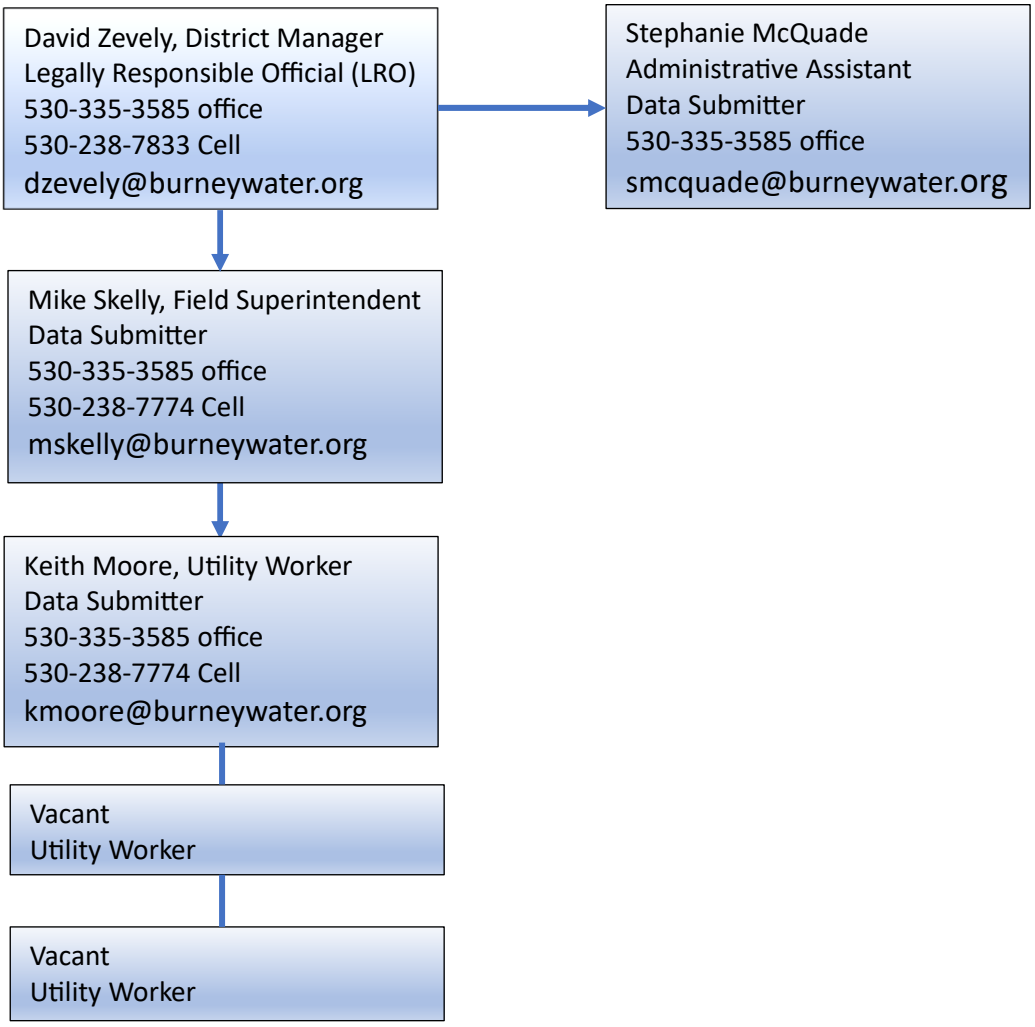
BWD reports SSOs electronically to CIWQS. The electronic SSO data, as well as information regarding regulatory actions, is available at: http://www.waterboards.ca.gov/ciwqs/publicreports.html. BWD will direct interested parties to the CIWQS public access website. The District will also begin to internally track SSO trends.

BWD does not use or have any satellite collection systems at this time. In the event that a change occurs, an agreement with the added satellite collection system would be completed and kept on file with the District Office in compliance with all requirements set forth in the SSMP.

APPENDIX A

NAMES AND CONTACT INFORMATION OF CURRENT STAFF

Contact Information/Line of Authority for SSMP



APPENDIX B

SPILL EMERGENCY RESPONSE PLAN

APPENDIX B

OF

SEWER SYSTEM MANAGEMENT PLAN (SSMP)

DRAFT

BURNEY WATER DISTRICT SPILL EMERGENCY RESPONSE PLAN

Reviewed/Revised for 2023 SSMP by Burney Water District Staff and PACE Engineering, Inc.

Original Document: 2017 Sanitary Sewer Overflow Emergency Response Plan completed by PACE Engineering, Inc.

TABLE OF CONTENTS

SECTION **PAGE**

ATTACHMENTS

ABBREVIATIONS

BWD	Burney Water District
CalOES	California Office of Emergency Services
CIWQS	California Integrated Water Quality System
CWEA	California Water Environmental Association
District	Burney Water District
GPM	Gallons per Minute
LRO	Legally Responsible Official
PLSD	Private Lateral Sewage Discharge
SCADA	Supervisory Control and Data Acquisition
SERP	Spill Emergency Response Plan
SI	Sewer Inspection
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
WDR	Waste Discharge Requirements
WWTP	Wastewater Treatment Plant

BURNEY WATER DISTRICT
SPILL EMERGENCY RESPONSE PLAN
MAY 2023

SECTION I: PURPOSE

Burney Water District (BWD or District) has structured this Spill Emergency Response Plan (SERP) to satisfy the requirements of the Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems, Water Quality Order No. 2022-0103-DWQ.

This SERP is intended to be a guideline and training document for BWD employees to follow in responding to, eliminating, cleaning up, documenting, and reporting sanitary sewer overflows (SSOs).

REGULATORY REQUIREMENTS

The WDRs include the following requirements regarding the SERP:

- The District shall certify, in its Annual Report, that its SERP is up to date to ensure prompt detection and response to spills, to reduce spill volumes, and to collect information for prevention of future spills. The Annual Report should review and assess the effectiveness of the SERP, and the SERP should be updated as needed. The Annual Report is due April 1 of each year.
- The SERP shall include measures to protect the public health and the environment.
- The District shall respond to spills from its system(s) in a timely manner that minimizes water quality impacts and nuisances by:
    - immediately stopping the spill and preventing/minimizing a discharge to waters of the State;
    - intercepting sewage flows to prevent/minimize spill volume discharged into waters of the State;
    - thoroughly recovering, cleaning up, and disposing of sewage and wash down water; and
    - cleaning publicly accessible areas while preventing toxic discharges to waters of the State.
- The District must provide in-house and external training on a regular basis for sanitary sewer system operations and maintenance staff and contractors. The training must cover:
    - the District's SERP procedures and practice drills;
    - skilled estimation of spill volume for field operators; and
    - electronic California Integrated Water Quality System (CIWQS) reporting procedures for staff submitting data.
- The SERP must include procedures to:
    - notify primary responders, appropriate local officials, and appropriate regulatory agencies of a spill in a timely manner;
    - notify other potentially affected entities (e.g., health agencies, water suppliers) of spills that potentially affect public health or reach waters of the State;
    - comply with the notification, monitoring, and reporting requirements of this General Order, State law and regulations, and applicable Regional Water Board Orders;
    - ensure that appropriate staff and contractors implement the SERP and are appropriately trained;

- address emergency system operations, traffic control, and other necessary response activities;
- contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system;
- minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State;
- remove sewage from the drainage conveyance system;
- clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters;
- implement technologies, practices, equipment, and interagency coordination to expedite spill containment and recovery;
- implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event;
- conduct post-spill assessments of spill response activities; and
- document and report spill events as required in the WDRs.

SECTION II: GENERAL

The SERP is designed to define appropriate actions by BWD upon notification of a possible SSO caused by problems within the District-owned sewer collection system. BWD shall dispatch the appropriate personnel to investigate the possible SSO, identify the responsible party(ies), and provide appropriate customer service to minimize effects of the SSO on public health and quality of surface waters. For purposes of this SERP, "confirmed sewage spill" is also sometimes referred to as "sanitary sewer overflow," "sanitary sewage overflow," "overflow," or "SSO."

OBJECTIVES

The primary objectives of the SERP are to:

- respond to SSOs in a timely and efficient manner in order to protect public health and the environment, and
- satisfy the requirements of regulatory agencies and waste discharge permits that address procedures for managing SSOs.

Additional objectives of the SERP are to:

- provide appropriate customer service;
- protect the wastewater treatment plant and collection system including all related appurtenances and personnel;
- protect property from SSOs resulting from problems within the publicly owned sanitary sewer system, and
- provide guidelines for BWD employees to follow in responding to, eliminating, cleaning up, documenting, and reporting SSOs.

ORGANIZATION OF PLAN

The key elements of the SERP are addressed individually as follows:

Section I	Purpose
Section II	General
Section III	Spill Detection and Notification
Section IV	Sanitary Sewer Overflow Response Procedure
Section V	Regulatory Agency Notification Procedure
Section VI	Distribution and Maintenance SERP
Attachment A	SSO Field Report
Attachment B	SSO Volume Estimation

SPILL DETECTION AND NOTIFICATION

Failure of any element within the BWD wastewater collection system that threatens to cause or causes an SSO will trigger a response to isolate and correct the problem. Blocked sewers, pipe failures, or mechanical malfunctions can cause an SSO. Other natural and man-made disturbances are also possible causes of SSOs.

RECEIPT OF INFORMATION REGARDING AN SSO IN THE COLLECTION SYSTEM

District employees or the public may detect an SSO. The District Office is primarily responsible for receiving phone calls from the public notifying BWD of possible SSOs from the wastewater collection system. The answering party is then responsible for forwarding the possible SSO information to the appropriate personnel within BWD. During business hours, the public can contact the District Office at (530) 335-3582. The District Office staff will then notify the Field Superintendent and/or District Manager. During afterhours, the public can call the same number and they will receive a message directing them to contact the on-call operator via an on-call cell phone number. The on-call operator is responsible for responding and then notifying the Field Superintendent and/or District Manager.

The District publishes the main telephone number in the local telephone book and on the District website at www.burneywater.org as well as posts it at the District Office.

When District staff observe an SSO during the course of their regular activities, they are instructed to notify the main office and, if possible, respond to the situation.

BWD office staff who receive a call from the public will obtain all relevant information available regarding the possible SSO including:

- time and date the call was received;
- time and date the caller first noticed the spill;
- the specific location and/or address of the possible SSO;
- a description of problem, including whether the spill has reached a drainage conveyance system or surface water; and
- the caller's name and call-back phone number.

SSOs detected by any personnel during their normal duties shall be reported to the Field Superintendent or District Manager. Dispatched personnel should record all relevant SSO information indicated above and report back information to the Field Superintendent or District Manager.

If an SSO is a result of a contractor working on the sanitary sewer system, the contractor shall be required to notify the District immediately. The contractor shall try to contain the SSO until the District arrives, at which point the District will be responsible for the SSO cleanup. The contractor may be liable for any costs and/or fines incurred as a result of the SSO if the SSO is determined to be caused by the contractor's work.

RECEIPT OF INFORMATION REGARDING AN SSO IN A LIFT STATION

All of the District's lift stations are equipped with high wet well alarms that when triggered will automatically dial the on-call operator. The operator on duty shall make note of the time and date the alarm call was received and the alarm description. In the event of an auto dialer failure, BWD staff visit the lift stations at least five to six days a week, this includes one day a weekend.

SECTION III: SANITARY SEWER OVERFLOW RESPONSE PROCEDURE

The SERP presents guidelines for BWD to mobilize labor, materials, tools, and equipment to correct or repair any condition that may cause or contribute to an un-permitted discharge from a publicly owned sanitary sewer system. A wide range of potential system failures is considered by the plan. Being prepared to respond to system failures could lessen the effect of SSOs to surface waters, land, or buildings. The objectives of these actions are to:

- determine the apparent cause of the SSO, e.g., whether the cause lies in the publicly owned sewer or private lateral;
- protect public health, the environment, and property by minimizing SSO impacts as soon as possible;
- establish perimeters with appropriate barricades and control zones with vehicles or natural topography, e.g., hills, berms;
- communicate preliminary SSO information and potential impacts as soon as practicable to the Office of Emergency Services, Regional Water Quality Control Board, and Shasta County Health Department but not more than two hours after confirming an SSO, as required; and
- contain the SSO to the maximum extent possible including preventing the discharge of sanitary sewage into surface waters.

Emergency response personnel shall be available 24 hours a day, 365 days of the year.

It is the responsibility of the Field Superintendent or the responding party(ies) to gather all spill response data and communicate this data back to the District Manager as soon as possible. Until verified, the report of a possible spill will be referred to as a "sewer inspection (SI)," not an "SSO."

An SSO Field Report, included in Attachment A of this SERP, should be completed by the Field Superintendent within 24 hours of the responding party(ies)'s confirmation of an SSO. The District Manager is responsible for reviewing, updating, signing, and submitting the final SSO report to the State Water Resources Control Board (SWRCB) website and the CIWQS Online Sanitary Sewer Overflow Database.

DISPATCH OF APPROPRIATE CREWS TO THE SITE OF AN SSO

The Field Superintendent or District Manager shall dispatch additional response crews, equipment, or contracted services as necessary.

The crew aims to respond with the appropriate equipment to any SI/SSO location within 30 minutes of receiving the report of an SSO.

RESPONDING PARTY

Upon receipt of a report of an SSO, all response crew members shall proceed to the BWD corporate yard where they will gather all necessary equipment and resources before proceeding to the SSO site. Delays or conflicts in assignments and issues regarding equipment and resources should be reported to the Field Superintendent for resolution.

The responding party(ies) should report his/her findings, including possible damage to the public system and, if assessable, to private property, to the Field Superintendent. If the Field Superintendent has not received findings from the responding party(ies) within an appropriate time frame, they should contact the response crew leader to determine the status of the investigation.

ADDITIONAL RESOURCES

Requests for additional personnel, material, supplies, and equipment from the responding party(ies) shall be conveyed to the Field Superintendent as soon as possible.

PRELIMINARY ASSESSMENT OF DAMAGE TO PRIVATE AND PUBLIC PROPERTY

The responding party(ies) should use discretion in assisting private property owners/occupants who are affected by an SSO. Be aware that BWD could face increased liability for any further damages inflicted to private property during such assistance. Appropriate photographs and video footage, if possible, should be taken of the area of the SSO and the impacted area for thorough documentation of the nature and extent of the impact. Photographs or videos are to be forwarded to the District Manager for filing with the inspection/SSO report.

If the spill is not a result of a failure or backup/blockage in the District-owned and -maintained sewer, the responding party(ies) shall do the following:

- If the property owner/resident is not home or present, the responding party(ies) should leave a door hanger on the door notifying them of the spill and that it should be cleaned up as soon as possible.
- If the property owner/resident is home, the responding party(ies) should notify the resident that the spill is not a result of a blockage or backup in the District-owned sewer system and that the District does not have the legal authority to maintain or perform work on privately owned laterals. The responding party(ies) should recommend the property owner/resident hire a licensed contractor/plumber to clear the blockage and clean up the spill.

If the spill is a result of a failure or backup/blockage from the District-owned and -maintained sewer, the responding party(ies) shall notify the Field Superintendent as soon as possible and follow the procedures of their SERP.

COORDINATION WITH HAZARDOUS MATERIAL RESPONSE

Upon arrival at the location of an SSO, should a suspicious substance (e.g., oil sheen, foamy residue) be found on the ground surface or should a suspicious odor (e.g., gasoline) not common to the sewer system be detected, the responding party(ies) should contact the Field Superintendent for guidance before taking further action.

- The Field Superintendent will alert the local fire department if necessary. The responding party(ies) shall await the arrival of the local fire department.
- After arrival of the local fire department, responding party members will take direction from the commanding officer of the local fire department. Only when the commanding officer determines it is safe and appropriate for the responding party(ies) to proceed can containment, clean up, and corrective activities be performed in accordance with the SERP.
- **Remember that vehicle engines, portable pumps, or open flames (e.g., cigarette lighters) can provide the ignition for an explosion or fire should flammable vapors or fluids be present at the site. Maintain a safe distance and observe caution until and after assistance arrives.**
- **Hydrogen sulfide gas naturally forms in collection systems and lift stations. This gas is extremely toxic and highly flammable. If a rotten egg odor is present, it could be hydrogen sulfide gas. Evacuate the area immediately and set up a barrier to keep the public out. Notify the Field Superintendent, who will notify the proper authorities to respond.**

RESPONSIBILITIES OF RESPONDING PARTY UPON ARRIVAL

It is the responsibility of the first person who arrives at the site of an SSO to protect the health and safety of the public by mitigating the impact of the SSO to the extent possible. Should the SSO not be the responsibility of BWD but there is imminent danger to public health, public or private property, or to the waters of the United States, then prudent action should be taken until the responsible party(ies) assumes control and provides remedial actions. The responding party(ies) should have the following priorities:

- Follow safe work practices, including wearing proper personal protective equipment.
- Set up barricades as necessary to prevent the public from accessing the SSO area. Barricades should remain in place until the site has been properly cleaned. Signs shall also be posted as necessary.
- If necessary, identify and request additional resources to prevent the spread of the SSO, determine its cause, and correct the SSO.
- Dispatch appropriate personnel, materials, supplies, and/or equipment as needed. Promptly notify the appropriate personnel as indicated herein. Follow the chain of communication included in Table 1.

Table 1 – BWD Chain of Communication

Contact	Position	Office Phone Number	Work Cell Phone
David Zevely	District Manager	530-335-3582	530-238-7833
Mike Skelly	Field Superintendent	530-335-3582	530-524-4395
Keith Moore	Utility Worker	530-335-3582	530-524-4395

As part of the initial response, the responding party(ies) shall also:

- Note the time of arrival at the location of the SSO.
- Identify and assess the affected area of the spill.
    - If the SSO appears that it may impact surrounding buildings, try contacting the resident to notify them of the SSO.
- Photograph the spill and affected areas.
- Use GPS, if available, to assist in mapping the location and extent of the spill.
- Document any drainage channels the SSO reached.
- Document any bodies of water the SSO reached.
- Document the spill using the SSO Field Report included in Attachment A of this SERP.
- Take steps to recover and retain the spill to the sanitary sewer system as feasible.
- Refer to the Emergency Response Procedures section included herein for specific response procedures to certain situations.

MEASURES FOR SPILL CONTAINMENT

Following the above initial response, the responding party(ies) will:

- Take immediate steps to contain the SSO and, where possible, recover sewage that has already been discharged to minimize impact to public health or the environment.
    - Block or bag storm drains.
        - Storm drains within the District flow to either Burney Creek or a man-made storm drain detention basin.
    - Use sandbags and/or spill mats.
    - Recover spilled sewage by using a vactor truck.
    - Pump or divert spilled sewage into a downstream manhole.
    - Pump sewage from an upstream manhole to a downstream manhole in order to bypass the failed pipe or blockage.
- Determine the immediate destination of the SSO, such as storm drain, street curb gutter, creek, water body, etc.
    - Burney Creek, which is a tributary to the Pit River, flows through Burney.

- If additional materials and equipment are needed, identify and request the necessary materials and equipment to contain or isolate the SSO.
- Estimate the volume of the spill using photos and other methods as outlined in Attachment B.

All containment efforts should be properly documented on District forms.

ADDITIONAL MEASURES FOR POTENTIALLY PROLONGED SSO CONDITIONS

In the event of a prolonged sewer line blockage or a sewer line collapse, a determination should be made by the Field Superintendent to set up a portable bypass pumping operation around the obstruction/blockage.

- Appropriate measures shall be taken to effectively handle the sewage flow.
- Continuous or periodic monitoring shall be implemented as required.
- Barricades should remain in place to protect public health.
- Regulatory agency issues shall be addressed in conjunction with emergency repairs.

EMERGENCY RESPONSE PROCEDURES

The following section contains instructions for responding to the various causes of SSOs listed below:

- Wastewater lift station alarms.
- Lift station failure caused by force-main break inside the dry well, pump failure, or valve failure.
- Lift station failure caused by force-main break inside the wet well, pump failure, or valve failure.
- Lift station failure caused by a power outage.
- Overflowing sewer manhole resulting from a surcharged sewer main.
- Sewer force-main break.
- Sewer main break/collapse.

Wastewater Lift Station Alarms

General Response Actions:

1. Send an individual to the station indicating an alarm as soon as possible. If serious trouble is found, call for additional assistance and keep an individual at the station until further instructions are received.
2. Always check with the power company when an alarm goes on to see if there is/was a power outage in the area. The pole number nearest the station should be reported.

3. Personnel called to investigate lift station alarms shall respond to the station even if the alarm has cleared prior to their arrival. All alarm conditions are to be checked and logged. Use the following guidelines and follow confined space entry procedures if applicable.

Wet Well/Dry Well-Type Lift Stations:

1. Check atmosphere within dry well prior to entering with gas meter.
2. Take your time entering the dry well. Never enter a flooded dry well.
3. Note any unusual odors, e.g., burning electrical equipment or paint.
4. Listen for and note any unusual noises.
5. Lightly touch pump motors and pump bearing housing. Note any that seem unusually hot.
6. Observe every piece of equipment in the station. Note anything that looks out of place.
7. Record all gage readings, e.g., wet well level, hour meters, flow charts, on-off levels, psi gauges on pumps, and anything else significant.
8. Based on available information, troubleshoot the failure. By process of elimination, the failure will be isolated.
9. Emergency personnel should be absolutely certain that the cause of the pump station alarm or failure has been properly identified and corrected prior to leaving the station.
10. Reset all alarm feature indicator lights.

Submersible-Type Lift Stations:

1. Check atmosphere with a gas meter within the wet well prior to working over the top.
2. Note any unusual odors, e.g., burning electrical equipment or paint.
3. Listen and note if pump(s) are running and any unusual noises.
4. Observe every piece of equipment in the station, paying specific attention to the level control system. Note anything that looks out of place.
5. Record all gage readings, e.g., wet well level, hour meters, flow charts, on-off levels, psi gauges on pumps, and anything else significant.
6. Based on available information, trouble-shoot the failure. By process of elimination, the failure will be isolated. Check level controls, pump operation using manual position, and pump output. Once the problem is isolated, engage mechanical or electrical disciplines for repairs.
7. Emergency personnel should be absolutely certain that the cause of the pump station alarm or failure has been properly identified and corrected prior to leaving the station.

8. Reset all alarm feature indicator lights.
    - Various types of level sensors may be present in the lift stations, including bubbler systems, float switches, or ultrasonic transducers. Similarly, various types of controls may be present for pump cycling, including pneumatic systems, simple relays, and/or computerized processors. The responding party(ies) should be fully capable and trained in the proper function of each of these systems present within BWD. Troubleshooting these controls is specific to the unit. The O&M manual for the level sensor system and pump controls should be consulted during a failure.

Minimum Levels of Staffing: 2	
Minimum Emergency Equipment	Specialized Equipment
• Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Ventilation blower	• As applicable for troubleshooting

<u>Lift Station Failure Caused by Force-Main Break inside Dry Well, Pump Failure, or Valve Failure</u>

Main Lift Station:

1. Dispatch crew to the lift station immediately.
2. Upon arrival, the crew should identify if the dry well is flooded. The pumps may be still pumping if the motors are above the water level.
3. After further investigation, the crew should determine the nature of the failure, e.g., pump(s), valve(s), or force main(s), prior to entering dry well if possible.
4. Call additional personnel to bring appropriate portable pump(s) including all required lengths of suction and discharge hose to the lift station.
5. Before entering the dry well, measure atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. Remove all hazards as appropriate, including electrical and engulfment hazards, prior to entering the station.
6. Constantly monitor the atmospheric conditions while working in the dry well of the station.
7. Upon arrival of the portable pump, connect the appropriate lengths of suction hose that will suspend into the wet well and then connect enough discharge hose to pump into bypass connection.
8. Set up an additional portable trash pump to pump out the dry well into the wet well.
9. Enter the dry well and inspect the following facilities:
    - Lighting.
    - Ventilation.
    - Sump pump operation.

- Motor control system, including air compressors.
- Bubbler system (if applicable).
- Pump alternator.
- Control and instrument readings.
- Temperature of pump motors.
- All internal piping.

10. Isolate the failed component by valve operation. After exiting the dry well, start the auxiliary pump and motor if possible.
11. Complete repairs to pipe, pump, or valve as per policy. If permanent materials are not readily available, install blind flanges for temporary conditions.
12. Restore facilities to normal and inspect other components of the force main and pumping system for signs of similar failure.
13. Shut down the bypass operation. Do not disconnect hoses until repair is checked for leaks. Operate pumps to check repair under pressure and normal operating conditions.
14. If no leaks are observed, return pumps to normal conditions. Monitor pumps to check lead/lag operations.
15. Proceed to wet well for inspection. Before entering the wet well, measure atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. Check the following if applicable:
    - Wet well level.
    - Float controls/Level sensors.
    - Grease assessment.
16. Make a report indicating the following:
    - Time of call.
    - Description of the problem.
    - How repair was made.
    - Personnel present.
    - Equipment used.
17. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 4	
Minimum Emergency Equipment	Specialized Equipment
• Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Flashlight • Ventilation blower	N/A

Lift Station Failure Caused by Force-Main Break inside Wet Well, Pump Failure, or Valve Failure

Bartel Lift Station:

1. Dispatch crew to the lift station immediately.
2. Upon arrival, the crew should identify the storage capacity in the wet well and collection system. This will give some indication of the time available for response.
3. Inspect the motor control circuit for failure indications. Check alternator to determine failure, if applicable. If pump failure is determined, skip to Bypass Steps.
4. Prior to working above the wet well, measure atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. If flooded, skip to Bypass Steps.
5. Constantly monitor atmospheric conditions while working in or above the wet well. Inspect the wet well. Check the wet well floats or level control system and pump volute for clogging or other problems.

Bypass Steps:

1. If pump failure, determine if bypass pumping is necessary. If unnecessary, skip to Repair Procedures.
2. For bypass pumping, call additional crew to bring appropriate portable pump(s), including all required lengths of suction and discharge hose, to the lift station if necessary. Upon arrival of the portable pump, connect the appropriate lengths of suction hose that will suspend into the wet well and then connect enough discharge hose to pump into appropriate manhole or bypass connection (if so equipped). Go through the procedures for starting the portable pump and begin pumping.

Repair Procedures:

1. Enter wet well and inspect piping and valves for cause of failure. Monitor atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases.
2. Complete repairs to pipe, pump, or valve as per policy. If permanent materials are not readily available, install temporary repairs until permanent repairs can be completed.
3. Restore facilities to normal and inspect other components of the force main and pumping system for signs of similar failure.

4. Shut down bypass operation. Do not disconnect hoses until repair is checked for leaks. Operate pumps to check repair under pressure and normal operating conditions.
5. If no leaks are observed, return pumps to normal operating conditions. Monitor pumps to check lead/lag operations.
6. Make a report indicating the following:
    - Time of call.
    - Description of the problem.
    - How repair was made.
    - Personnel present.
    - Equipment used.
7. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 4	
Minimum Emergency Equipment	Specialized Equipment
• Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Flashlight • Ventilation blower	N/A

Lift Station Failure Caused by Power Outage

1. Dispatch personnel to the lift station immediately. If outage is at the Bartel Lift Station, the crew needs to bring the auxiliary generator to operate the lift station until power is restored if there is not sufficient capacity in the wet well and collection system.
2. Dispatcher shall request assistance of the power company in restoring power to the station if necessary. Determine the estimated time of arrival of the power company crew and then notify the responding party(ies).
3. Operators should check overhead power lines for fuses that might have blown or downed power lines as they approach the lift station. If the operators notice a blown fuse or downed power line, they should identify the pole number(s) and notify the dispatcher to relay to the power company the location and the pole number(s).
4. Lock out and tag out the main line disconnect (if applicable).
5. Go through the specific procedures for starting the generator to supply power to the station.
6. Run station with the auxiliary generator until power is restored.

7. Make a report indicating the following:
    - Time of call.
    - Description of the problem.
    - How repair was made.
    - Personnel present.
    - Equipment used.
8. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
• Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Flashlight	• Power testing equipment

Overflowing Sewer Manhole Resulting from Surcharged Sewer Main

1. Refer to sewer maps for location of sewers (private lands, flow patterns, manholes, etc.) and determine if the area is served by a pump station before responding to the call.
2. Dispatch the sewer crew immediately to the problem location to assess immediate danger to the environment.
3. Determine location of the blockage by inspecting the downstream manholes until a dry manhole is found.
4. Install the proper size sand trap in the downstream invert of the manhole before clearing the blockage to capture the debris. From the debris collected, try to determine the cause of the blockage and remove the debris from the manhole.
5. Use necessary equipment to relieve the blockage, including jet flushing and/or power rodding.
6. If it is imminent that wastewater will be released into wetlands, receiving waters, or a drinking water supply watershed, the District Manager should be notified. The District Manager will notify the proper authorities and agencies. See notification charts.
7. Call additional crews to set up sandbags and flotation booms across streams, brooks, etc., as necessary. Unless special conditions exist, freeing the blockage is priority to containing the bypass.
8. Gather and remove sewage-related debris and organic matter from affected area.

9. If wastewater is in streets/roads (public or private), contain the wastewater as best as possible with sandbags or other industry-accepted alternatives to minimize any impact to public health or the environment.
10. Sandbag nearby catch basin inlets to prevent wastewater from entering the drainage system and causing potential contamination to tributary receiving waters.
11. If ponding should occur on the street or easement (public or private), cordon off the area.
12. Remove as much sewage as possible.
13. Disinfect ponding areas with an industry-standard disinfectant and notify surrounding homes.
14. If the wastewater should jeopardize a playground or park, cordon off the entire area. Close the park to the public until the issue has been remedied to the satisfaction of the local and state boards of health and the local park superintendent.
15. Make a report indicating the following:
    - Time of call.
    - Description of the problem.
    - How repair was made.
    - Personnel present.
    - Equipment used.
16. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
• Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Traffic cones • High-pressure cleaner • Disinfectants • Ventilation blower	• TV camera unit • Caution tape

<u>Sewer Force-Main Break</u>

1. Dispatch a sewer crew to the site to assess the immediate danger to the environment and to determine who and what might be affected.
2. Set up signs, barricades, and/or barrels for traffic control and public safety.

3. Reroute traffic as necessary. Deploy traffic control measures such as police or flagperson as needed.
4. Request additional manpower and equipment as needed based on initial damage assessment, e.g., excavating crew, bypass pumping equipment.
5. Bypass pumping from the pump station wet well to the force-main discharge manhole may be required. If necessary, set up bypass pumping equipment.
6. If bypass pumping is not an option, then the line may need to be repaired under pressure. Shut down the lift station only if detention time is known and can be mitigated.
7. Call additional crews to set up sandbags and flotation booms across streams, brooks, etc., as necessary. Unless special conditions exist, bypassing the broken force main is The priority before containing the bypass.
8. The crew shall initiate measures to contain the sewer overflow as best as possible, cordon off the affected area, and place absorbing booms or sandbags to collect any floatable debris.
9. Check the tributary area to determine if the discharge will affect any receiving waters.
10. If it is determined receiving water may be affected, the dispatcher should notify the proper authorities or agency.
11. If the break is on the pipe length, a repair can be made with a wrap-around sleeve. If the break is at the bell, a bell-joint clamp may be used.
12. If a repair cannot be made while the line is under pressure or bypass pumping cannot be completed, two alternatives exist:
    - Utilize a vactor truck to remove the water from the wet well. Discharge the water into a manhole in a different tributary area or at the treatment plant.
    - If the vactor truck has insufficient volume, the scenario may require the assistance of several tanker trucks.
13. Upon confirmation of adequacy of the repair, backfill the excavation, if necessary, and restore surface conditions to existing conditions.
14. While the crew is restoring the excavation, the crew leader should conduct a preliminary assessment of damage to private and public property. The crew leader should take appropriate photographs and video footage, if possible, of the outdoor area of the sewer overflow and impacted area to thoroughly document the nature and extent of the impacts.
15. Make a report indicating the following:
    - Time of call.
    - Description of the problem.
    - How repair was made.
    - Personnel present.
    - Equipment used.

16. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
• Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Traffic cones • High-pressure cleaner • Disinfectants • Ventilation blower	• TV camera unit • Caution tape • Backhoe • Vactor truck

Sewer Main Break/Collapse

1. Dispatch sewer crew to location of break/collapse immediately.
2. Set up signs, barricades, and/or barrels for traffic control and public safety.
3. Reroute traffic as necessary. Deploy traffic control measures, such as police or flagperson as needed.
4. Request additional manpower and equipment as needed based on initial damage assessment, e.g., excavating crew, bypass pumping equipment.
5. Bypass pumping from the upstream manhole to the downstream manhole may be required. If necessary, set up bypass pumping equipment. If not necessary, prepare for repairs while the pipe is flowing.
6. Call additional crews to set up sandbags and flotation booms across streams, brooks, etc., as necessary. Unless special conditions exist, bypassing the broken sewer main is the priority before containing the bypass.
7. Gather and remove sewage-related debris and organic matter from the affected area.
8. If wastewater is in the streets/roads (public or private), contain the wastewater as best as possible with sandbags or other industry-accepted alternatives to minimize any impact to public health or the environment.
9. Sandbag nearby catch basin inlets or paved leak-offs to prevent wastewater from entering the drainage system and causing potential contamination to tributary receiving waters.
10. If ponding should occur on the street or easement (public or private), cordon off the area.
11. Remove as much sewage as possible.
12. Disinfect ponding areas with an industry-standard disinfectant and notify surrounding homes/businesses.

13. If the wastewater should jeopardize a playground or park, cordon off the entire area. Close the park to the public until the issue has been remedied to the satisfaction of the local and state boards of health and the local park superintendent.
14. Determine the location of the break/collapse and make necessary repairs. Use repair procedures consistent with policy. If the break is on the pipe length, the repair can be made with a wrap-around sleeve. If the break is at the bell, a bell-joint clamp may be used.
15. Upon confirmation of adequacy of the repair, backfill the excavation if necessary and restore surface conditions to match existing conditions.
16. To restore the sewer line to full capacity, the crew should remove any debris that may have entered and accumulated in the sewer line downstream and upstream from the break/collapse. The crew should clean the sewer line as described below.
17. Install the proper size sand trap in the downstream invert of the downstream manhole against the flow to the upstream manhole.
18. Repeat this procedure for several upstream and downstream pipe reaches.
19. The crew leader should take appropriate photographs and video footage, if possible, of the outdoor area of the sewer overflow and impacted area to thoroughly document the nature and extent of the impacts.
20. Make a report indicating the following:
    - Time of call.
    - Description of the problem.
    - How repair was made.
    - Personnel present.
    - Equipment used.
21. If sewage overflow occurred, complete an SSO Field Report and forward to the District Manager within 24 hours.

Minimum Levels of Staffing: 2 to 3	
Minimum Emergency Equipment	Specialized Equipment
• Gas meter • Harness and lifeline • Tripod • Personal protective equipment • Miscellaneous tools • Portable pumps and hoses • Portable generator • Traffic cones • High-pressure cleaner • Disinfectants • Ventilation blower	• TV camera unit • Caution tape • Backhoe

CLEANUP

SSO sites are to be promptly cleaned to the highest degree possible after an overflow. No readily identifiable residue is to remain in the area of the SSO.

1. The SSO site is to remain secured to prevent public access to the site until the site has been thoroughly cleaned.
2. Where practicable, the area is to be thoroughly flushed and cleaned of any sewage or wash-down water. Solids and debris are to be transported to the wastewater treatment plant (WWTP) for proper disposal.
3. Where appropriate, the SSO site is to be disinfected, and any ponds formed by the SSO will be pumped dry and residue will be transported to the WWTP for proper disposal.
4. Areas shall be allowed to dry and the above steps repeated as necessary.

Private Property: The District is responsible for an SSO cleanup on private property if the SSO originated from the District-owned sewer system. The District must receive written permission from the Property Owner prior to performing any cleanup activities on the property. Under no circumstance are District employees to enter a private residence.

Hard Surfaces, Landscaped, and/or Unimproved Natural Vegetation: The responding party(ies) shall use brooms, rakes, and other applicable means to scrape up solids and debris. The affected area should then be washed down and disinfected. Any water containing contaminants should be removed from the site by ether diverting to a downstream sewer manhole or with the vactor truck. Chlorinated water shall never be allowed to enter drainage channels or surface water. Allow the area to dry and repeat as necessary if residue is still present.

- Special care should be taken to restore landscaped and natural vegetation areas to their pre-SSO conditions.

Natural Waterways: Follow the notification procedures indicated herein for a Category 1 spill if an SSO reaches a natural waterway or surface water. The Responsible Agency for the waterway or surface water should respond and provide further direction.

In the event an SSO occurs during a major storm event or during other wet weather conditions, the responding party(ies) shall use rakes, brooms, and other applicable tools to scrape up and remove all solids and debris. Flushing shall be omitted if there is no reasonable means to capture and remove any runoff from the flushing activities.

POST-CLEANUP ACTIVITIES

The Field Superintendent should conduct a follow-up visit to the site of the SSO, if possible, to ensure the provisions of the SERP and other directives were properly followed.

The Field Superintendent is responsible for confirming that the SSO Field Report was provided to the District Manager.

Post-cleanup photos of the site shall be taken and kept on file with the SSO Field Report.

WATER QUALITY MONITORING

Site-Specific Monitoring

For spills that require site-specific monitoring, the District shall visually assess the spill location(s) and spread using photography, GPS, and other best available tools. The following shall be documented in the critical spill locations:

- Photography and GPS coordinates for:
  - The system location where the spill originated. For multiple appearance points of a single spill event, the point closest to the spill origin.
- Photography for:
  - Drainage conveyance system entry locations.
  - The location(s) of discharge into surface waters, as applicable.
  - Extent and spread of the spill.
  - The location(s) of cleanup.
- Spill Volume Estimation:
  - Estimate the total spill volume using the spill estimation worksheets included in Attachment B.

Receiving Water Monitoring

In the event an SSO reaches Burney Creek and the estimated volume is greater than 50,000 gallons, the District will, at a minimum, perform water quality monitoring upstream and downstream of the impacted area.

- One water sample each day of the duration of the spill will be collected from:
  - the drainage conveyance systems at a point in the drainage system before it reaches the receiving water;
  - a point in the receiving water where sewage initially enters the receiving water;
  - a point in the receiving water upstream of the point of sewage discharge; and
  - a point in the receiving water downstream of the point of sewage discharge where the spill material is fully mixed with the receiving water.
- The following parameters will be analyzed in all samples using approved test methods under 40 Code of Federal Regulations Part 136:
  - Ammonia.
  - Total Coliform Bacteria.
  - Fecal Coliform Bacteria. If Fecal Coliform is present, E. coli and Enterococcus shall also be analyzed.
- Additional sampling and monitoring will be collected and analyzed as required by the Regional Water Quality Control Board.
- Notify Pace Analytical Laboratory personnel of field sampling requirement related to spills over 50,000 gallons in a waterway. In the event that the SSO occurs after hours, contact PACE Analytical Laboratory at the start of business hours the following morning.

SSO Sampling Procedures

The District wastewater collection staff will first determine whether or not the SSO has reached a receiving water by calculating travel paths, flow rates, and containment measures. If the spill is 50,000 gallons or greater and has come in contact with a receiving water, these SSO sampling procedures will be followed. The receiving water will be monitored as indicated above.

BWD staff collecting samples will follow proper sample collection, handling, and storage procedures. District staff will proceed with testing and/or sampling only when it is determined to be feasible and safe.

Point of Discharge Sampling/Testing:

1. Move to the point where the SSO entered receiving water.
2. Photograph, map, and mark the location for future reference.
3. Label the field samples with the date, time, location, and sampler's initials. Record the testing results.
4. Collect 2 bacteriological samples (Fecal Coliform and Enterococci) using the supplied containers labeled "micro."
5. Collect a 500 ml sample for ammonia using a plastic 16 oz container that contains H2SO4 (gold colored) preservative.
6. Keep the samples under ice or refrigeration (for example, use a cooler) until transferred to the laboratory's process refrigerator.

Upstream Sampling/Testing

1. Move at least 10 feet upstream from the point where SSO enters the receiving water to obtain a non-contaminated baseline sample.
2. Follow the procedure mentioned in "Point of Discharge Sampling/Testing" (steps 2 through 6).

Downstream Sampling

1. Determine how far the SSO has traveled downstream.
2. Estimate rate of flow of stream.
    a. Use a floating item on the water to determine how far it travels in one minute times the estimated number of minutes since the SSO first reached the water. Then measure and record width of stream and, in the same location, measure the depth of stream in five locations from left to right.
3. Move to three locations downstream:
    a. 50 feet downstream from the point where the SSO enters the receiving water.
    b. 200 feet downstream from the point where the SSO enters the receiving water.
    c. A point nearest the extent of how far the SSO traveled following the calculation in step 1.

4. Follow the directions mentioned in “Point of Discharge Sampling/Testing” (steps 2 through 6).

Notes:

1. Do not touch micro sample container’s opening rim or bottom of the lid once the lid is removed.
2. Do not overfill sample containers because they contain preservatives including concentrated acids and caustics that are dangerous and harmful if contacted with skin, eyes, etc.
3. All samples should be labeled with location, date, time, preservation, and other pertinent information. Follow-up sampling and testing will be performed if determined to be necessary.

SANITARY SEWER OVERFLOW FIELD REPORT

All SSOs shall be thoroughly investigated and documented in order to meet the SWRCB reporting requirements. An SSO report shall be completed by the responding party(ies), regardless of the spill volume and discharge location. The SSO Field Report and information required for reporting can be found in Attachment A. The information required on the SSO Reporting Form is used to develop the Spill Technical Report to be submitted to the SWRCB through the CIWQS SSO online reporting platform.

To properly complete an SSO report:

- Determine if the SSO may have impacted surface waters (Burney Creek).
- Characterize the SSO by evaluating the following:
  - Sewage overflows to storm water drainage system.
  - Preplanned or emergency maintenance jobs involving bypass pumping.
  - SSOs where observation or on-site evidence clearly indicates all sanitary sewage was retained on land and did not reach surface water and where cleanup occurs.
  - Any other pertinent information relating to each individual SSO.
- Use one of the following criteria to estimate the start date/time of the SSO:
  - Information reported to BWD and later verified by a sewer investigator.
  - Visual observation.
- Use one of the following criteria to estimate the end date/time of the SSO:
  - When the blockage is cleared or flow is controlled or contained.
  - The arrival time of the responding party(ies) if the SSO stopped between the time it was reported and the time of arrival.
- Estimate the flow rate of the SSO in gallons per minute (GPM) by any of the methods available in Attachment B.
- Estimate the volume of the SSO when the rate of overflow is known by multiplying the duration of the overflow by the overflow rate.
- Photograph the event.
- Describe any damage to the exterior areas of public/private property.

All SSO Field Reports shall be maintained by the District for a minimum of five years and shall be made available for review by the SWRCB upon request.

EQUIPMENT

The District has the following equipment readily available for use in responding to, eliminating, and cleaning up SSOs:

- Three utility trucks with tools, strobe lights, and arrow bars.
- Four-wheel drive backhoe and various buckets.
- Envirosight closed-circuit television camera system (push camera for laterals and small-diameter mainlines).
- Shamrock SP T650-19 trailer mounted sewer jetter with various nozzles and root cutter.
- VAC-TRON trailer-mounted vacuum and hydro-excavation unit.
- Caterpillar 430D series backhoe.
- Ridgid sewer lateral snake.
- Ventis 4-Gas monitor.
- Various trailers including dump trailer.
- Two 3-inch trash pumps.
- Hand tools, lights, cones, barricades, and sandbags.

SECTION IV: REGULATORY AGENCY NOTIFICATION AND REPORTING PLAN

This Regulatory Agency Notification and Reporting Plan establishes procedures that BWD shall follow to provide formal notice to Regulatory Agency Officials as necessary in the event of SSOs. Agency notification and reporting requirements vary depending on the quantity of sewage spilled and the location the spill reaches. The following reporting criteria explains to whom various forms of notifications should be sent and lists agencies/individuals to be contacted.

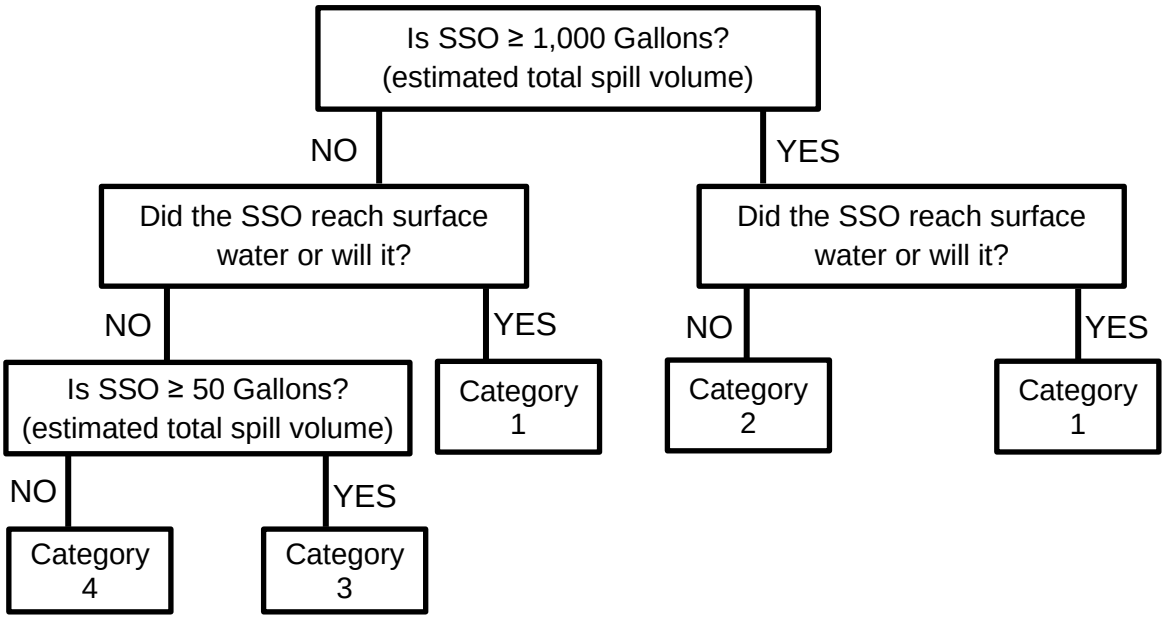
Based on information provided by the responding party(ies), the District Manager will determine the category of the spill according to the SWRCB requirements and follow the applicable notification and monitoring requirements. Contact information for the various regulatory agency officials is shown in Table 2.

Table 2 – Regulatory Agency Contacts

Name/Agency	Phone Number	Additional Phone Number	Important Notification Requirements
Valerie Rasmussen/SWRCB	530-224-6130		**Must be notified within two hours of knowledge of a Category 1 or 2 spill**
Shasta County Health Department	530-225-5073		
CalOES – Spill Notification	800-852-7550	916-845-8911	
Department of Fish and Game	530-225-2300		
Regional Water Quality Control Board	530-224-6130		

***Note:** When contacting OES, be prepared to give information related to the spill (e.g., spill volume, SSO description, SSO impacts). OES will supply a control number to be used when referring to the SSO. Record the control number on the SSO Reporting Form.

SSOS DETERMINATION OF CATEGORY



Category 1 SSO

Discharges of untreated or partially treated wastewater of any volume that:

a) reaches surface water and/or reaches a drainage channel tributary to a surface water; or

b) reaches a municipal separate storm sewer system and is 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 municipal separate storm sewer system 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).

Notification: Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (CalOES) and obtain a notification number.

Monitoring: Conduct spill-specific monitoring in addition to water quality sampling as indicated herein within 18 hours of initial knowledge of a spill of 50,000 gallons or greater to surface waters.

Reporting: Submit a draft Spill Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report Form within 15 calendar days of the spill end date.

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.

Category 2 SSO

Discharges of untreated or partially treated wastewater of 1,000 gallons or greater that does not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Notification: Within 2 hours of becoming aware of any Category 2 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify CalOES and obtain a notification number.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit a draft Spill Technical Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report within 15 calendar days of the spill end date.

Category 3 SSO

Discharges of untreated or partially treated wastewater equal to or greater than 50 gallons and less than 1,000 gallons that does not discharge to surface water.

Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit certified report to CIWQS within 30 calendar days of the end of the month in which SSO occurred. For example, if the SSO occurred on February 1, the District must certify the Category 3 SSO before March 30.

Category 4 SSO

Discharges of untreated or partially treated wastewater less than 50 gallons that does not discharge to surface waters.

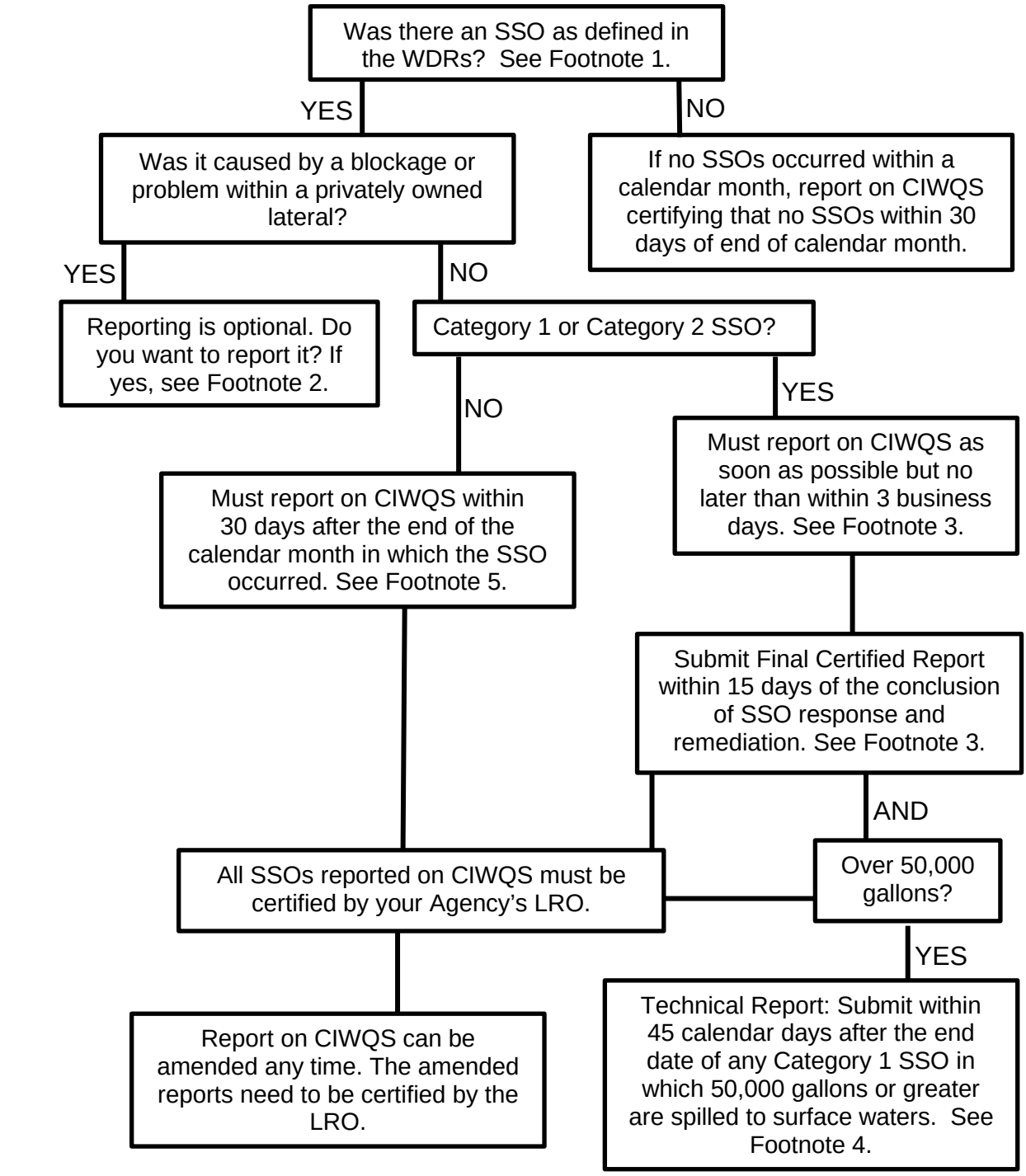
Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: If, during any calendar month, a Category 4 spills occur, certify monthly the estimated total spill volume exiting the sanitary sewer system and the total number of all Category 4 spills into the online CIWQS Sanitary Sewer System Database within 30 days after the end of the calendar month in which the spills occurred.

Upload and certify a report, in an acceptable digital format, of all Category 4 spills to the online CIWQS Sanitary Sewer System Database by February 1 after the end of the calendar year in which the spills occur.

SSO REPORTING REQUIREMENTS



SSO Reporting Requirements Footnotes:

1. WDR SSO: Any overflow, spill, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
    a. Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;

b. Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
c. 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. The District must identify the sewage discharge as occurring and caused by a private lateral, and a responsible party(ies) (other than the District) should be identified, if known.
3. Category 1 and Category 2 SSOs: Report as soon as (1) the District has knowledge of the discharge, (2) reporting is possible, and (3) reporting can be provided without substantially impeding cleanup or other emergency measures. Initial reporting of Category 1 and 2 SSOs must be reported to the online SSO system as soon as possible but no later than three business days after the District is made aware of the SSO.
4. 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.
5. Monthly Certified Spill Report: Submit within 30 calendar days after the end of the month in which the spill occurred.

At a minimum, the SSO Field Report included in Attachment A must be completely filled out prior to finalizing and certifying an SSO Spill Report for each category of SSO.

Draft Spill Report

A draft Spill Report shall be submitted to the CIWQS Online Sanitary Sewer Overflow Database within three business days of the District's knowledge of a Category 1 or Category 2 spill. The draft Spill Report must include the following:

1. Contact information, including name and telephone number of the District's contact person to respond to spill-specific question.
2. Spill location name.
3. Date and time the District was notified of or self-discovered the spill.
4. District operator arrival time.
5. Estimated spill start date and time.
6. Date and time the District notified CalOES and the assigned control number.
7. Description, photographs, and GPS coordinates of the system location where the spill originated:
    a. If a single spill 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 spill appearance point explanation field.
8. Estimated total spill volume exiting the system.
9. Description and photographs of the extent of the spill and spill boundaries.

10. Did the spill reach a drainage conveyance system? If yes, include:
    a. Description of the drainage conveyance system transporting the spill.
    b. Photographs of the drainage conveyance system entry location(s).
    c. Estimated spill volume fully recovered from the drainage conveyance system.
    d. Estimated spill volume remaining within the drainage conveyance system.
11. Estimated total spill volume recovered.

In addition, a Category 1 draft Spill Report must also include:

1. Description and photographs of all discharge point(s) into the surface water.
2. Estimated spill volume that discharged to surface waters.

Certified Spill Report

A certified Spill Report shall be submitted within 15 calendar days of the spill end date for Category 1 or Category 2 spills into the CIWQS Online Sanitary Sewer Overflow Database. Upon submission of the certified Spill Report into the CIWQS Online Sanitary Sewer Overflow Database, the database will issue a final spill event identification number.

The District can update and add additional information to the certified Spill Report within 90 calendar days of the spill end date by amending the report or by adding an attachment to the Spill Report in the CIWQS Online Sanitary Sewer Overflow Database. After 90 calendar days, the District can contact the SWRCB at sanitarysewer@waterbaords.ca.gov to request to amend a Spill Report. The LRO will have to provide justification as to why the Spill Report was not amended within the original 90 days.

The LRO shall certify all Spill Reports and any amendments thereto. The certified Spill Report must include the following:

1. All of the same information that is required for the draft Spill Report.
2. Description of the spill event destination(s), including GPS coordinates, if available, that represent the full spread and reach of the spill.
3. Spill end date and time.
4. Description of how the spill volume estimations were calculated, including at a minimum:
    a. The methodology, assumptions, and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring, or other telemetry information used to estimate the volume of the spill discharged and the volume of the spill recovered (if any volume of the spill was recovered).
    b. The methodology(ies), assumptions, and types of data relied upon for estimations of the spill start time and the spill end time.
5. Spill cause(s), e.g., root intrusion, grease deposition.
6. System failure location, e.g., main, lateral, pump station.
7. Description of the pipe material and estimated age of the pipe material at the failure location.
8. Description of the impact of the spill.

9. Whether or not the spill was associated with a storm event.
10. Description of spill response activities, including description of immediate spill containment and cleanup efforts.
11. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill and a schedule of major milestones for those steps.
12. Spill response completion date.
13. Detailed narrative of investigation and investigation findings of cause of spill.
14. Reasons for an ongoing investigation, as applicable, and the expected date of completion.
15. Whether or not the spill was located within 1,000 feet of a municipal surface water intake.

In addition, certified Spill Reports for Category 1 spills must also include:

1. Name and type of receiving water body(ies).
2. Description of the water body(ies), including but not limited to:
    a. Observed impacts on aquatic life.
    b. Public closure, restricted public access, temporary restricted use, and/or posted health warnings due to spill.
    c. Responsible entity for closing/restricting use of water body(ies).
    d. Number of days closed/restricted as a result of the spill.
3. If water quality samples were collected, identify sample locations and the parameters the water quality samples were analyzed for. If no samples were taken, "Not Applicable" shall be selected.

Spill Technical Report

Spill Technical Reports for Category 1 spills greater than 50,000 gallons shall be submitted within 45 calendar days of the spill end date. The Spill Technical Report must include the following:

1. Spill causes and circumstances, including at a minimum:
    a. Complete and detailed explanation of how and when the spill was discovered.
    b. Photographs illustrating the spill origin, the extent and reach of the spill, drainage conveyance system entrance and exit, receiving water, and post-cleanup site conditions.
    c. Diagram showing the spill failure point, appearance point(s), the spill flow path, and ultimate destinations.
    d. Detailed description of the methodology employed and available data used to calculate the discharge volume and, if applicable, the recovered spill volume.
    e. Detailed description of the spill cause(s).
    f. Description of the pipe material and estimated age of the pipe material at the failure location.
    g. Description of the impact of the spill.
    h. Copy of original field crew records used to document the spill.
    i. Historical maintenance records for the failure location.

2. The District's response to the spill:
    a. Chronological narrative description of all actions taken by the District to terminate the spill.
    b. Explanation of how the SSMP SERP was implemented to respond to and mitigate the spill.
    c. Final corrective action(s) completed and a schedule for planned corrective actions, including:
        i. Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable.
        ii. Identifiable system modifications and operation and maintenance program modifications needed to prevent repeated spill occurrences.
        iii. Necessary modifications to the SERP to incorporate lessons learned in responding to and mitigating the spill.
3. Water Quality Monitoring, including at minimum:
    a. Description of all water quality sampling activities conducted.
    b. List of pollutant and parameters monitored, sampled, and analyzed as required herein, in the WDRs, and by any other regulatory agency.
    c. Laboratory results, including laboratory reports.
    d. Detailed location map illustrating all water quality sampling points.
4. Evaluation of spill impact(s) including a description of short-term and long-term impact(s) to beneficial uses of the surface water.

Monthly Certified Spill Reporting

Category 3:

Category 3 spills are required to be reported to the CIWQS Online Sanitary Sewer Overflow Database within 30 calendar days after the end of the month in which the spill occurred. The Monthly Certified Spill Report should include the following:

1. Contact information, including name and telephone number of the District's contact person to respond to spill-specific questions.
2. Spill location name.
3. Date and time the District was notified of or self-discovered the spill.
4. District operator arrival time.
5. Estimated spill start date and time.
6. Description, photographs, and GPS coordinates of the system location where the spill originated:
    a. If a single spill 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 spill appearance point explanation field.
7. Estimated total spill volume exiting the system.
8. Description and photographs of the extent of the spill and spill boundaries.

9. Did the spill reach a drainage conveyance system? If yes, include:
    a. Description of the drainage conveyance system transporting the spill.
    b. Photographs of the drainage conveyance system entry location(s).
    c. Estimated spill volume fully recovered from the drainage conveyance system.
    d. Estimated spill volume remaining within the drainage conveyance system.
10. Estimated total spill volume recovered.
11. Description of the spill event destination(s), including GPS coordinates, if available, that represent the full spread and reach of the spill.
12. Spill end date and time.
13. Description of how the spill volume estimations were calculated, including at a minimum:
    a. The methodology, assumptions, and type of data relied upon, such as SCADA records, flow monitoring, or other telemetry information used to estimate the volume of the spill discharged and the volume of the spill recovered (if any volume of the spill was recovered).
    b. The methodology(ies), assumptions, and type of data relied upon for estimations of the spill start time and the spill end time.
14. Spill cause(s), e.g., root intrusion, grease deposition.
15. System failure location, e.g., main, lateral, pump station.
16. Description of the pipe material and estimated age of the pipe material at the failure location.
17. Description of the impact of the spill.
18. Whether or not the spill was associated with a storm event.
19. Description of spill response activities including description of immediate spill containment and cleanup efforts.
20. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill and a schedule of major milestones for those steps, including at a minimum:
    a. Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable.
    b. Identifiable system modifications and operation and maintenance program modifications needed to prevent repeated spill occurrences at the same spill event location, including:
        i. Adjusted schedule/method of preventive maintenance.
        ii. Planned rehabilitation or replacement of sanitary sewer asset.
        iii. Inspected, repaired asset(s), or replaced defective asset(s).
        iv. Capital improvements.
        v. Documentation verifying immediately implemented system modifications and operating/maintenance modifications.
        vi. Description of spill response activities.
        vii. Spill response completion date.

viii. Ongoing investigation efforts, and expected completion date of investigation to determine the full cause of spill.

21. Detailed narrative of investigation and investigation findings of cause of spill.

Category 4:

The District shall report and certify the estimated total spill volume exiting the sanitary sewer system and the total number of all Category 4 spills to the online CIWQS Online Sanitary Sewer Overflow Database within 30 calendar days after the end of the month in which the spills occurred.

No Spill Certification:

If either no spills occur during a calendar month or only Category 4 spills and/or District-owned and/or -operated lateral spills (that do not discharge to surface water) occur during a calendar month, the District shall certify one of the following:

- "No Spills" certification statement.
- "Category 4 Spills" and/or "Non-Category 1 Lateral Spills" certification statement.

If a spill starts in one calendar month and ends in a subsequent calendar month and the District has no further spills of any category in the subsequent calendar month, the District shall certify a "No Spills" statement for the subsequent calendar month.

If the District has no spills from its systems during a calendar month but the District voluntarily reported a spill from a private lateral or a private system, the District shall certify a "No Spills" statement for that calendar month.

If the District has spills from its owned and/or operated laterals during a calendar month, the District shall not certify a "No Spills" statement for that calendar month.

Annual Certified Spill Reporting

For all Category 4 spills and spills from its owned and/or operated laterals that are caused by a failure or blockage in the lateral and that do not discharge to a surface water, the District shall:

- maintain records for a minimum of five years;
- provide the records upon request by SWRCB or Regional Water Board staff; and
- annually upload and certify a report, in an appropriate digital format, of all recordkeeping of spills to the online CIWQS Online Sanitary Sewer Overflow Database by February 1 after the end of the calendar year in which the spills occurred.

A spill from a District-owned and/or -operated lateral that discharges to a surface water is a Category 1 spill. The Enrollee shall report all Category 1 spills as indicated herein and in the WDRs.

Annual Report

The District is required to submit an annual report by April 1 of each year beginning in 2024. The annual report must be entered directly into the CIWQS Online Sanitary Sewer Overflow Database and certified by the LRO. With the 2022 WDRs, questionnaires are no longer acceptable for the Annual Report. The Annual Report must address the following:

- Population served.
- Updated sewer system service area boundary map if the service area boundary has changed from original map submitted.
- Number of system operation and maintenance staff:
    - Entry level (less than two years of experience).
    - Journey level (greater than two years of experience).
    - Supervisory level.
    - Managerial level.
- Number of operation and maintenance staff certified as a certified collection system operator by the California Water Environmental Association (CWEA), with corresponding number of certified collection system operator grade levels (Grade I, II, III, IV, or V).
- System information:
    - Miles of system gravity and force mains.
    - Number of upper and lower service laterals connected to system.
    - Estimated number of upper and lower laterals owned and/or operated by the District.
    - Portion of laterals that is the District's responsibility.
    - Average age of the major components of the system infrastructure.
    - Number and age of pump stations.
    - Estimated total miles of the system pipeline not accessible for maintenance.
- Name and location of the treatment plant(s) receiving sanitary sewer system waste.
- Name of satellite sewer system tributaries.
- Number of gravity sewers aboveground or underground crossing a water body throughout system.
- Number of force mains (pressurized pipe) aboveground or underground crossing a water body throughout system.
- Number of siphons used to convey waste throughout the sewer system.
- Miles of sewer system cleaned.
- Miles of sewer system video inspected or comparable, e.g., video closed-circuit television or alternative inspection methods.
- System Performance Evaluation.
- Major spill causes, e.g., root intrusion, grease deposition.
- System infrastructure failure points, e.g., main, pump station, lateral.

- Ongoing spill investigations.
- Actions taken to address system deficiencies.

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 District's sanitary sewer system or from other private sewer assets.

PLSDs that the District becomes aware of may be voluntarily reported to the CIWQS Online Sanitary Sewer Overflow Database. The SWRCB encourages Districts to notify CalOES for PLSDs greater than or equal to 1,000 gallons that result or may result in a discharge to surface waters.

Sanitary Sewer System Service Area Boundary Map

The District's LRO shall submit an up-to-date electronic spatial map of its sewer system service area boundary. The map must include the location of the wastewater treatment plant. The map should be updated as the District makes changes to its sanitary sewer system.

TRAINING

The District Manager and/or Field Superintendent provide training District staff upon initial hire, annually, and as needed. Any staff who may have a role in responding to, reporting, mitigating, and/or cleaning up a spill are required to attend the training. District training regarding the collection system and SSOs includes but is not limited to:

- Review of the SSMP and SERP including:
    - Response to SSOs, including practice drills.
    - SSO containment and clean-up procedures, including practice drills.
    - How to calculate/estimate SSO volume.
    - SSO Chain of Command.
    - SSO reporting procedures, including CIWQS reporting for the LRO and any data submitters.
- Water Quality Sampling Techniques, including hands on sampling.
- Work site and District safety protocols, including use of proper personal protective equipment.

Attendees at any training are required to sign in, and the District Manager and/or Field Superintendent signs off at the end of the training. All training records are kept on file at the District Office. The training record for the SSMP and SERP are included as an Attachment to the SERP in the District Office copy.

SPILL RESPONSE DRILLS

Annual training drills and field exercises are held to ensure all staff responsible for responding to, mitigating, and cleaning an SSO are thoroughly trained in District policy and procedures.

1. The Field Superintendent will simulate an SSO using potable water and/or other applicable means and methods. SSOs will be simulated either within the collection system or at a lift station. The Field Superintendent will report the SSO to the District Office.
2. The District Office staff will receive the call and follow the procedures under "Receipt of Information Regarding an SSO" section included herein. The District Office staff will dispatch the SSO to the applicable responding party(ies).
3. The responding party(ies) will respond to the simulated SSO and follow the procedures under "Sanitary Sewer Overflow Response Procedure" section included herein. The responding party(ies) will go through all of the steps starting at the initial response procedures until the SSO has been thoroughly cleaned up. The responding party(ies) will also fill out the SSO Field Report and practice estimating the spill volume.
4. The Field Superintendent will then go through the post-cleanup procedures included herein and submit the SSO Field Report to the District Manager.
5. The District Manger will review the SSO Field Report, simulate adding the SSO into the CIWQS Online Sanitary Sewer Overflow Database and then file the SSO Field Report with the training sign-in sheet.

SECTION V: DISTRIBUTION AND MAINTENANCE OF SERP

Annual updates to the SERP should be made to reflect all changes in policies and procedures that may be required to achieve its objectives. One copy of the SERP and any amendments should be distributed to each of the following departments and functional positions:

- District Office.
- District Manager.
- Field Superintendent.
- Utility Workers.
- Field Trucks.
- Treatment Plant.

All other personnel who may become incidentally involved in responding to overflows should be familiar with the SERP. Appended to the SERP copy kept at the District Office should be a sign-off sheet that states all employees and staff have read and completely understand the SERP. The sign-off sheet should be updated annually when the District performs their annual training and audit of the SERP.

ATTACHMENT A

SSO FIELD REPORT

Burney Water District
SSO Field Report

SSO ☐ **PLSD** ☐ **Document with Photographs and/or Video**

Circle Category: 1, 2, 3 or 4

Reporting party name and contact information _____

Date/Time Notified/Discovered the Spill _____

Estimated Arrival Date/Time _____

Estimated Spill Start Date/Time _____

Estimated Spill End Date/Time _____

SSO Location Details

Address, Location Description, and/or MH# _____

Cross Street _____

GPS coordinates (if available) _____

Spill Details

Number of Spill Appearance Points ☐ 1 to 10

Appearance Point(s) (Circle One or More)

Force Main	Clean Out (Public)	Pump Station
Gravity Main	Lateral (Private)	
Inside Building or Structure	Manhole	
Lateral Clean Out (Private)	Other Sewer System Structure	

Describe location(s) If other or multiple appearance points selected _____

Final Spill Destination (Choose all areas the wastewater flowed through and ultimately reached)

Beach	Other (specify below)	Street/Curb and Gutter
Building or Structure	Paved Surface	Surface Water
Drainage Channel	Separate Storm Drain	Unpaved Surface

Explain Final Spill Destination if Other Circled _____

Spill Cause (Circle One or More)

Air Relief Valve /Blow-Off Valve Failure	Grease Deposition (FOG)
Construction Diversion Failure	Inappropriate Discharge to CS
CS Maintenance Caused Spill/Damage	Natural Disaster
Damage by Others Not Related to CS	Non-Dispersibles
Construction/Maintenance (Specify Below)	Operator Error
Debris from Construction	Other (Specify below)
Debris from Lateral	Pipe Structural Problem/Failure
Debris – General	Pipe Structural Problem/Failure – Installation
Debris – Rags	Pump Station Failure – Controls
Flow Exceeded Capacity	Pump Station Failure – Mechanical

Describe Spill Cause _____

Where Did Failure Occur (Circle One or More)

Air Relief Valve/Blow-Off Valve	Manhole	Pump Station – Power
Force Main	Other (Specify below)	Siphon
Gravity Mainline	Pump Station – Controls	
Lateral (Private)	Pump Station – Mechanicals	

Describe Where Failure Occurred if Other _____

Was This Spill Associated with a Storm Event? Yes No

Pipe Diameter at Blockage or Failure? _____

Pipe Material at Blockage or Failure? _____

Estimated Age of Sewer Asset at Blockage or Failure? _____

Spill Response Activities (Circle One or More)

Cleaned Up	Returned All Spill to Sewer
Mitigated Effects of Spill	Returned Portion of Spill to Sewer
Contained All or Portion of Spill	Property Owner Notified
Other (Specify below)	Other Enforcement Agency Notified
Restored Flow	

Describe Response Activities if Other: _____

Spill Response Completion Date/Time _____

Spill Corrective Action Taken

- Adjust Schedule/Method of Preventative Maintenance
- Enforcement Action Against FOG Source
- Inspected Sewer Using CCTV to determine Cause
- Other (Specify below)
- Plan Rehabilitation or Replacement of Sewer
- Repaired Facilities or Replaced Defect

Describe Corrective Action Taken if Other _____

Is There an Ongoing Investigation? Yes No

Reason for Ongoing Investigation _____

Visual Inspection Results from Impacted Water
(Describe observations and **take Photographs**) _____

Health Warinings Posted? Yes No

Did the Spill Result in a Beach Closure? Yes No

If Yes, Name of Closed Beach(es) _____

Name of Impacted Surface Water(s) _____

Spill Volume

Estimated Spill Volume that reached a separate storm drain that flows to a surface water body?

[ ] Gallons

Estimated Spill Volume recovered from a separate storm drain that flows to a surface water body?

[ ] Gallons

Estimated spill volume that reached a drainage channel that flows to a surface water body?

[ ] Gallons

Estimated spill volume recovered from a drainage channel that flows to surface water body?

[ ] Gallons

Estimated spill volume discharged directly to a surface water body?

[ ] Gallons

Estimated spill volume recovered from a drainage channel or surface water body?

[ ] Gallons

Estimated spill volume discharged to land or structure?

[ ] Gallons

Estimated spill volume recovered from the discharge to land?

[ ] Gallons

Volume Estimation Methods Used

A Separate Note Sheet may include Drawings, Calculations, and other details that determine Spill Volume

Please list all assumptions made in estimating spill volumes _____

Water Quality Samples Analyzed for (Circle One or More)
Dissolved Oxygen
Other Chemical Indicators – Specify below
Biological Indicators – Specify below
No Water Quality Samples Taken
Not Applicable to this Spill
Other – Specify below

Water Quality Samples Analyzed for _____

_____

_____

Water Quality Samples Reported to (Circle One or More)
County Health Agency
Regional Water Quality Control Board
Other (Specify Below)
No Water Quality Samples Taken
Not Applicable to This Spill

If Other, Enter Agencies Reported to

_____

_____

Cal OES Control Number _____
Cal OES Called Date/Time _____

SSO Contact Information (Person Who can Answer Specific Questions about the Spill)

Name and Title _____

Phone Number _____

PLSD Contact Information (Person Who can Answer Specific Questions about the Spill)

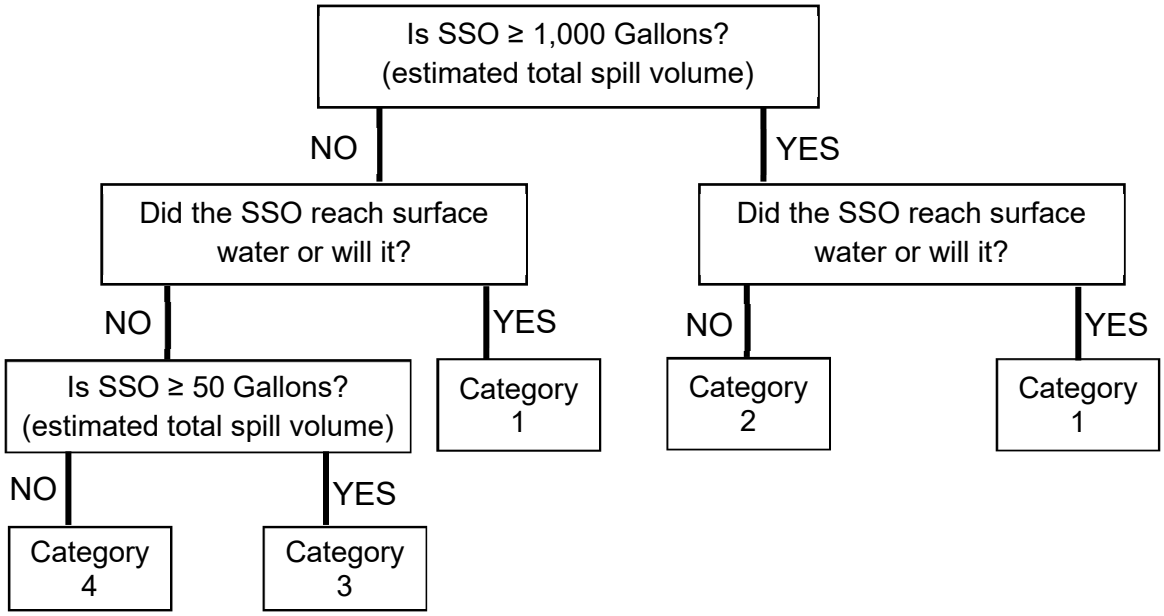
Name and Phone Number (if different than RP) _____

Address _____

Reported By/Date: _____

Submit Report to Legally Responsible Official

SSOS DETERMINATION OF CATEGORY



Category 1 SSO

Discharges of untreated or partially treated wastewater of any volume that:

a) reaches surface water and/or reaches a drainage channel tributary to a surface water; or

b) reaches a municipal separate storm sewer system and is 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 municipal separate storm sewer system 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).

Notification: Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (CalOES) and obtain a notification number.

Monitoring: Conduct spill-specific monitoring in addition to water quality sampling as indicated herein within 18 hours of initial knowledge of a spill of 50,000 gallons or greater to surface waters.

Reporting: Submit a draft Spill Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report Form within 15 calendar days of the spill end date.

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.

Category 2 SSO

Discharges of untreated or partially treated wastewater of 1,000 gallons or greater that does not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Notification: Within 2 hours of becoming aware of any Category 2 SSO greater than or equal to 1,000 gallons discharged to a surface water or spilled in a location where it probably will be discharged to surface water, notify CalOES and obtain a notification number.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit a draft Spill Technical Report to CIWQS SSO Reporting platform within 3 business days of becoming aware of the SSO. Submit certified Spill Report within 15 calendar days of the spill end date.

Category 3 SSO

Discharges of untreated or partially treated wastewater equal to or greater than 50 gallons and less than 1,000 gallons that does not discharge to surface water.

Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: Submit certified report to CIWQS within 30 calendar days of the end of the month in which SSO occurred. For example, if the SSO occurred on February 1, the District must certify the Category 3 SSO before March 30.

Category 4 SSO

Discharges of untreated or partially treated wastewater less than 50 gallons that does not discharge to surface waters.

Notification: Not applicable.

Monitoring: Conduct spill-specific monitoring.

Reporting: If, during any calendar month, a Category 4 spills occur, certify monthly the estimated total spill volume exiting the sanitary sewer system and the total number of all Category 4 spills into the online CIWQS Sanitary Sewer System Database within 30 days after the end of the calendar month in which the spills occurred.

Upload and certify a report, in an acceptable digital format, of all Category 4 spills to the online CIWQS Sanitary Sewer System Database by February 1 after the end of the calendar year in which the spills occur.

ATTACHMENT B

SSO VOLUME ESTIMATION

Attachment B - SSO Volume Estimation

All SSO volume estimation methods taken from *Sewer Spill Estimation Guide* developed by the Orange County Area Waste Discharge Requirements Steering Committee, Orange County, CA, revised May 15, 2014.

Disclaimer from *Sewer Spill Estimation Guide:* "Methods used for spill estimation and the estimates 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 use of this guide."

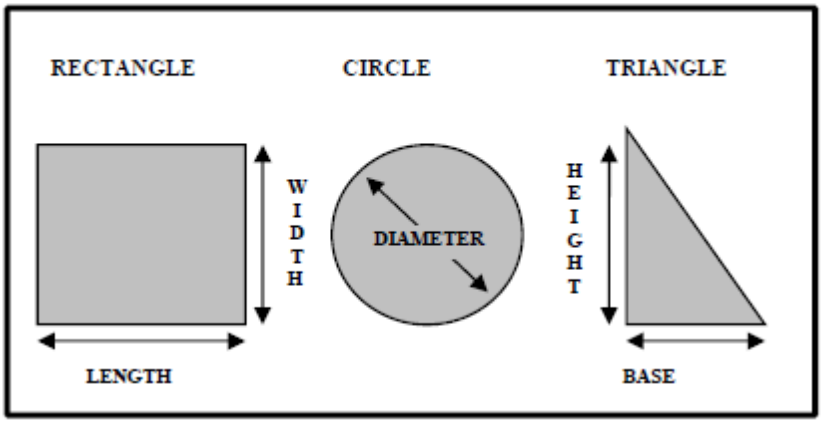
Visual or Eyeball Method

- Imagine the amount of water that would spill from a 1-gallon jug, 5-gallon bucket, or 50-gallon barrel.
- Estimate how many 1-gallon jugs, 5-gallon buckets, or 50-gallon barrels the SSO would fill.
- Use chart below to estimate total volume.

	How Many	Multiply by	Total Volume
1-gallon jug		1	
5-gallon bucket		5	
50-gallon barrel		50	

Measured Method

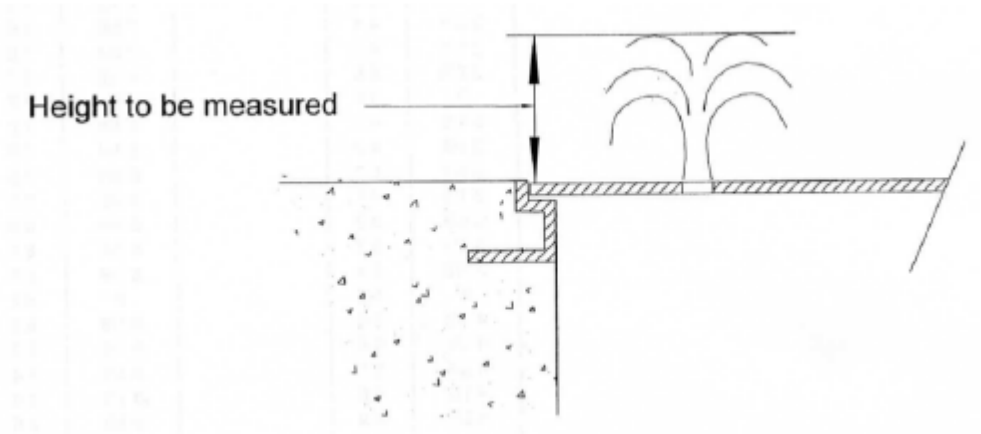
Common Shapes and Dimensions



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.

Pick and Vent Holes in Manhole Covers

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.



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

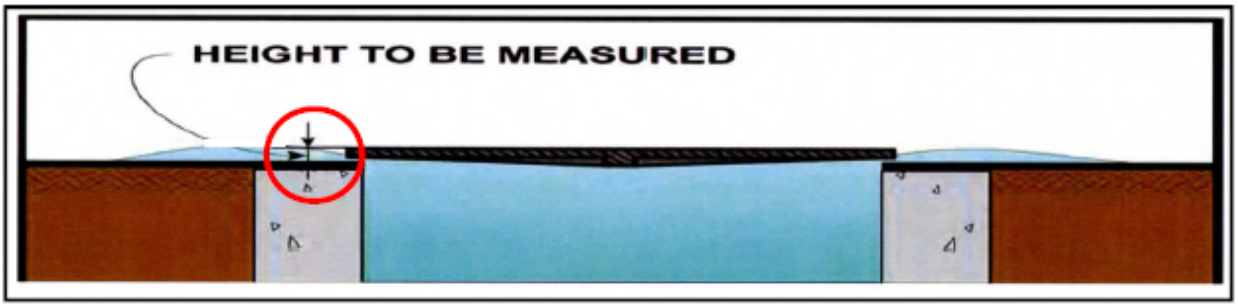
Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

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: =Ex*Bx*(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

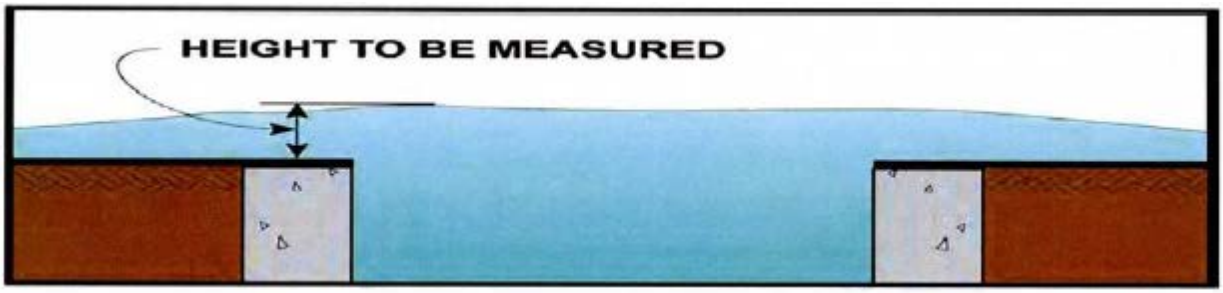
Manhole Ring

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. (Be sure to use the appropriate chart for MH Cover in Place or MH Cover Removed). 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.

MH Cover in Place:



MH Cover Removed:



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		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
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		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
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).

ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED

24" FRAME

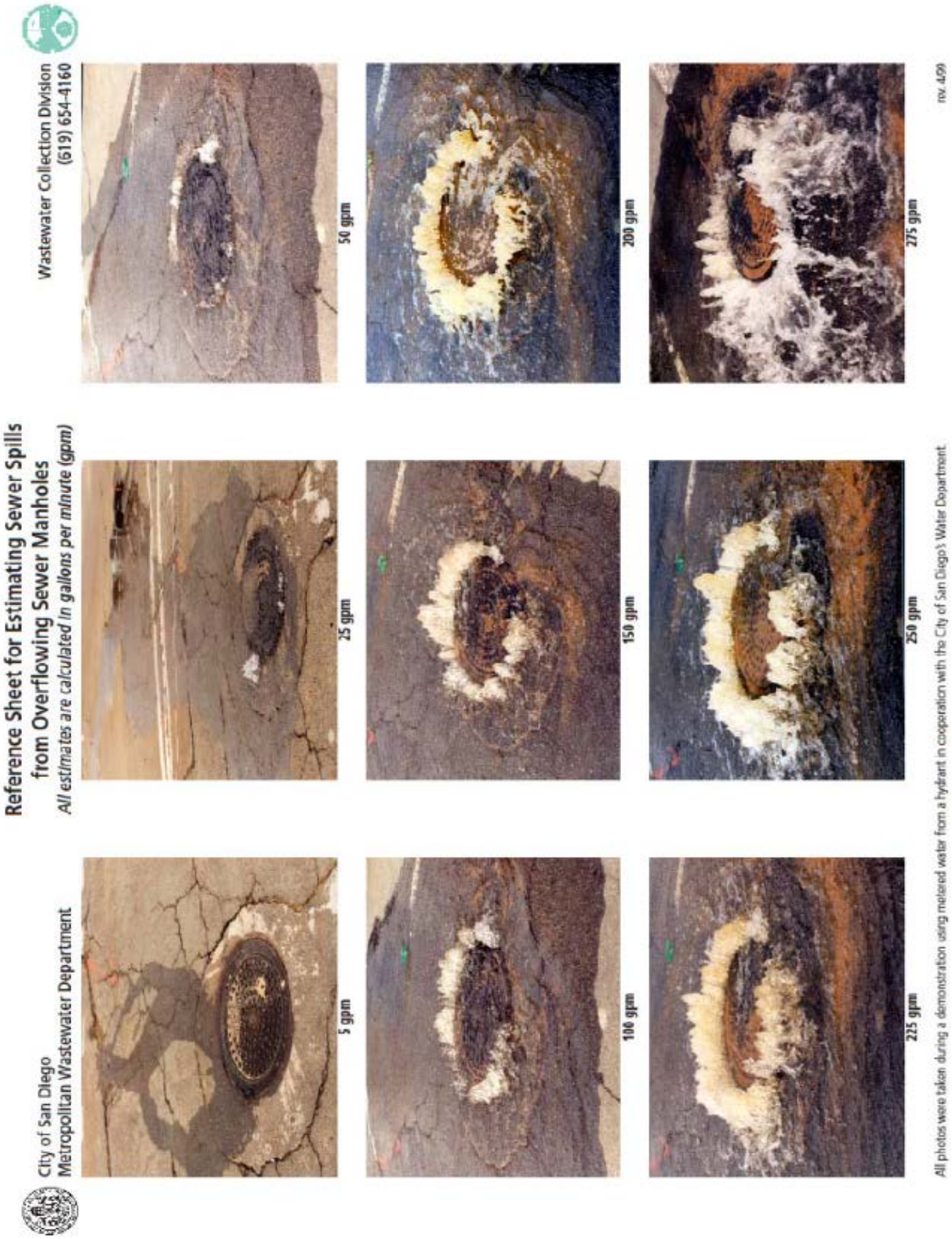
Water Height above M/H frame H in inches	S S O FLOW Q in gpm	in MGD	Min. Sewer size in which these flows are possible
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	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	

Pictorial Reference

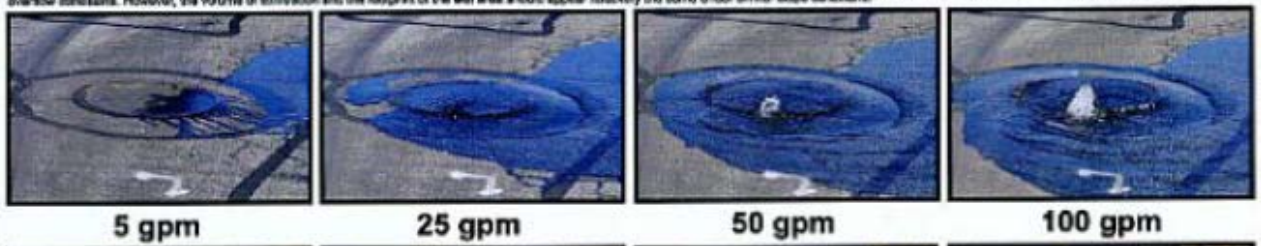
City of San Diego Manhole Overflow Picture Chart



SSCSC Manhole Overflow Gauge

Overflow Simulation courtesy of Eastern Municipal Water District

DISCLAIMER: This overflow simulation may appear differently from those in other systems because of the manhole lid pick hole configuration. Manhole lids with single or multiple pick holes may appear differently during overflow conditions. However, the volume of exfiltration and the footprint of the wet area should appear relatively the same under similar slope conditions.



DISCLAIMER: This overflow simulation may appear differently from those in other systems because of the manhole lid pick hole configuration. Manhole lids with single or multiple pick holes may appear differently during similar overflow conditions. However, the volume of exfiltration and the footprint of the wet area should appear relatively the same under similar slope conditions.

PROVIDING QUALITY TRAINING FOR COLLECTION SYSTEM PERSONNEL SINCE 1991

Mission Statement: To continuously increase the level of professionalism of Collection Systems personnel involved in the operation, maintenance, design and construction of Wastewater Collection Systems, by providing education and training, taking an active role in promoting certification, and Recognizing proficiency in our field.

SSCSC Manhole Overflow Gauge

APPENDIX C

CITY OF REDDING STANDARD SPECIFICATIONS AND DETAILS FOR DESIGN AND CONSTRUCTION OF WASTEWATER COLLECTION FACILITIES

1. ACCEPTABLE PIPE MATERIALS:

WASTEWATER MAINS (8"–60"),	PVC SOLID WALL SDR 26 PER ASTM D–3034 HDPE, HIGH DENSITY POLYETHYLENE (DR17 MINIMUM) FUSIBLE PVC SOLID WALL PIPE (SCHEDULE 80, DR25 MINIMUM) PVC SOLID WALL PIPE (C900) VCP, VITRIFIED CLAY PIPE (EXTRA STRENGTH) – ONLY 18" AND LARGER (WHEN APPROVED BY CITY ENGINEER)
WASTEWATER CONNECTIONS/ LATERALS (4" OR 6"):	ABS SOLID WALL PIPE SDR 23.5 ASTM D–2751 ABS SOLID WALL PIPE SDR 26 ASTM D–2751 ABS SOLID WALL PIPE (DWV SCHEDULE 40) PVC SOLID WALL PIPE SDR 23.5 ASTM D–3034 PVC SOLID WALL PIPE SDR 26 ASTM D–3034 FUSIBLE PVC SOLID WALL PIPE (SCHEDULE 80, DR25 MINIMUM) HDPE DR26 MINIMUM

2. THE CITY OF REDDING MAY REQUIRE THE USE OF FUSED (PVC OR HDPE) PIPE IN AREAS OF HIGH GROUNDWATER, SHALLOW COVER OR UNSTABLE GROUND CONDITIONS.

3. THE LARGEST PIPELINE THAT CAN BE TAPPED FOR A SEWER CONNECTION LATERAL IS 15 INCH UNLESS APPROVED BY THE CITY ENGINEER.

4. PRIOR TO ACCEPTANCE OF THE SEWER, THE PIPELINES SHALL BE PROPERLY CLEANED OF ALL DEBRIS, AIR PRESSURE TESTED PER STANDARD SPECIFICATIONS SECTION 306–7.8.2.4, AND MANDRELLED (WHEN APPLICABLE) BY THE CONTRACTOR; AND THEN TELEVIEWED. PROPER CLEANING TECHNIQUES AND DEVICES SHALL BE UTILIZED TO ENSURE NO DEBRIS, SAND, GRAVEL OR SILT WILL ENTER THE EXISTING CITY SEWER SYSTEM.

5. THE DOWNSTREAM END OF ALL NEW PIPELINES WHICH ARE NOT ACTIVE IN SERVICE SHALL BE PLUGGED UNTIL THE SEWER IS ACCEPTED BY THE CITY.

6. MANDREL TESTING SHALL BE REQUIRED FOR ALL PLASTIC PIPE PER STANDARD SPECIFICATIONS SECTION 306–7.8.3.

7. PRIOR TO ACCEPTANCE, ALL MANHOLES CONSTRUCTED OR REHABILITATED SHALL SUCCESSFULLY PASS A VACUUM TEST PER CITY OF REDDING CONSTRUCTION STANDARD PAGE 300.10.

8. MINIMUM DEPTH OF COVER:

   A. 5.0 FEET OVER SEWER MAIN
   B. 4.5 FEET OVER SEWER CONNECTIONS/LATERALS AT PROPERTY LINE (PER PAGE 301.00 & 622.00)

9. THE MINIMUM RADIUS CURVATURE FOR SEWER MAINS SHALL BE 1.5 TIMES THE MANUFACTURER'S RECOMMENDATION. ALL CURVATURE OF FLEXIBLE PIPE SHALL BE MADE BY BENDING THE PIPE. NO DEFLECTION OF THE PIPE JOINTS SHALL BE ALLOWED. SHARPER CURVES MAY BE OBTAINED BY USING 3° COUPLINGS (18" MINIMUM BETWEEN COUPLINGS).

10. SEWER TAPS ON LIVE SEWER MAINS SHALL BE PERFORMED BY THE CITY. CONTACT THE CITY PUBLIC WORKS INSPECTION TO SCHEDULE THE TAP. PHONE: 225–4170.

11. WATER STOPS SHALL BE M&H, FERNCO, OR EQUAL, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

12. NON–METALLIC PIPE SHALL HAVE LOCATING WIRE AND WARNING TAPE PER PAGE 608.00.

13. ALL HDPE, PVC AND FPVC PIPE INTERIOR SHALL BE LIGHT GREEN OR GRAY IN COLOR.

14. PIPE SHALL MARKED "SEWER" ON THE EXTERIOR OR HAVE A GREEN STRIPE COEXTRUDED INTO THE PIPE MATERIAL.

DWG DATE: 7/85		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
10	9/22	EDIT NOTES	APPROVED BY
9	12/18	EDIT NOTES	
8	3/18	EDIT NOTES	
7	1/18	EDIT NOTE	
6	10/16	EDIT NOTE	
5	7/13	EDIT NOTES	
MARK	DATE	REVISION	9–22–22 CITY ENGINEER

SANITARY SEWER CONSTRUCTION CRITERIA

1. EACH MANHOLE SHALL BE VACUUM TESTED IN THE PRESENCE OF THE CITY INSPECTOR FOR ACCEPTANCE PRIOR TO FINAL PAVING AND AFTER ALL BACKFILLING AND COMPACTION IS COMPLETED. INDUSTRY STANDARDS RECOMMEND THAT THE MANHOLES BE PRE-TESTED IMMEDIATELY AFTER ASSEMBLY AND PRIOR TO BACKFILLING. SUCH PRE-TESTING IS FOR THE CONTRACTOR'S CONVENIENCE AND NEED NOT BE IN THE PRESENCE OF THE INSPECTOR.

2. ALL TESTING EQUIPMENT AND LABOR SHALL BE PROVIDED BY THE CONTRACTOR.

3. ALL PIPES ENTERING THE MANHOLE SHALL BE PLUGGED, TAKING CARE TO SECURELY BRACE THE PLUGS FROM BEING DRAWN INTO THE MANHOLE.

4. THE TEST HEAD SHALL BE PLACED AT THE INSIDE OF THE TOP OF THE CONE SECTION AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

5. A VACUUM OF 10 INCHES OF MERCURY SHALL BE DRAWN AND THE VACUUM PUMP SHUT OFF. WITH THE VALVES CLOSED, THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP TO NINE INCHES. THE MANHOLE SHALL PASS IF THE TIME IS GREATER THAN 60 SECONDS FOR 48" DIAMETER MANHOLES, 75 SECONDS FOR 60" DIAMETER MANHOLES, AND 90 SECONDS FOR 72" DIAMETER MANHOLES.

6. IF THE MANHOLE FAILS THE INITIAL TEST, NECESSARY REPAIRS SHALL BE MADE WITH A NON-SHRINK GROUT OR EPOXY. RETESTING SHALL PROCEED UNTIL A SATISFACTORY TEST IS OBTAINED. NO GROUT SHALL BE PLACED IN THE HORIZONTAL JOINTS BEFORE TESTING.

DWG DATE: 1/98		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION	
2 1	3/18 7/13	EDIT NOTE 6 UPDATE	APPROVED BY 3/19/18 CITY ENGINEER	SPECIFICATIONS FOR VACUUM TESTING OF MANHOLES
MARK	DATE	REVISION		

1. DESIGN OF SEWER LINES SHALL BE BASED UPON AN AVERAGE DAILY FLOW OF 300 GALLONS PER HOUSEHOLD EQUIVALENT PER DAY PLUS 1,500 GALLONS PER ACRE PER DAY FOR STORM WATER AND GROUNDWATER INFILTRATION. PEAKING FACTORS APPLIED TO DRY WEATHER FLOWS SHALL BE 3.25 FOR RESIDENTIAL AND 1.70 FOR NON–RESIDENTIAL SERVICES.

2. MAINS AND COLLECTOR SEWER LINES SHALL BE DESIGNED WITH A MINIMUM MANNING COEFFICIENT OF N=0.013.

3. THE MINIMUM SLOPE ALLOWED FOR SEWER PIPELINES SHALL BE:

8"	s=0.0040
10"	s=0.0030
12"	s=0.0025

   THE MAXIMUM LENGTH OF ANY DEAD END PIPELINE SHALL BE 250 FEET, OR LESS; SHALL HAVE A MINIMUM SLOPE OF s=.0040; AND SHALL HAVE NO MORE THAN FOUR SERVICE CONNECTIONS.

4. MINIMUM GRADES SHALL NOT BE LESS THAN THOSE REQUIRED TO PRODUCE A VELOCITY OF TWO (2.0) FEET PER SECOND WHEN THE SEWER SIZE SELECTED IS FLOWING FULL OR HALF FULL. PIPE SIZES SHALL NOT BE ARBITRARILY INCREASED IN ORDER TO TAKE ADVANTAGE OF A FLATTER GRADE.

5. THE MINIMUM SIZE SEWER MAIN SHALL BE 8–INCH.

6. MINIMUM DEPTH OF COVER:

   A. 5.0 FEET OVER SEWER MAIN
   B. 4.5 FEET OVER SEWER CONNECTIONS/LATERALS AT PROPERTY LINE (STANDARD PAGE 301.00)

7. MANHOLE SPACING:

A.	MAINLINE SEWERS 8 TO 12 INCH	:	500 FEET MAXIMUM
B.	TRUNKLINE SEWERS 15 TO 30 INCH	:	700 FEET MAXIMUM
C.	INTERCEPTOR SEWERS 36 INCH AND LARGER	:	800 FEET MAXIMUM
D.	INTERCEPTOR AT ALL ANGLE POINTS IN HORIZONTAL AND VERTICAL ALIGNMENT		

8. INSIDE DROP MANHOLES WILL ONLY BE PERMITTED WHEN APPROVED BY THE CITY ENGINEER PER 362.00 OUTSIDE DROP MANHOLES WILL NOT BE PERMITED.

9. MAXIMUM DEPTH OF COVER:

   SEWER MAINS SHALL NOT BE DESIGNED WITH COVER EXCEEDING 15 FEET FROM FINISH SURFACE GRADE, UNLESS SPECIAL PERMISSION IS RECEIVED FROM THE CITY ENGINEER.

10. NO PRIVATE FORCE MAINS WILL BE ALLOWED IN THE CITY RIGHT–OF–WAY UNLESS PERMISSION IS RECEIVED FROM THE CITY ENGINEER.

11. HORIZONTAL AND VERTICAL CURVATURE SHALL BE ONE–HALF OF THE MAXIMUM DEFLECTION RECOMMENDED BY THE MANUFACTURER.

DWG DATE: 7/85	SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION

MARK	DATE	REVISION
6	3/18	EDIT NOTE 8
5	7/13	EDIT NOTES
4	4/06	EDIT NOTES

APPROVED BY

3/19/18

CITY ENGINEER

SANITARY SEWER DESIGN CRITERIA

1. PVC SEWER PIPE AND FITTINGS FOR GRAVITY SEWERS SHALL BE MADE FROM ALL NEW, RIGID, UNPLASTICIZED POLYVINYL CHLORIDE IN ACCORDANCE WITH ASTM STANDARD SPECIFICATION D 3034 WITH A WALL THICKNESS OF AT LEAST SDR 26. SDR VALUES AND PVC MATERIAL REQUIREMENTS SHALL BE PER SECTION 207-17 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK). JOINTS SHALL CONSIST OF AN INTEGRAL BELL AND RUBBER RING ELASTOMERIC SEAL (GASKETS) MEETING THE REQUIREMENTS OF ASTM D 3212 AND ASTM F 477. THE PIPE AND FITTINGS SHALL BE ASSEMBLED WITH THE PIPE MANUFACTURER'S RECOMMENDED LUBRICANT.

2. ALL PIPE SHALL HAVE A "HOME" MARK TO INDICATE FULL PENETRATION OF THE SPIGOT WHEN THE JOINT IS MADE.

3. SPECIFIC APPROVAL IS REQUIRED FOR USE OF SEWER PIPELINES FOR WHICH COMMERCIAL OR INDUSTRIAL AREAS ARE TRIBUTARY.

4. ALL PVC PIPELINES ENTERING OR LEAVING A CONCRETE STRUCTURE SHALL HAVE A FERNCO, PRESS-SEAL, OR EQUAL, WATER STOP FIRMLY CLAMPED AROUND THE PIPE EXTERIOR AND CAST INTO THE STRUCTURE BASE OR NEAR THE STRUCTURE WALL CENTER AS A WATER STOP.

5. INSTALLATION, BEDDING, AND BACKFILL REQUIREMENTS FOR PVC SEWER PIPE SHALL BE IN ACCORDANCE WITH ASTM D 2321 AS MODIFIED BY CITY OF REDDING STANDARD PAGE 610.00.

6. PRIOR TO ACCEPTANCE OF THE SEWER, THE PIPELINES SHALL BE AIR PRESSURE TESTED PER STANDARD SPECIFICATIONS SECTION 306-7.8.2.4

7. AFTER PIPE INSTALLATION AND PLACEMENT AND COMPACTION OF BACKFILL, BUT PRIOR TO PLACEMENT OF PAVEMENT, ALL PIPELINES SHALL BE CLEANED AND THEN SEPARATELY MANDRELLED TO MEASURE FOR OBSTRUCTIONS. OBSTRUCTIONS SHALL INCLUDE, BUT NOT BE LIMITED TO DEFLECTIONS, JOINT OFFSETS, AND SEWER CONNECTIONS/LATERAL PIPE INTRUSIONS. A CONTRACTOR-SUPPLIED RIGID MANDREL MEETING THE REQUIREMENTS OF THE GREENBOOK SECTION 306-7.8.3 WITH AN EFFECTIVE CIRCULAR CROSS-SECTION HAVING A DIAMETER OF AT LEAST 95 PERCENT OF THE MAXIMUM AVERAGE INSIDE DIAMETER, PER ASTM 3034, SHALL BE PULLED THROUGH THE PIPE BY HAND NOT SOONER THAN 30 DAYS AFTER COMPLETION OF PLACEMENT AND DENSIFICATION OF BACKFILL. THE MINIMUM EFFECTIVE LENGTH OF THE MANDREL SHALL BE EQUAL TO ITS NOMINAL DIAMETER. OBSTRUCTIONS DUE TO DEFLECTION SHALL BE CORRECTED BY REPLACEMENT OF THE OVER-DEFLECTED PIPE; RE-ROUNDING IN PLACE WILL NOT BE ALLOWED.

8. IF A SECTION OF PIPELINE FAILS TO MEET THE MANDREL TEST AND IS REPAIRED AND FAILS A SECOND TIME, IT SHALL BE REPLACED WITH AN APPROVED RIGID OR SEMI-RIGID PIPE MATERIAL AND CONNECTED WITH FLEXIBLE RUBBER COUPLINGS WITH STAINLESS STEEL CLAMPS.

9. PVC PLASTIC SEWER PIPELINE MAY BE MANDREL TESTED AGAIN BEFORE THE TWELFTH MONTH FOLLOWING ACCEPTANCE AT THE DISCRETION OF THE MUNICIPAL UTILITIES DEPARTMENT. THE CONTRACTOR SHALL REPAIR ANY OBSTRUCTIONS CAUSED BY EXCESS DEFLECTION.

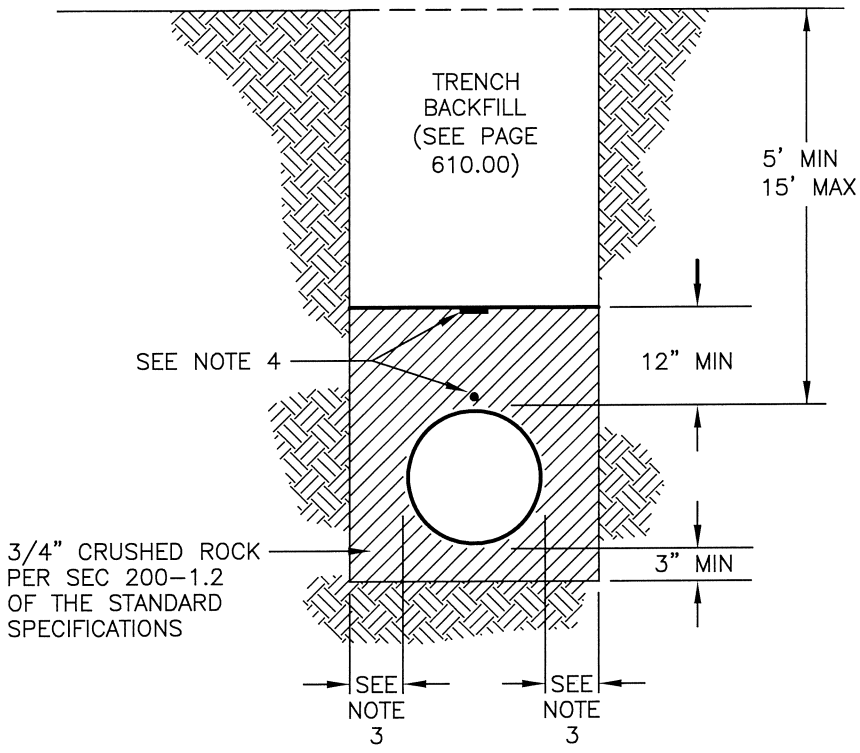
10. ALL MANDREL TESTING SHALL BE WITNESSED BY THE CITY INSPECTOR AND BE CONDUCTED BY THE CONTRACTOR'S FORCES AND AT THE CONTRACTOR'S EXPENSE.

DWG DATE: 8/92		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
7	9/22	EDIT NOTE 6&7	APPROVED BY
6	3/18	EDIT NOTE 3	
5	1/18	ADD NOTE 6	
4	7/13	UPDATE	
3	4/06	UPDATE	9-22-22
MARK	DATE	REVISION	CITY ENGINEER

POLYVINYL CHLORIDE (PVC) SEWER PIPE

FLEXIBLE

PVC SDR 26 (8 INCH–15 INCH)

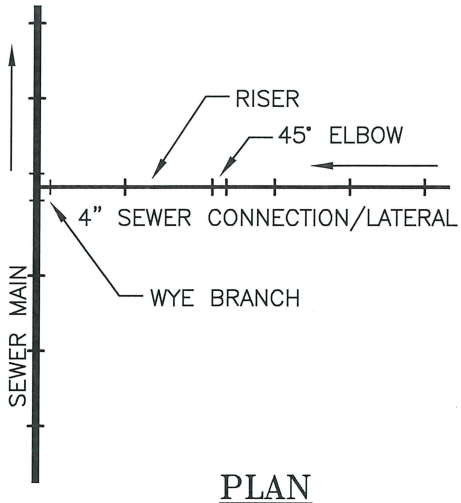


NOTES:

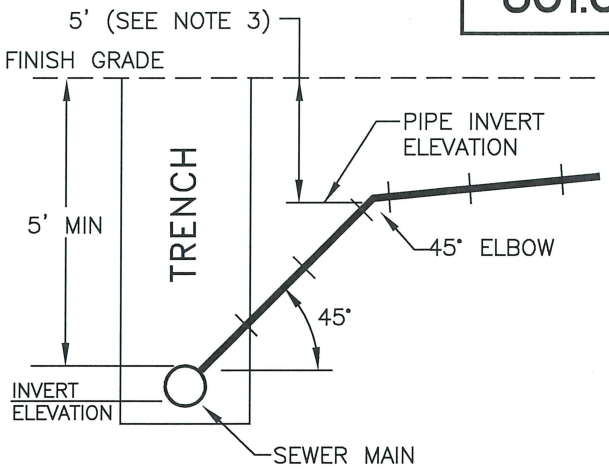
1. ALL PLASTIC SEWER MAINS SHALL BE AIR PRESSURE TESTED AND MANDREL TESTED WITH 5% MAX DEFLECTION PRIOR TO TELEVIEWING. THE CONTRACTOR SHALL REPAIR ANY SEWER MAIN OBSTRUCTION.
2. SEWER CONNECTIONS/LATERALS SHALL HAVE THE SAME BEDDING REQUIREMENTS AS SEWER MAINS.
3. TRENCH WIDTH ON EACH SIDE OF THE PIPE SHALL BE A MINIMUM OF EITHER FOUR (4) INCHES OR THE PIPE MANUFACTURER'S RECOMMENDED MINIMUM, WHICHEVER IS GREATER, AND A MAXIMUM OF 18 INCHES.
4. △6 NON–METALLIC PIPE SHALL HAVE LOCATING WIRE AND WARNING TAPE PER PAGE 608.00.

DWG DATE: 7/92		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
7	1/18	EDIT NOTE 1	APPROVED BY
6	8/16	EDIT NOTE	
5	7/13	ADD 608.00	
4	4/06	EDIT NOTES	1/26/18
MARK	DATE	REVISION	CITY ENGINEER

BEDDING FOR PLASTIC SEWER PIPE



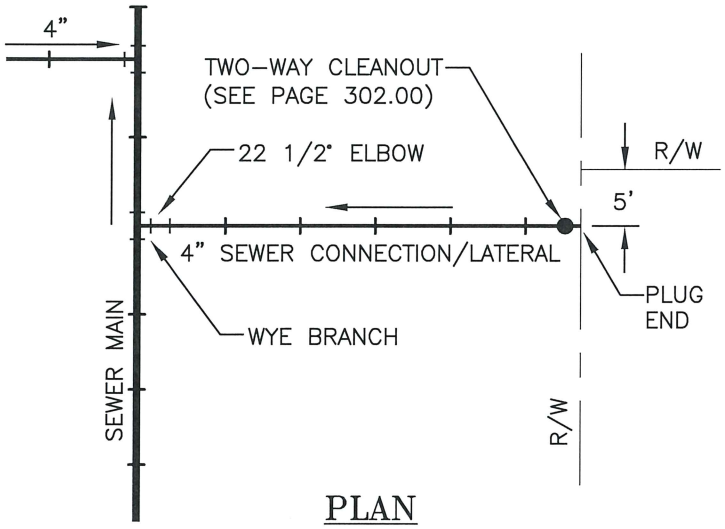
PLAN



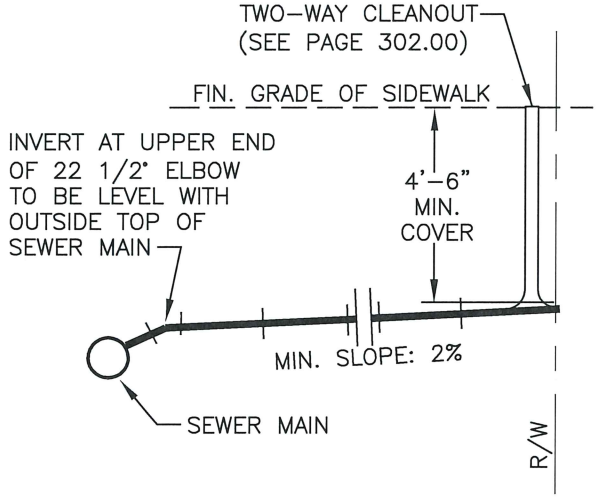
ELEVATION

TYPICAL RISER CONNECTION

(SEE NOTE 2)



PLAN



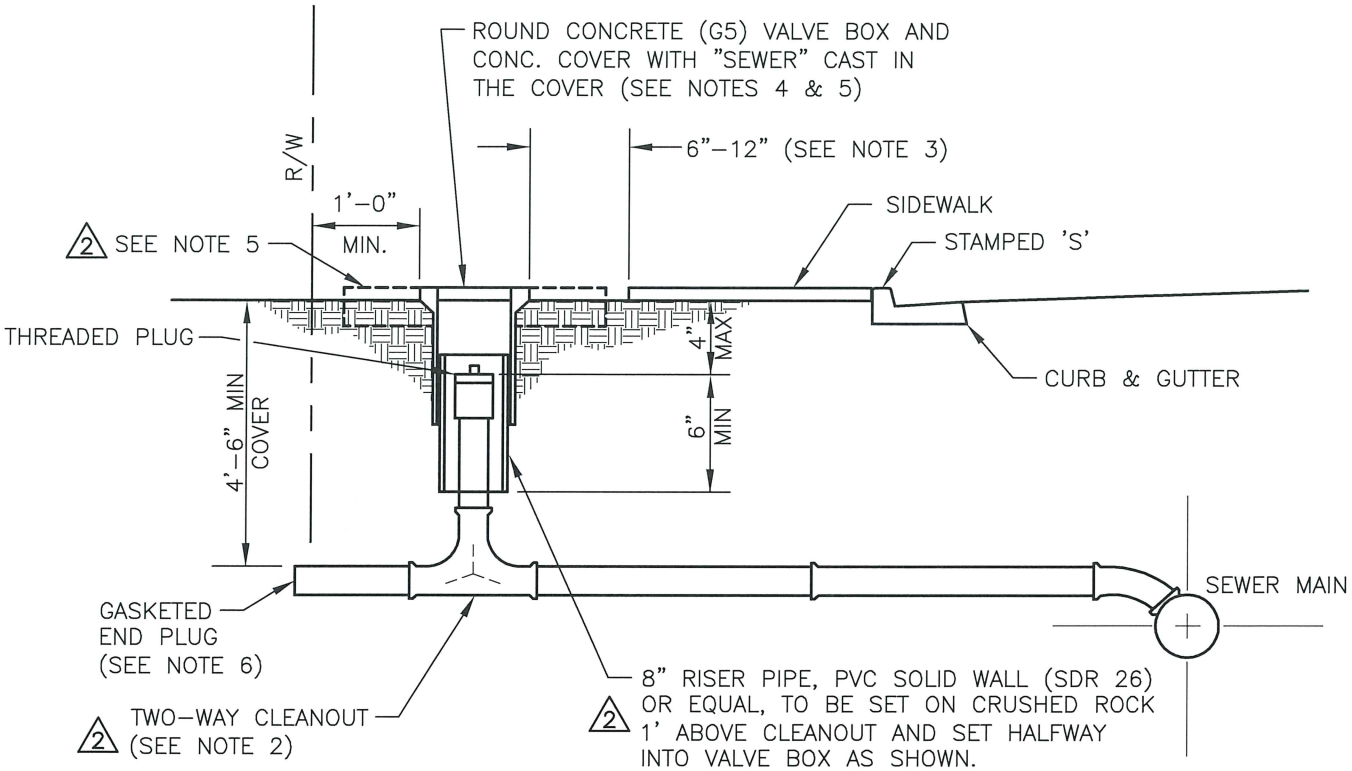
ELEVATION

TYPICAL HOUSE CONNECTION

NOTES:

1. 90° TAPS ARE ACCEPTABLE.
2. RISERS SHALL BE INSTALLED WHEN DEPTH OF SEWER MAIN EXCEEDS 6 FT.
3. VERTICAL INSTALLATIONS (STOVEPIPING) WILL NOT BE ALLOWED.
4. WHERE SEWER MAIN IS IN AN EASEMENT, INSTALL A TEE BRANCH AND PLUG.
5. PLACE 1/2" OR 5/8" PLASTIC CONDUIT (SCRAP) UPRIGHT AT PROPERTY LINE OVER END OF SEWER CONNECTION/LATERAL.
6. SEWER TAPS ON LIVE SEWER MAINS SHALL BE PERFORMED BY CITY OF REDDING CREW ONLY. CONTACT THE CITY INSPECTOR TO SCHEDULE TAP.
7. STAMP "S" INTO CURB AT LOCATION OF LATERAL.

DWG DATE: 12/91		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
10 9 8	3/18 7/13 4/06	2 WAY CO NAME CHG ADD CLEANOUT	APPROVED BY 3/19/18 CITY ENGINEER
MARK	DATE	REVISION	TYPICAL SANITARY SEWER LATERAL



NOTES:

2 1. THIS STANDARD SHALL BE REQUIRED ON ALL NEW RESIDENTIAL CONSTRUCTION.

2. TWO–WAY CLEANOUT.

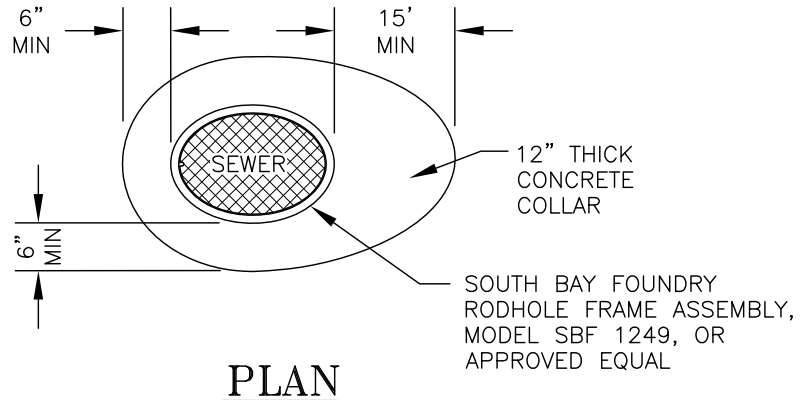
3. WHERE CONCRETE DRIVEWAY OR SIDEWALK SHALL EXIST, LATERAL CLEANOUT SHALL BE PLACED AT THE BACK OF CONCRETE WITH 6"–12" CLEARANCE BETWEEN CONCRETE AND CLEANOUT BOX. FOR ALL OTHER SITUATIONS, CLEANOUT SHALL BE PLACED 1' OFF THE PROPERTY LINE OR AS SHOWN ON THE PLANS APPROVED BY THE CITY ENGINEER.

4. WHERE LATERAL CLEANOUT IS LOCATED IN DRIVEWAYS OR OTHER AREAS SUBJECT TO VEHICULAR TRAFFIC, SET CLEANOUT BOX (G5) FLUSH TO FINISH GRADE, AND USE A CI TRAFFIC RATED COVER.

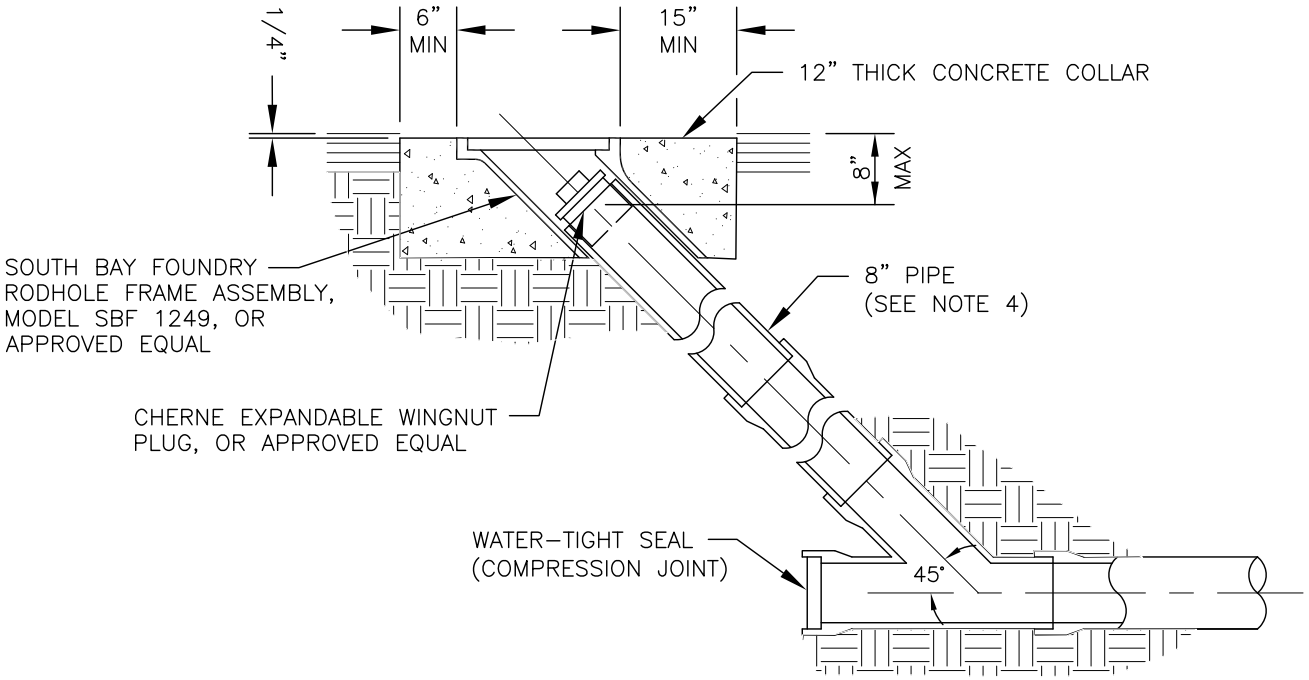
2 5. WHERE CLEANOUT IS SUBJECT TO VEHICULAR TRAFFIC AND NOT SET IN CONCRETE DRIVEWAY, POUR A 28" DIA. X 12" THICK CONCRETE COLLAR AROUND VALVE BOX.

6. ONCE THE NEW SEWER MAIN AND LATERALS HAVE BEEN TESTED, ACCEPTED, AND APPROVED TO BE PUT ON–LINE, CONTRACTOR SHALL CONNECT THE BUILDING LATERAL TO THE NEW CLEANOUT.

DWG DATE: 4/06		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
2	3/18	REVISE NOTES & CLEANOUT	APPROVED BY 3/19/18 CITY ENGINEER
1	7/13	REVISE STD	LATERAL CLEANOUT
MARK	DATE	REVISION	



PLAN

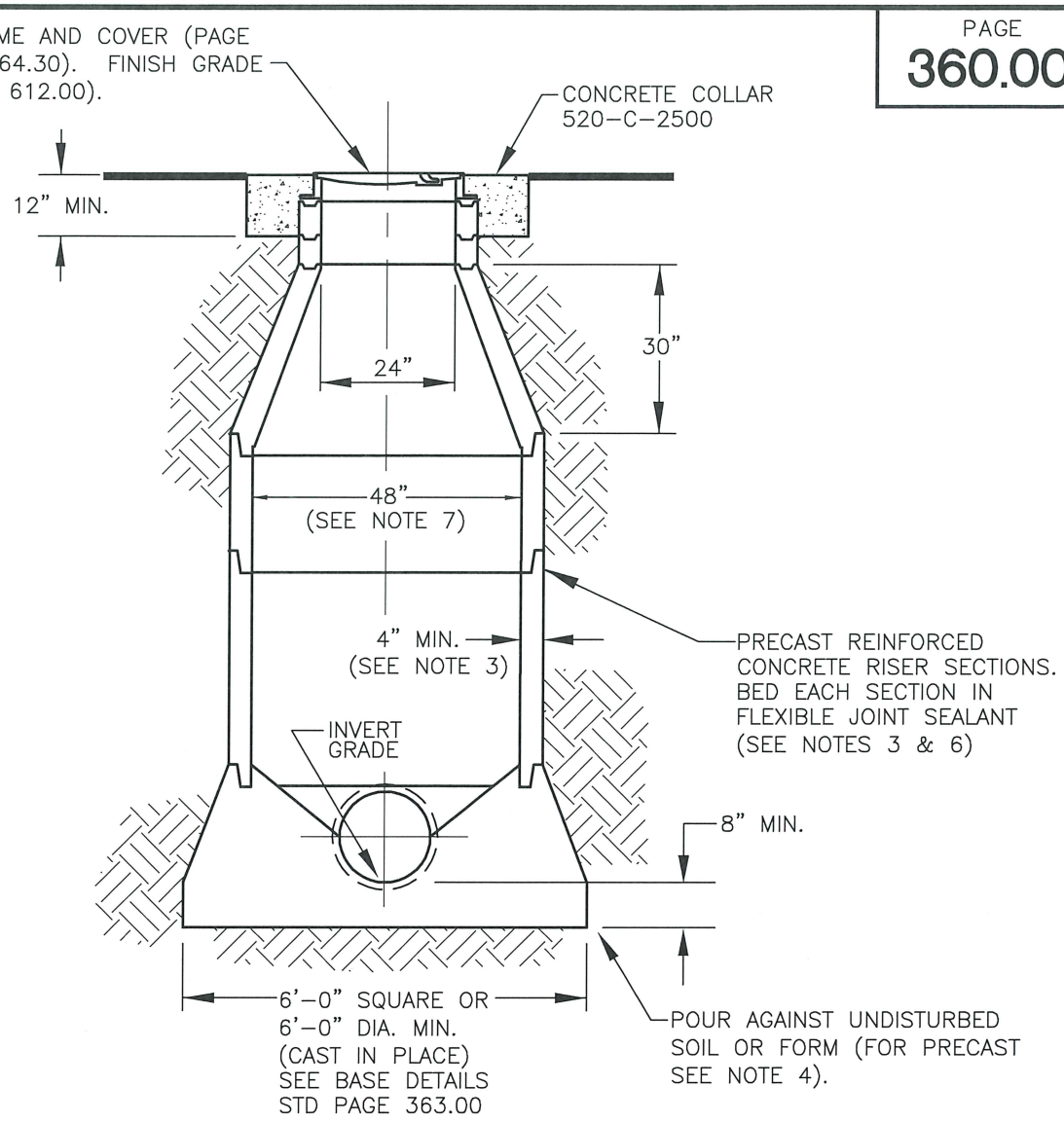


SECTION

NOTES:

1. ALL WORK SHALL CONFORM TO THE CITY OF REDDING CONSTRUCTION STANDARDS AND STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK).
2. ALL INSTALLATIONS SHALL BE 8" UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER.
3. 1/8th BEND MAY BE USED IN PLACE OF WYE WITH APPROVAL OF THE CITY ENGINEER.
4. CONCRETE COLLAR AROUND RODHOLE FRAME SHALL BE OVAL TO MATCH FRAME ASSEMBLY.

DWG DATE: 7/11		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
4 3	7/13 2/03	CHANGE STD NEW STD	APPROVED BY 10/9/13 CITY ENGINEER
MARK	DATE	REVISION	SEWER MAIN TERMINATION

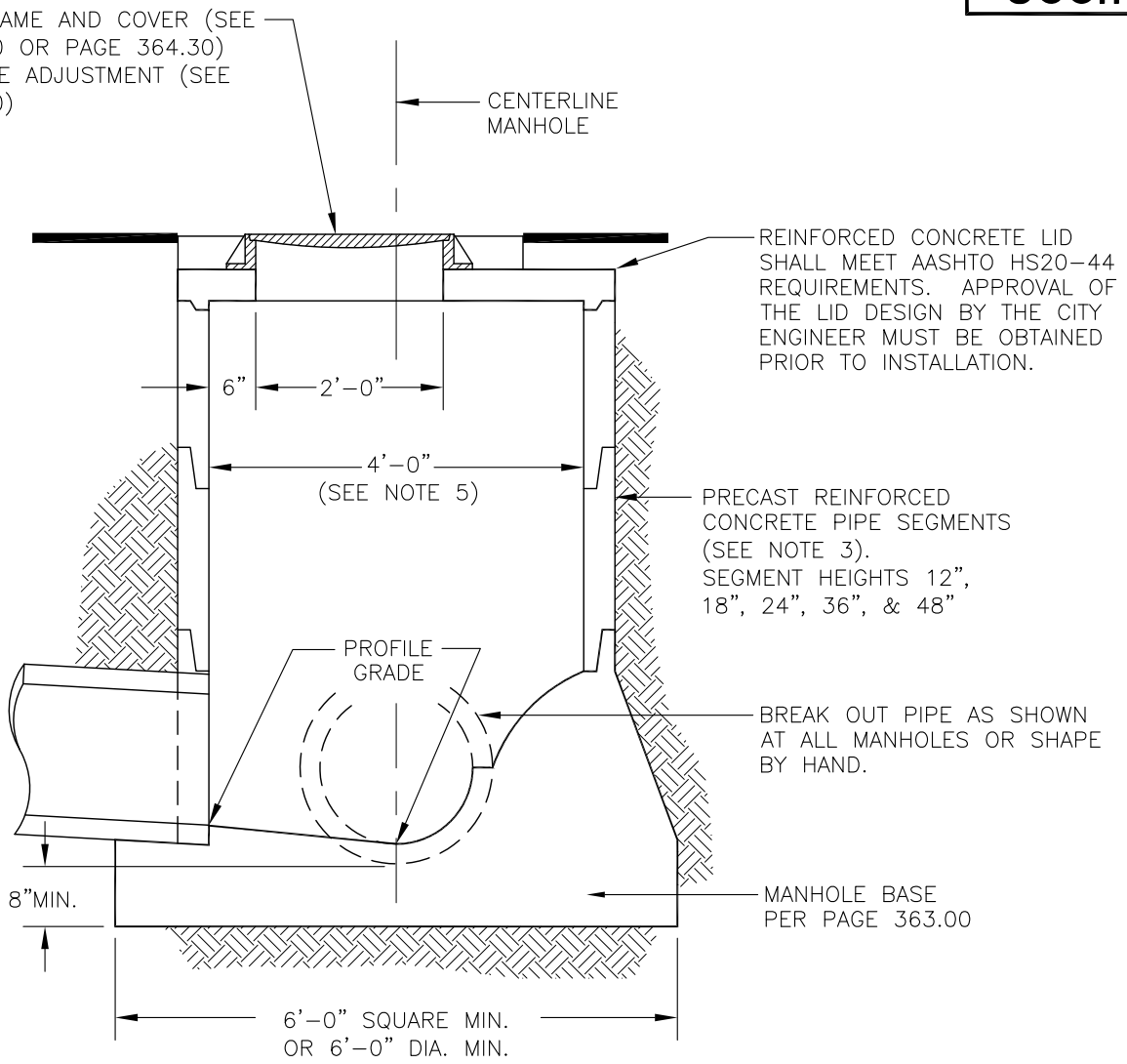


NOTES:

1. WHERE MANHOLES ARE NOT LOCATED IN STREETS OR TRAVELED WAY PLACE TOP OF MANHOLE 12" TO 24" ABOVE EXISTING GROUND PER PAGE 365.00 UNLESS OTHERWISE SHOWN ON PLANS.
2. ALL CONCRETE USED IN MANHOLE SHALL BE PER PAGE 100.00.
3. PRECAST REINFORCED CONCRETE MANHOLE SEGMENTS SHALL CONFORM TO ASTM DESIGNATION: C478-70 (4" MIN. WALL THICKNESS). ALL SECTIONS SHALL HAVE TONGUE AND GROOVE JOINTS.
4. PRECAST CONCRETE BASES MANUFACTURED BY COOK CONC. PRODUCTS, TEICHERT AGGREGATE, OR EQUAL MAY BE USED IN LIEU OF POURED IN-PLACE BASES (SEE PAGE 363.00).
5. ECCENTRIC TYPE CONCRETE CONE SECTIONS SHALL BE INSTALLED IN PLACE OF CONCENTRIC CONES WHEN DIRECTED BY THE ENGINEER. WHEN ECCENTRIC CONE SECTION IS INSTALLED, THE VERTICAL WALL SHALL BE INSTALLED DOWNSTREAM.
6. ALL SEGMENTS SHALL BE BEDDED IN FLEXIBLE JOINT SEALANT:
   - A DOUBLE BEAD SHALL BE USED IF SEALANT IS 3/4-INCH OR 1-INCH DIAMETER.
   - A SINGLE BEAD SHALL BE USED IF THE SEALANT IS 1 1/4-INCH OR GREATER DIAMETER.
7. 6'-0" MANHOLES ARE TO BE CONSTRUCTED AT THOSE LOCATIONS WHERE PIPE SIZE IS 30" OR LARGER IN DIAMETER.
8. WHEN CLAY PIPE IS INSTALLED, THE PIPE SECTION SHALL NOT EXTEND MORE THAN 12" FROM SIDE OF MANHOLE.
9. WHEN ABS OR PVC PIPE IS USED, THE BARREL OF THE PIPE SHALL BE PRE-PRIMED WITH SOLVENT AND SPRINKLED WITH SAND IN ORDER TO PROVIDE A WATERTIGHT SEAL BETWEEN THE PIPE AND CONCRETE. THIS REQUIREMENT IS IN ADDITION TO THE USE OF THE WATERSTOP.
10. PIPE MAY BE LAID THROUGH A LINE MANHOLE EXCEPT WHEN A GRADE OR LINE CHANGE OCCURS. MINIMUM DROP THROUGH ALL OTHER MANHOLES SHALL BE THE DIFFERENCE IN DIAMETERS OF THE UPSTREAM AND DOWNSTREAM PIPES OR 0.20 FT., WHICH EVER IS GREATER.
11. BACKFILL SHALL BE CLASS 'A' IN STREET R/W AND CLASS 'B' IN ALL OTHER LOCATIONS. COMPACTION PER PAGE 610.00 & PAGE 705.00.

DWG DATE: 1/98		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
12	3/18	12" COLLAR	APPROVED BY
11	1/18	EDIT NOTE	
10	8/16	EDIT NOTE	
9	7/13	REVISE NOTES	
8	4/06	ADD NOTE	
7	2/03	NAME CHG	
MARK	DATE	REVISION	CITY ENGINEER 3/20/18

TYPE 1 4 FT. SEWER MANHOLE



NOTES:

1. ALL CONCRETE USED IN MANHOLE BASE SHALL BE PER PAGE 100.00.
2. PIPE MAY BE LAID THROUGH A "LINE" MANHOLE EXCEPT WHERE A GRADE CHANGE OCCURS. MINIMUM DROP THROUGH ALL OTHER MANHOLES SHALL BE THE DIFFERENCE IN DIAMETER IN THE UPSTREAM AND DOWNSTREAM PIPES OR 0.20 FT., WHICHEVER IS GREATER.
3. PRECAST REINFORCED CONCRETE MANHOLE SECTION SHALL CONFORM TO ASTM DESIGNATION C478 (6" MIN. WALL THICKNESS). ALL SECTIONS SHALL HAVE TONGUE AND GROOVE JOINTS.
4. ALL MANHOLE SEGMENTS SHALL BE BEDDED IN FLEXIBLE JOINT SEALANT (KENT-SEAL OR EQUAL).
   - A DOUBLE BEAD SHALL BE USED IF SEALANT IS 3/4-INCH OR 1-INCH IN DIAMETER.
   - A SINGLE BEAD IF SEALANT IS 1 1/4-INCH OR GREATER IN DIAMETER.
5. 6'-0" MANHOLES ARE TO BE CONSTRUCTED AT THOSE LOCATIONS WHERE PIPE SIZE IS 30" OR LARGER IN DIAMETER.
6. WHERE MANHOLES ARE NOT LOCATED IN STREETS, PLACE TOP OF MANHOLE COVER 12" TO 24" ABOVE FINISHED GRADE UNLESS OTHERWISE SHOWN ON PLANS.
7. BACKFILL SHALL BE CLASS 'A' IN STREET R/W AND CLASS 'B' IN ALL OTHER LOCATIONS. COMPACTION REQUIREMENTS PER PAGE 610.00 & PAGE 601.00. △7

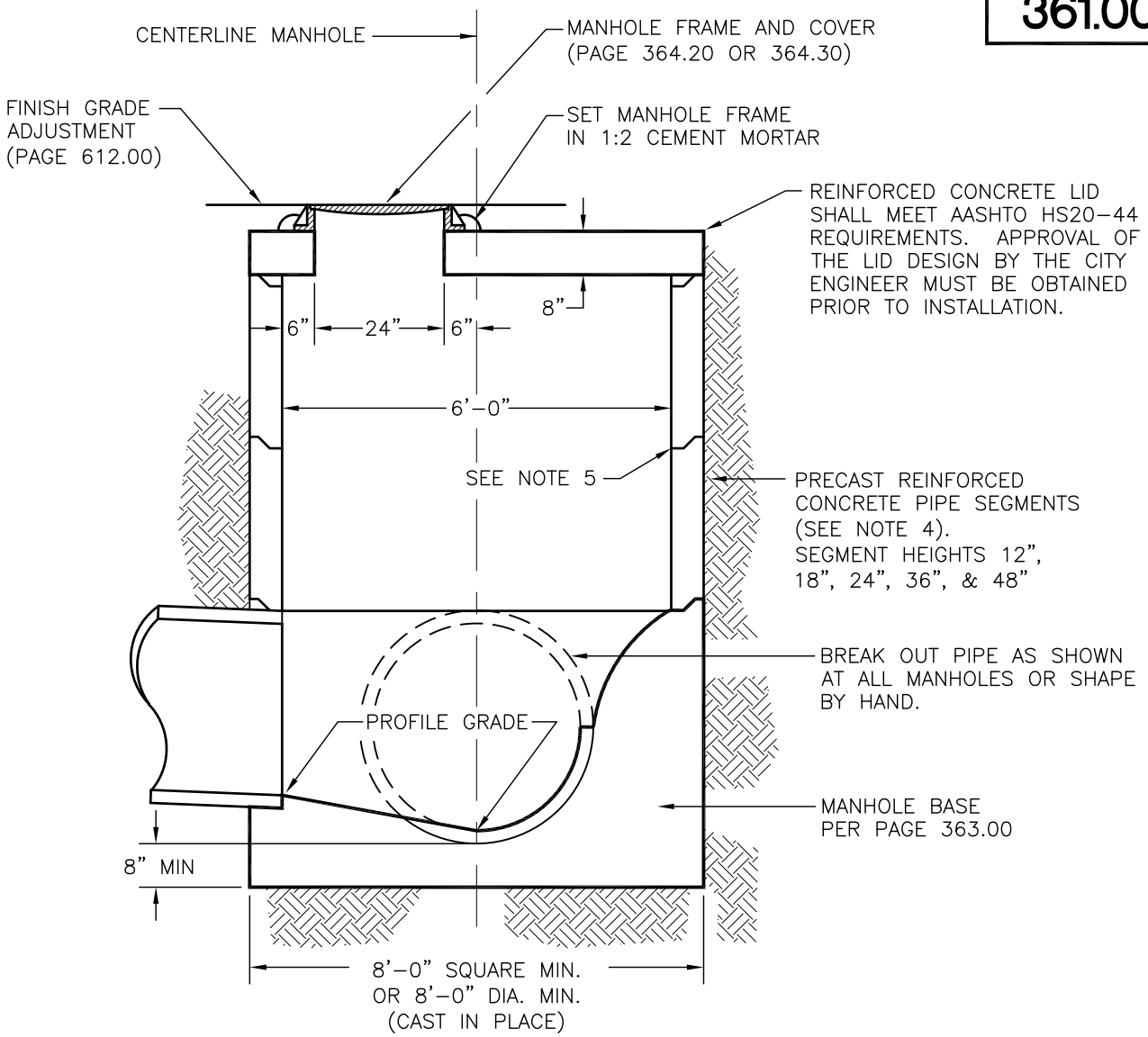
DWG DATE: 12/91	SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION

MARK	DATE	REVISION
7	5/22	EDIT NOTE
6	7/13	REVISE NOTES
5	4/06	ADD NOTE
4	2/03	NAME CHG

APPROVED BY

6-13-22
CITY ENGINEER

TYPE 2 4 FT. SEWER MANHOLE



NOTES:

1. WHERE MANHOLES ARE NOT LOCATED IN STREETS, PLACE TOP OF MANHOLE COVER 12" TO 24" ABOVE FINISHED GRADE UNLESS OTHERWISE SHOWN ON PLANS.
2. ALL CONCRETE USED IN MANHOLE BASE SHALL BE PER PAGE 100.00.
3. PIPE MAY BE LAID THROUGH A "LINE" MANHOLE EXCEPT WHERE A GRADE CHANGE OCCURS. MINIMUM DROP THROUGH ALL OTHER MANHOLES SHALL BE THE DIFFERENCE IN THE UPSTREAM PIPES AND DOWNSTREAM PIPE OR 0.17 FT. WHICHEVER IS GREATER.
4. PRECAST REINFORCED CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ASTM DESIGNATION C478 (6" MIN. WALL THICKNESS). ALL SECTIONS SHALL HAVE TONGUE AND GROOVE JOINTS.
5. ALL MANHOLE SEGMENTS SHALL BE BEDDED IN FLEXIBLE JOINT SEALANT (KENT-SEAL OR EQUAL).
   - A DOUBLE BEAD SHALL BE USED IF SEALANT IS 3/4-INCH OR 1-INCH IN DIAMETER.
   - A SINGLE BEAD IF SEALANT IS 1 1/4-INCH OR GREATER IN DIAMETER.
6. 6'-0" MANHOLES ARE TO BE CONSTRUCTED AT THOSE LOCATIONS WHERE PIPE SIZE IS 30" OR LARGER IN DIAMETER.
7. BACKFILL SHALL BE CLASS 'A' IN STREET R/W AND CLASS 'B' IN ALL OTHER LOCATIONS. COMPACTION REQUIREMENTS PER PAGE 610.00 & PAGE 601.00.

△5

DWG DATE: 4/91	SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION

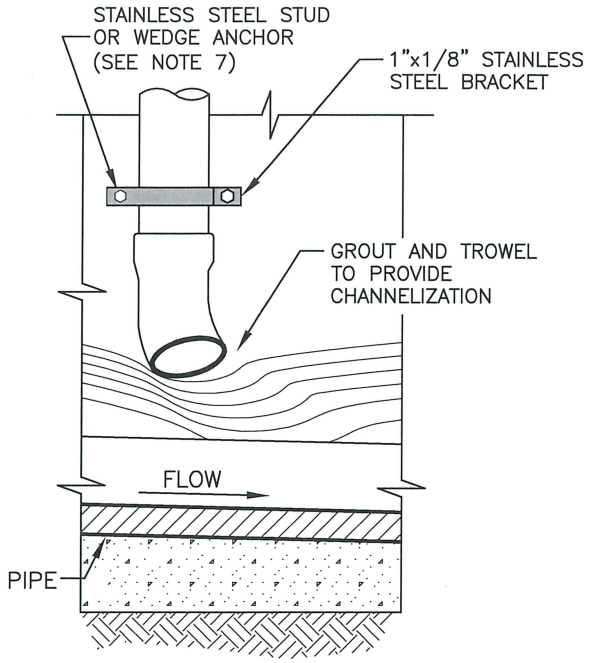
MARK	DATE	REVISION
5	5/22	EDIT NOTE
4	7/13	UPDATE
3	2/03	EDIT NOTES

APPROVED BY

6-13-22

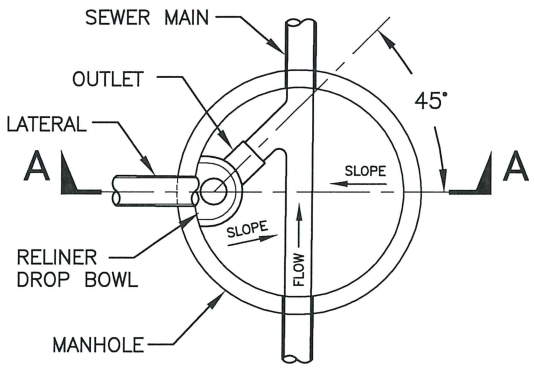
CITY ENGINEER

STANDARD 6 FT. SEWER MANHOLE

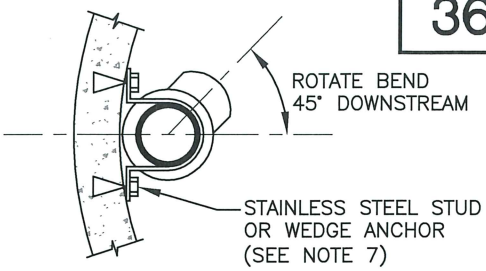


SECTION D–D

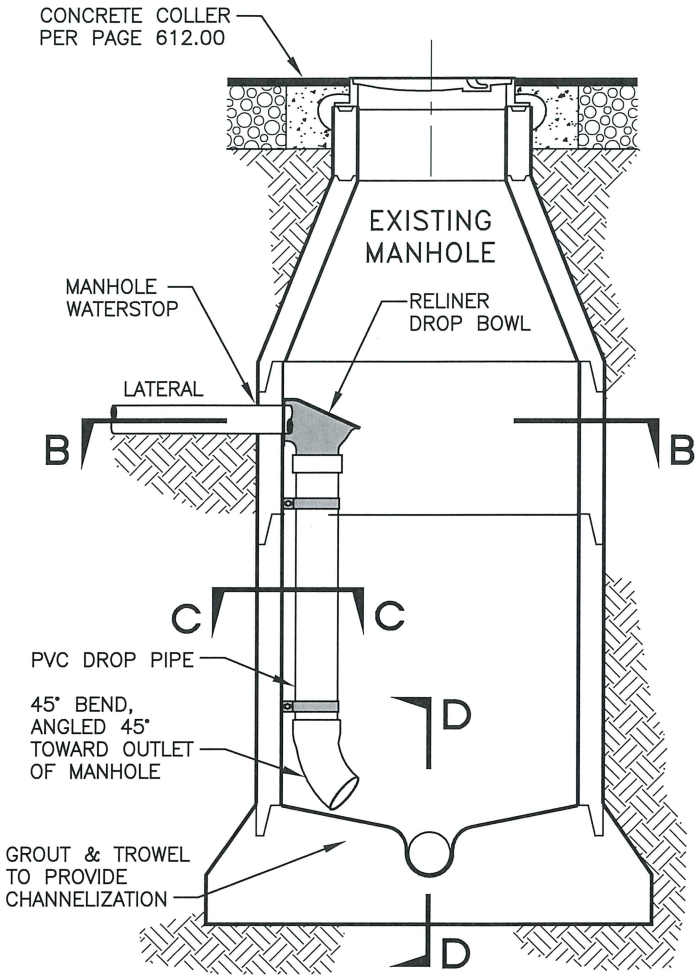
RELINER DROP BOWL
MOUNTING POSITION



SECTION B–B



SECTION C–C



SECTION A–A

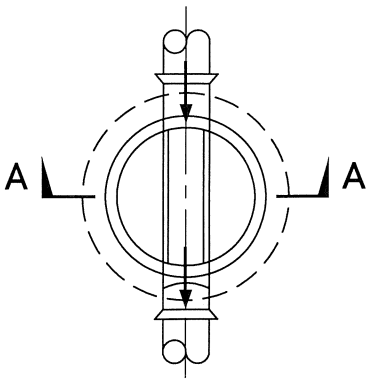
NOTES:

1. INSIDE DROP MANHOLES ALLOWED WHEN THE GRADE DIFFERENCE IS 6 FT. OR MORE ON EXISTING FACILITIES AND WITH SPECIAL APPROVAL BY THE CITY ENGINEER.
2. THIS TYPE OF DROP MANHOLE CONSTRUCTION MAY BE UTILIZED ONLY WHEN 8 INCH OR SMALLER PIPE IS USED.
3. VERTICAL PIPE SHALL BE 6 INCH FOR BOTH 6 INCH AND 8 INCH INCOMING LINES. VERTICAL PIPE MAY BE 4 INCH WHEN INCOMING LINE IS 4 INCH.
4. ABS SCH 40 DWV PIPE SHALL BE USED IN THE DROP SECTION OF THE MANHOLE.
5. 1"x1/8" STAINLESS STEEL BRACKETS SHALL BE USED TO SECURE VERTICAL PIPES WITHIN THE MANHOLE, WITH A MINIMUM OF ONE BRACKET PER JOINT OF PIPE AND A MINIMUM OF TWO BRACKETS PER MANHOLE INSTALLATION.
6. BACKFILL SHALL BE CLASS 'A' IN STREET R/W AND CLASS 'B' IN ALL OTHER LOCATIONS. COMPACTION REQUIREMENTS PER PAGE 610.00 & PAGE 705.00.
7. ALL HOLES DRILLED INTO CONCRETE FOR MOUNTING BRACKETS SHALL BE SEALED WITH WATER TIGHT EPOXY.

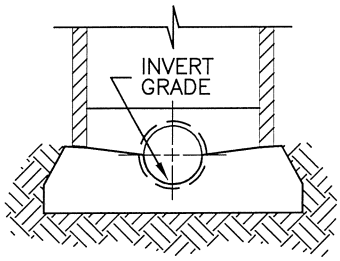
DWG DATE: 12/91		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
9	3/18	ADD COLLAR	APPROVED BY
8	1/18	UPDATE	
7	7/13	UPDATE	
6	4/06	EDIT NOTES	
5	2/03	NAME CHG	
MARK	DATE	REVISION	CITY ENGINEER

4 FT. INSIDE DROP MANHOLE

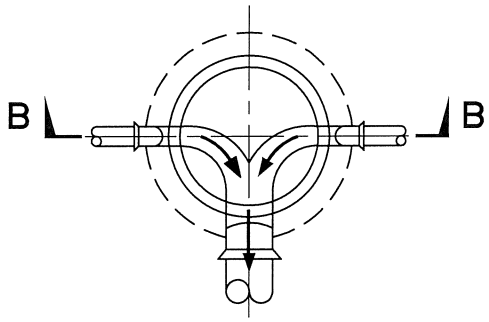
EXISTING MANHOLE ONLY



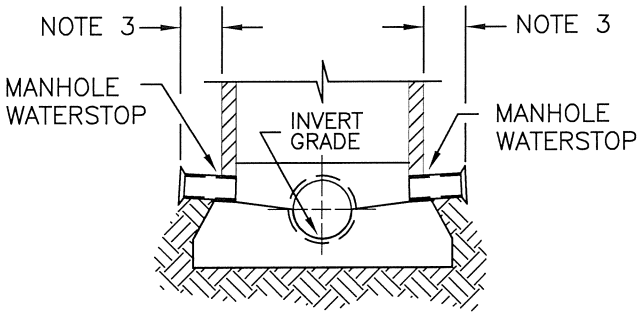
PLAN A



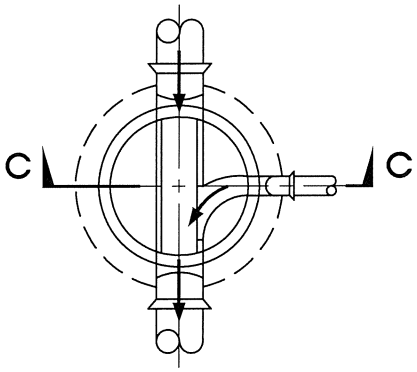
SECTION A–A



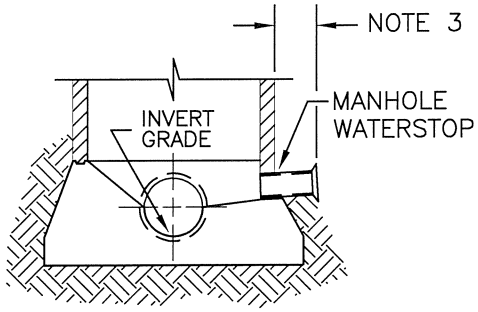
PLAN B



SECTION B–B



PLAN C



SECTION C–C

NOTES:

1. ALL CONCRETE USED IN MANHOLE SHALL BE PER PAGE 100.00.
2. PIPE MAY BE LAID THROUGH A LINE MANHOLE EXCEPT WHEN A GRADE OR LINE CHANGE OCCURS. MINIMUM DROP THROUGH ALL OTHER MANHOLES SHALL BE THE DIFFERENCE IN DIAMETERS OF THE UPSTREAM AND DOWNSTREAM PIPES OR 0.20 FT., WHICHEVER IS GREATER.
3. WHEN CLAY PIPE IS INSTALLED, PIPE SECTION SHALL NOT EXTEND MORE THAN 12" FROM SIDE OF MANHOLE.
4. WHEN ABS OR PVC PIPE IS USED, THE BARREL OF THE PIPE SHALL BE PRE–PRIMED WITH SOLVENT AND SPRINKLED WITH SAND IN ORDER TO PROVIDE A WATERTIGHT SEAL BETWEEN THE PIPE AND CONCRETE. THIS REQUIREMENT IS IN ADDITION TO THE USE OF THE WATERSTOP.
5. PRECAST CONCRETE BASES MANUFACTURED BY COOK CONCRETE PRODUCTS, OR TEICHERT AGGREGATE, OR EQUAL MAY BE USED IN LIEU OF POURED IN–PLACE BASES.

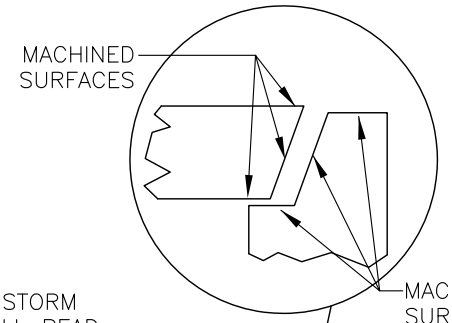
DWG DATE: 1/98		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION	
2 1	1/18 7/13	NOTES UPDATE	APPROVED BY 1/26/18 CITY ENGINEER	MANHOLE BASE DETAIL
MARK	DATE	REVISION		

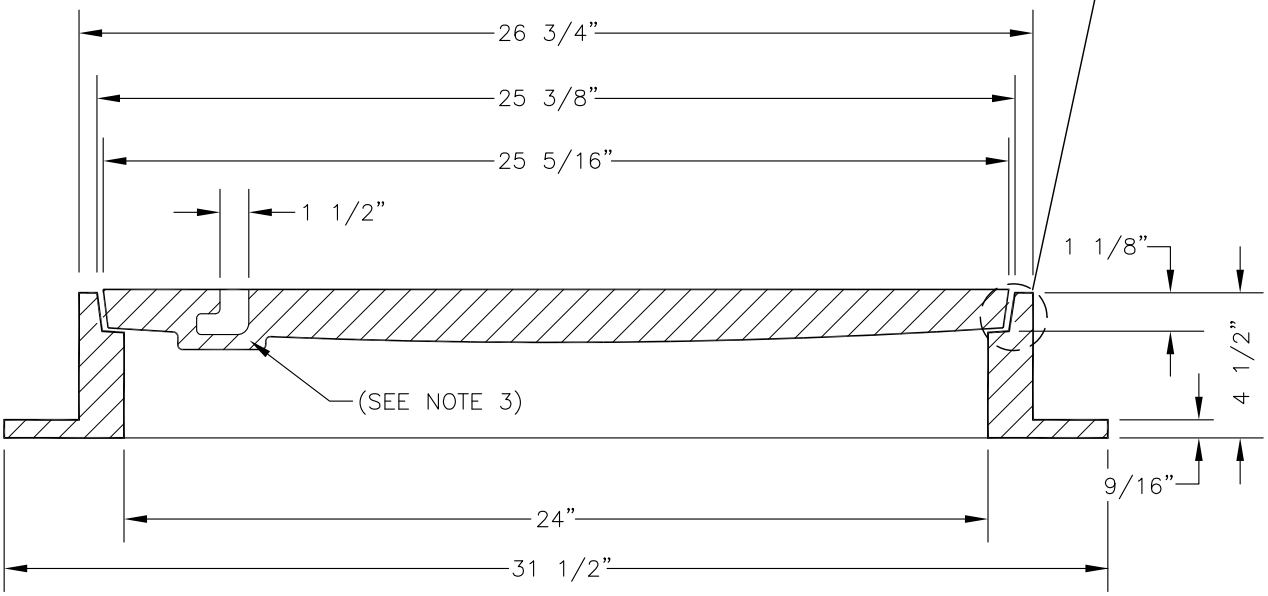
ACCEPTABLE MANUFACTURERS

DOMESTIC MANUFACTURER ONLY
CONTACT CITY OF REDDING
(530) 224-6068

MARKINGS ON ALL STORM DRAIN COVERS SHALL READ "SANITARY SEWER"

TOP OF COVER





COVER SECTION

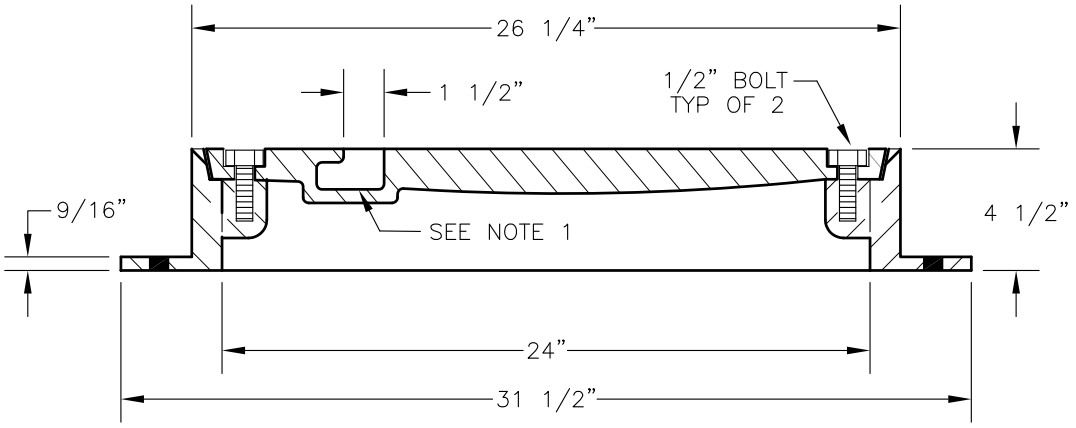
NOTES:
1. FRAME AND COVER FULLY MACHINED ON SURFACES AS SHOWN TO PROVIDE NO-ROCK, NO-STICK FIT.
2. STANDARD COVER MARKINGS AVAILABLE: "SANITARY SEWER". CASTING SHALL BE ORDERED WITH THE APPROPRIATE MARKING.
3. CASTING SHALL BE FURNISHED WITH CLOSED PICKHOLES.
4. ALL PARTS OF ACCEPTABLE ASSEMBLIES SHALL BE INTERCHANGEABLE.

DWG DATE: 1/92		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
8	7/13	UPDATE	APPROVED BY 10/9/13 CITY ENGINEER
7	7/13	EDIT NOTES	24 INCH SEWER MANHOLE COVER ASSEMBLY (STREET TYPE)
6	2/03	DECOR. COVER	
MARK	DATE	REVISION	

ACCEPTABLE MANUFACTURERS

DOMESTIC MANUFACTURER ONLY
CONTACT CITY OF REDDING
(530) 224-6068

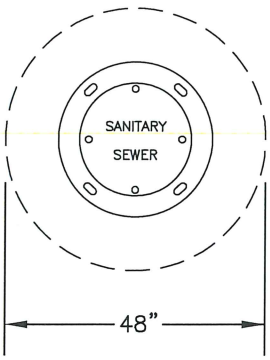
TOP OF COVER

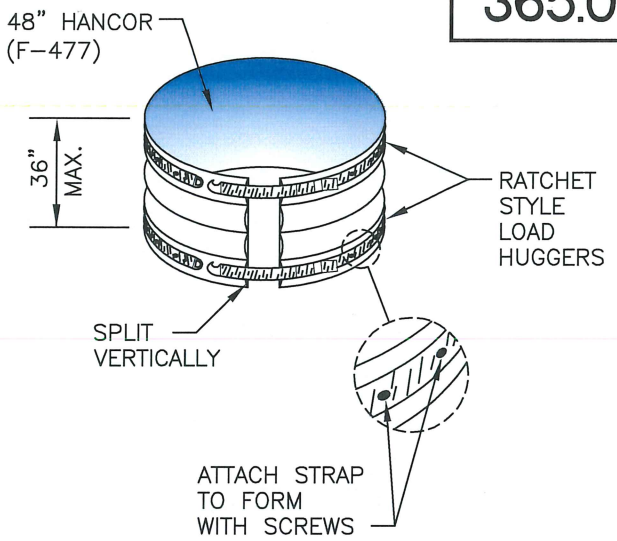


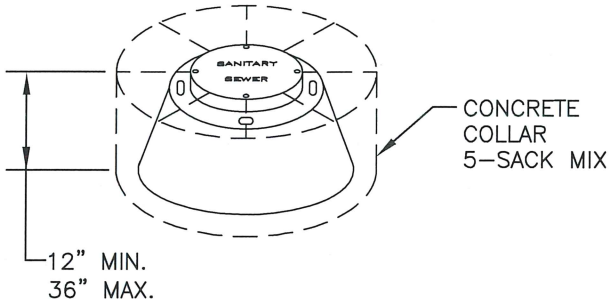
COVER SECTION

NOTES:
1. CASTING SHALL BE FURNISHED WITH CLOSED PICK HOLES.
2. ALL PARTS OF ACCEPTABLE ASSEMBLIES SHALL BE INTERCHANGEABLE.

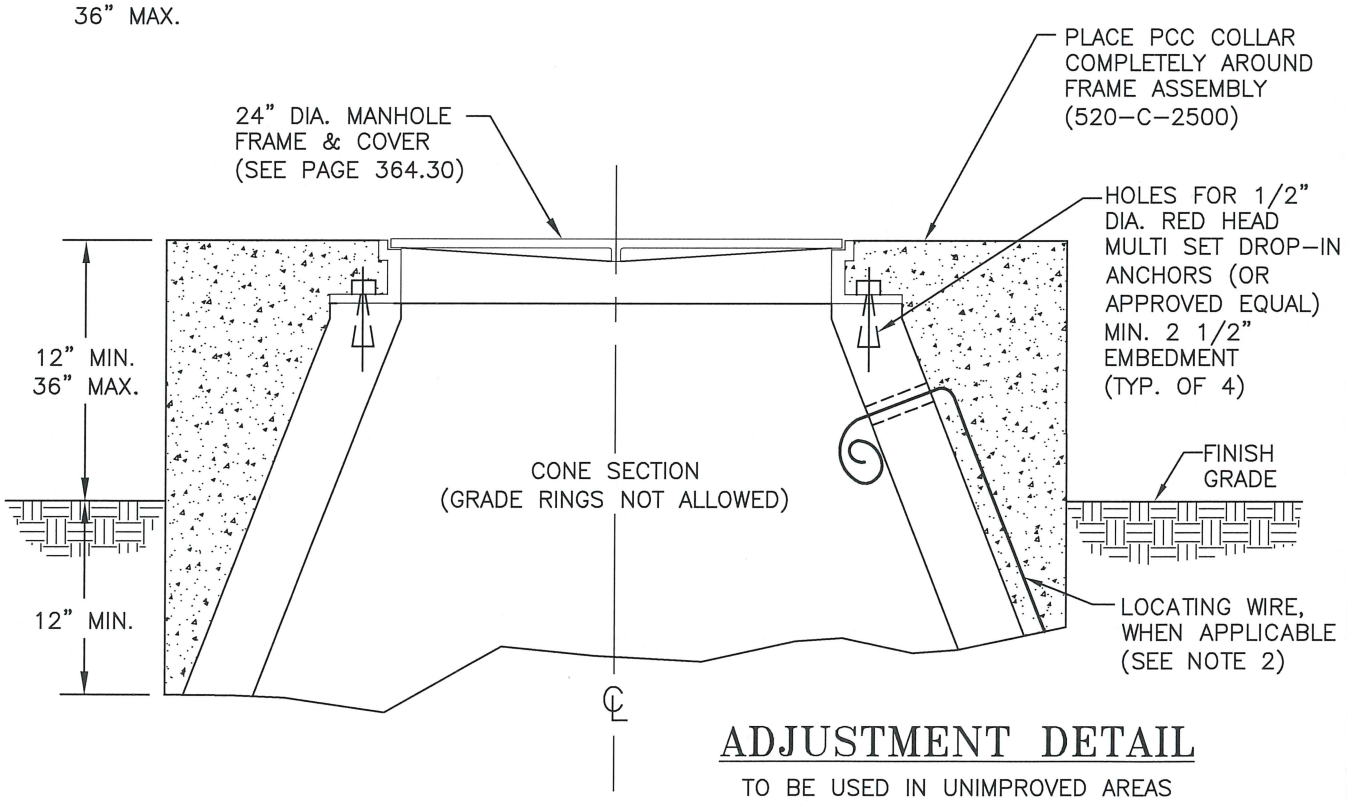
DWG DATE: 1/93		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
4	7/13	UPDATE	APPROVED BY 10/9/13 CITY ENGINEER
3	7/13	EDIT NOTES	SEWER MANHOLE COVER ASSEMBLY- BOLT DOWN
2	2/03	DECOR. COVER	
MARK	DATE	REVISION	







CONCRETE BUNKER FORM



ADJUSTMENT DETAIL

TO BE USED IN UNIMPROVED AREAS
(SHOWING REQUIRED FRAME ASSEMBLY ANCHORAGE)

NOTE:

1. FOR SEWER MANHOLE CONSTRUCTION, SEE PAGE 360.00.
2. WHEN MANHOLE IS PART OF A NON-METALLIC PIPE NETWORK, LOCATING WIRE PER PAGE 608.00 SHALL BE MAINTAINED. CORE 1"ø HOLE THRU MANHOLE AS NECESSARY TO MAINTAIN REQUIREMENT FOR EXCESS WIRE TO BE WITHIN 6"-12" OF THE FINISHED GRADE.

DWG DATE: 4/06		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
2 1	3/18 7/13	12" DIM UPDATE	APPROVED BY 3/20/18 CITY ENGINEER
MARK	DATE	REVISION	SEWER MANHOLE ADJUSTMENT DETAILS -UNIMPROVED AREAS-

REQUIREMENT:

1. SAND AND OIL INTERCEPTORS (ALSO REFERRED TO AS SOIs OR OIL/WATER SEPARATORS) ARE REQUIRED FOR INDUSTRIAL AND COMMERCIAL ESTABLISHMENTS WHERE IT IS NECESSARY TO CAPTURE SOLIDS (SAND, SILT, SEDIMENT, SLUDGE ETC.) AND/OR FLOATABLE MATERIAL (OIL, GREASE ETC.).

2. THIS STANDARD APPLIES TO ALL NEW CONSTRUCTION, TENANT IMPROVEMENTS, REMODELS, AND EXISTING SYSTEMS WHICH ARE IN NEED OF AN UPGRADE.

3. SOIs WILL BE SIZED FROM INFORMATION SUBMITTED BY THE INDUSTRY, INDUSTRIAL WASTE SURVEY INFORMATION, OR BY CITY FIELD INSPECTION DATA.

4. STORMWATER MUST NOT ENTER THE WASH AREA. A ROOF IS REQUIRED OVER OUTDOOR WASH AREAS.

SIZING CRITERIA:

5. PARAMETERS—THE PARAMETERS FOR SIZING SOI UNITS ARE HYDRAULIC LOADING, RETENTION TIME, AND STORAGE FACTOR FOR ONE OR MORE FIXTURES OR INDUSTRIAL APPLICATIONS.

6. SIZING FORMULA—THE SIZE OF THE SOI WILL BE DETERMINED BY USE OF THE FOLLOWING FORMULA:

NUMBER OF UNITS WASHED PER HOUR*	X	WASTE FLOW RATE**	X	RETENTION TIME***	X	STORAGE FACTOR****	=	INTERCEPTOR SIZE (LIQUID CAPACITY)

* NUMBER OF UNITS WASHED PER HOUR (I.E., AUTOS, ENGINES, PARTS, ETC.)

** WASTE FLOW RATE—GALLONS PER UNIT CLEANED (FOR INTERMITTENT USE), OR GALLONS PER HOUR (FOR CONSTANT USE)

*** RETENTION TIME 2.0 HOURS

**** STORAGE FACTORS—VEHICLE/EQUIPMENT/PARTS, ETC. WASHING

A.	SELF SERVICE/PUBLIC	1.5 HOURS
B.	EMPLOYEE OPERATED AUTOMATED/COMMERCIAL	2.0 HOURS
C.	OTHER INDUSTRIAL/COMMERCIAL APPLICATIONS	2.0 HOURS

7. THE MINIMUM SIZE SOI ALLOWED BY THE CITY IS 100 GALLONS.

DWG DATE: 2/03		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
3 2	7/13 2/03	UPDATE REDRAWN	APPROVED BY 10/9/13 CITY ENGINEER
MARK	DATE	REVISION	SAND AND OIL INTERCEPTORS (SOI)

DESIGN:

8. ALL NEW CONSTRUCTION AND UPGRADES SHALL BE CONSTRUCTED TO INCLUDE A SAMPLE MONITORING STATION.

9. THE USE OF ALTERNATE PRETREATMENT SYSTEMS IN CONJUNCTION WITH OR IN LEIU OF AN SOI UNIT MUST BE APPROVED BY THE CITY'S INDUSTRIAL WASTE DIVISION. DESIGN SPECS MUST BE SUBMITTED WITH THE APPLICATION PAPERWORK OR THE PLUMBING PLANS.

10. IF AN EXISTING SOI IS UNDERSIZED AND IS STRUCTURALLY SOUND AND INSTALLED PROPERLY, A BUSINESS OR OWNER MAY INSTALL AN ADDITIONAL SOI IN SERIES WITH THE EXISTING SOI TO SATISFY THE TOTAL SIZE CAPACITY REQUIRED.

11. SANITARY TEES MUST BE INSTALLED AT THE INLET AND OUTLET OF EACH INTERCEPTOR. THE SANITARY TEE SHALL BE INSTALLED SO THE TOP OPENING OF THE SANITARY TEE IS VISIBLE AND ACCESSIBLE FROM THE MANHOLE LIDS.

12. THE SOI SHALL BE INSTALLED AS SHALLOW AS POSSIBLE. THE BOTTOM OF THE SOI SHALL NOT BE GREATER THAN 15 FEET BELOW GRADE TO FACILITATE ROUTINE PUMPING OR EXCEED THE TANK MANUFACTURER'S DESIGN CRITERIA FOR MAXIMUM EARTH COVER (TOP OF TANK TO GRADE).

13. NO MORE THAN 24 INCHES OF GRADE RINGS SHALL BE USED IN AN INTERCEPTOR INSTALLATION. ALL FLEXIBLE JOINT SEALS OF RISERS AND COVER RINGS, AND ALL GROUT OF INTERNAL PLUMBING SHALL BE THE RESPONSIBILITY OF THE OWNER/OPERATOR AND/OR CONTRACTOR. AN ECCENTRIC CONCRETE CONE OR REDUCING TOP (36 INCH TO 24 INCH MANHOLE OR 48 INCH TO 24 INCH MANHOLE) SHALL BE USED IF THE TOP OF THE OGI IS GREATER THAN 24 INCHES BELOW FINISHED GRADE. (SEE CITY OF REDDING DESIGN SPECIFICATION PAGES 360.00, 360.10 AND 612.00.)

14. MANHOLE COVERS FOR SOIs SHALL NOT BE THE BOLT–DOWN TYPE.

15. ALL SOIs SHALL BE PROPERLY INSTALLED AND MAINTAINED. ALL INTERNAL PLUMBING OF PROPER DESIGN AND LENGTH SHALL BE IN PLACE AT ALL TIMES. SOIs ARE REQUIRED TO BE PUMPED WHEN 25% OF THE INTERNAL CAPACITY IS OCCUPIED BY OILS, GREASE AND/OR SOLIDS. PUMPING IS TYPICALLY REQUIRED EVERY 12 MONTHS DEPENDING ON USE. INTERCEPTOR PUMPING IS THE RESPONSIBILITY OF THE BUSINESS OPERATOR UNLESS OTHER AGREEMENTS HAVE BEEN MADE BETWEEN THE BUSINESS OPERATOR AND PROPERTY OWNER OR PROPERTY MANAGER. AT NO TIME IS THE CITY OF REDDING RESPONSIBLE FOR MAINTENANCE OF A PRIVATE SAND AND OIL INTERCEPTOR.

16. GRATED OPENINGS ARE NOT ALLOWED OVER THE SOI. TRENCH DRAINS AND DROP INLETS MUST BE SEPARATE FROM THE SOI TANK.

17. SOIs AND HYDROMECHANICAL SEPARATORS WILL BE INSPECTED BY THE CITY OF REDDING TO ENSURE PROPER INSTALLATION AND MAINTENANCE

18. SLUDGE AND OTHER WASTE HAULING MANIFESTS MUST BE RETAINED FOR A MINIMUM OF 3 YEARS.

REQUIREMENT:

1. OIL AND GREASE INTERCEPTORS (ALSO REFERRED TO AS GRAVITY GREASE INTERCEPTORS, OR OGIs) ARE REQUIRED AT COMMERCIAL AND INDUSTRIAL FOOD AND BEVERAGE FACILITIES WHERE IT IS NECESSARY TO CAPTURE GREASE, OIL AND FOOD SOLIDS BEFORE WASTEWATER ENTERS THE CITY SANITARY SEWER SYSTEM.

2. THIS STANDARD APPLIES TO ALL NEW CONSTRUCTION, TENANT IMPROVEMENTS, REMODELS, AND EXISTING SYSTEMS WHICH ARE IN NEED OF AN UPGRADE. OGIs MUST BE INSTALLED OUTDOORS OR IN A LOCATION OUTSIDE OF THE FOOD PREPARATION AREA.

3. OGIs WILL BE SIZED FROM INFORMATION SUBMITTED ON THE FOOD FACILITY WASTEWATER DISCHARGE SURVEY/APPLICATION 2. SIZING CRITERIA WILL FOLLOW CALIFORNIA PLUMBING CODE CHAPTER 10. GRAVITY GREASE INTERCEPTORS SHALL HAVE A MINIMUM RETENTION TIME OF 30 MINUTES AND BE A MINIMUM SIZE OF 500 GALLONS.

SIZING CRITERIA:

DRAINAGE FIXTURE UNITS (DFUs)	OIL AND GREASE INTERCEPTOR (OGI OR GRAVITY GREASE INTERCEPTOR) IN GALLONS
≤8	500
21	750
35	1000
90	1250
172	1500
216	2000
307	2500
342	3000
428	4000
576	5000
720	7500

4. THE MINIMUM SIZE OGI ALLOWED BY THE CITY IS 500 GALLONS. FOR VERY LARGE FACILITIES, THE SIZE WILL BE ESTABLISHED ON A CASE BY CASE BASIS. FOR OGIs LARGER THAN 3,000 GALLONS, MULTIPLE OGIs SHALL BE INSTALLED IN SERIES TO FACILITATE COMPLETE PUMPING REQUIRED FOR MAINTENANCE (I.E., TWO 2,500 GALLON OGIs MUST BE USED FOR 5,000 GALLON CAPACITY).

DWG DATE: 2/03		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
3 2	7/13 2/03	UPDATE REDRAWN	APPROVED BY 10/9/13 CITY ENGINEER
MARK	DATE	REVISION	OIL AND GREASE INTERCEPTORS (OGI)

DESIGN:

5. ALL NEW CONSTRUCTION AND UPGRADES SHALL BE CONSTRUCTED TO INCLUDE A SAMPLE MONITORING STATION.

6. ALL FOOD WASTES SHOULD BE SCREENED AND DISPOSED IN SOLID WASTE. GARBAGE GRINDERS ARE STRONGLY DISCOURAGED. IF A GARBAGE GRINDER IS INSTALLED, IT MUST BE PLUMBED TO THE GREASE INTERCEPTOR.

7. IF AN EXISTING OGI IS UNDERSIZED AND IS STRUCTURALLY SOUND AND INSTALLED PROPERLY, A BUSINESS OR OWNER MAY INSTALL AN ADDITIONAL OGI IN SERIES WITH THE EXISTING OGI TO SATISFY THE TOTAL CAPACITY REQUIREMENT.

8. SANITARY TEES MUST BE INSTALLED AT THE INLET AND OUTLET OF EACH INTERCEPTOR. THE SANITARY TEE SHALL BE INSTALLED SO THE TOP OPENING OF THE SANITARY TEE IS VISIBLE AND ACCESSIBLE FROM THE MANHOLE LIDS.

9. THE OGI SHALL BE INSTALLED AS SHALLOW AS POSSIBLE. THE BOTTOM OF THE OGI SHALL NOT BE GREATER THAN 15 FEET BELOW GRADE TO FACILITATE ROUTINE PUMPING OR EXCEED THE TANK MANUFACTURER'S DESIGN CRITERIA FOR MAXIMUM EARTH COVER (TOP OF TANK TO GRADE).

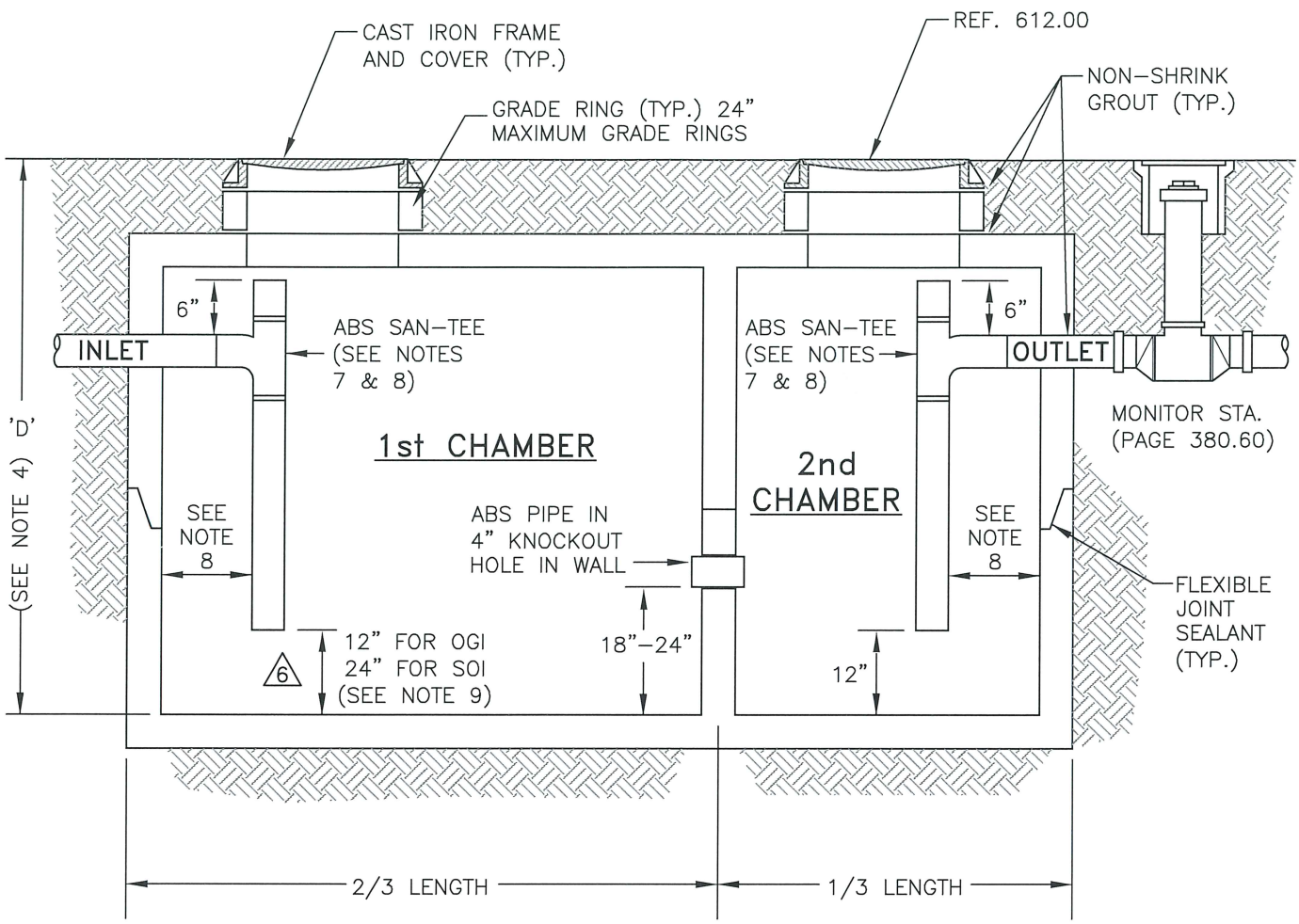
10. NO MORE THAN 24 INCHES OF GRADE RINGS SHALL BE USED IN AN INTERCEPTOR INSTALLATION. ALL FLEXIBLE JOINT SEALS OF RISERS AND COVER RINGS, AND ALL GROUT OF INTERNAL PLUMBING SHALL BE THE RESPONSIBLITY OF THE OWNER/OPERATOR AND/OR CONTRACTOR. AN ECCENTRIC CONCRETE CONE OR REDUCING TOP (36 INCH TO 24 INCH MANHOLE OR 48 INCH TO 24 INCH MANHOLE) SHALL BE USED IF THE TOP OF THE OGI IS GREATER THAN 24 INCHES BELOW FINISHED GRADE. (SEE CITY OF REDDING DESIGN SPECIFICATION PAGES 360.00, 360.10 AND 612.00.)

11. MANHOLE COVERS FOR OGIs SHALL NOT BE THE BOLT–DOWN TYPE.

12. ALL OGIs SHALL BE PROPERLY INSTALLED AND MAINTAINED. ALL INTERNAL PLUMBING OF PROPER DESIGN AND LENGTH SHALL BE IN PLACE AT ALL TIMES. OGIs ARE REQUIRED TO BE PUMPED WHEN 25% OF THE INTERNAL CPACITY IS OCCUPIED BY OILS, GREASE AND/OR SOLIDS. PUMPING IS TYPICALLY REQUIRED EVERY 3 MONTHS DEPENDING ON USE. INTERCEPTOR PUMPING IS THE RESPONSIBLITY OF THE BUSINESS OPERATOR UNLESS OTHER AGREEMENTS HAVE BEEN MADE BETWEEN THE BUSINESS OPERATOR AND PROPERTY OWNER OR PROPERTY MANAGER. AT NO TIME IS THE CITY OF REDDING RESPONSIBLE FOR MAINTENANCE OF A PRIVATE OIL AND GREASE INTERCEPTOR.

13. HYRDOMECHANICAL GREASE INTERCEPTORS (FORMERLY REFERRED TO AS GREASE TRAPS) OR OTHER PRE–MANUFACTURED DEVICES WILL ONLY BE ALLOWED WHERE SPACE OR OTHER DESIGN CONSTRAINTS PROHIBIT THE INSTALLATION OF A GRAVITY GREASE INTERCEPTOR. DESIGN SPECS MUST BE SUBMITTED WITH THE APPLICATION PAPERWORK OR THE PLUMBING PLANS.

14. OGIs AND HYDROMECHANICAL GREASE INTERCEPTORS WILL BE INSPECTED BY THE CITY OF REDDING TO ENSURE PROPER INSTALLATION AND MAINTENANCE.



NOTES:

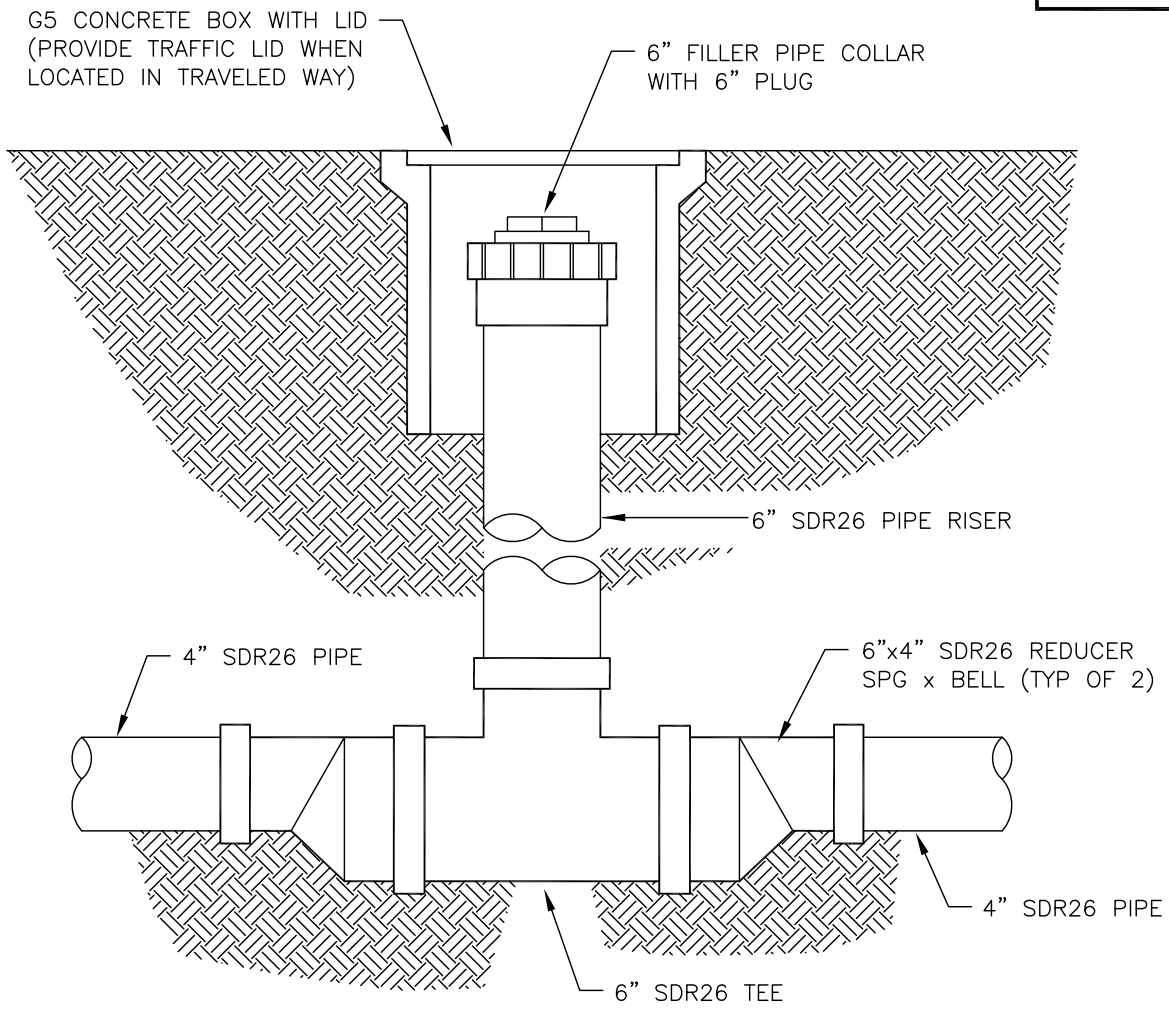
1. TANK SHALL HAVE A MINIMUM WALL THICKNESS OF 3".
2. SYSTEMS THAT MAY BE EXPOSED TO TRAFFIC AND/OR PARKING ON OR NEAR THE TANKS OR THE ACCESS COVERS SHALL BE DESIGNED TO AASHTO HS20-44 LOADING.
3. BACKFILL SHALL BE CLASS 'A' IN STREET R/W AND CLASS 'B' IN ALL OTHER LOCATIONS PER PAGE 610.00 AND PER TANK MANUFACTURER'S BEDDING RECOMMENDATIONS.
4. DISTANCE BETWEEN GRADE AND BOTTOM OF TANK 'D' SHALL NOT EXCEED 15 FEET OR EXCEED THE TANK MANUFACTURER'S CRITERIA FOR MAXIMUM EARTH COVER (TOP OF TANK TO GRADE).
5. ECCENTRIC MANHOLE CONE OR REDUCING TOP (36" TO 24" OR 48" TO 24") SHALL BE USED WHEN THE TOP OF TANK TO GRADE IS GREATER THAN 24" (SEE PAGES 360.00 AND 360.10).
6. IF ECCENTRIC CONES ARE INSTALLED, THE VERTICAL WALL SHALL BE OVER THE INLET AND OUTLET ENDS OF THE TANK.
7. INLET AND OUTLET PLUMBING SHALL BE SECURED WITH NON-SHRINK GROUT. SAN-TEES SHALL BE GLUED TO THE INLET AND OUTLET PLUMBING.
8. ABS SAN-TEES SHALL BE ALIGNED WITH EDGE OF ACCESS COVER TO ALLOW CLEANING.
9. OIL AND GREASE INTERCEPTOR (OGI) SHALL HAVE 12" CLEARANCE BELOW INLET SAN-TEE

△6 SAND AND OIL INTERCEPTOR (SOI) SHALL HAVE 24" CLEARANCE BELOW INLET SAN-TEE

DWG DATE: 6/92		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
6	3/18	ADD NOTE	APPROVED BY
5	8/16	EDIT NOTE	
4	7/13	REVISE NOTES	3/19/18
3	2/03	NEW COM. STD	
MARK	DATE	REVISION	CITY ENGINEER

SAND & OIL AND OIL & GREASE INTERCEPTOR

SOI AND OGI



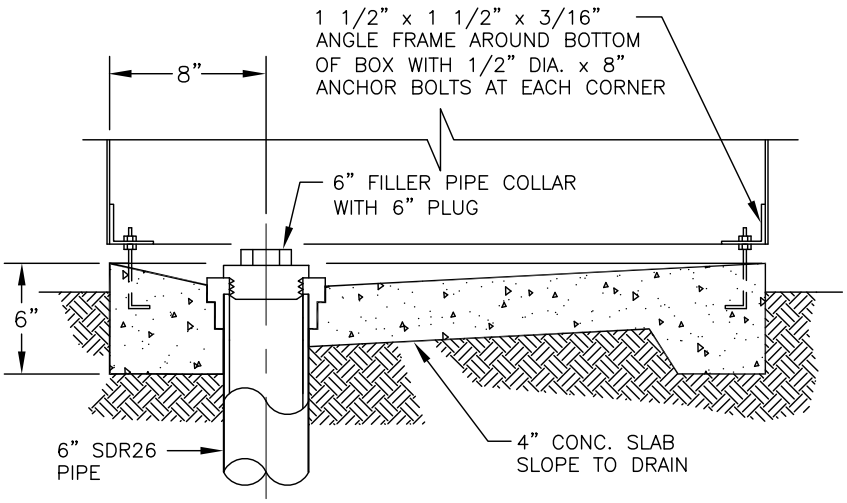
PARTS LIST

6" SDR26 TEE	1 EA
6"x4" SDR26 REDUCER (SPG x BELL)	2 EA
6" FILLER PIPE COLLAR	1 EA
6" PLUG	1 EA
G5 CONCRETE BOX	1 EA
G5 SEWER LID (IF REQUIRED)	1 EA
4" ABS COUPLING	1 EA
4" ABS x SDR BUSHING	1 EA

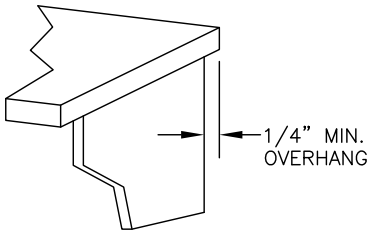
NOTE:

1. MONITOR STATION MUST BE INSTALLED LEVEL.

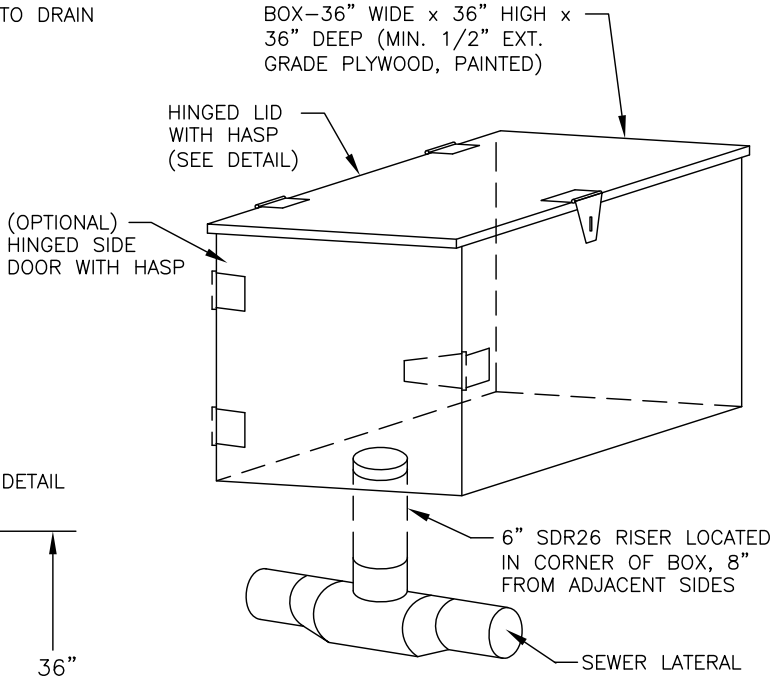
DWG DATE: 7/92		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
5 4	7/13 4/06	UPDATE REV. PARTS	APPROVED BY 10/9/13 CITY ENGINEER
MARK	DATE	REVISION	INTERCEPTOR MONITOR STATION



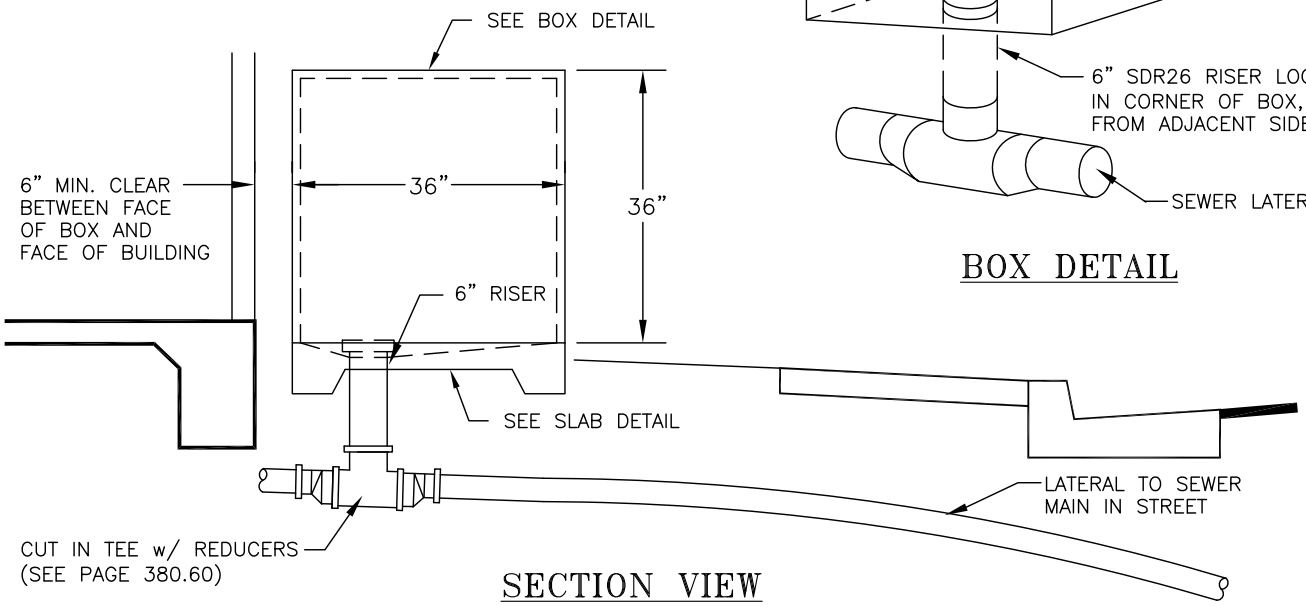
SLAB DETAIL



LID DETAIL



BOX DETAIL



SECTION VIEW

NOTE:

1. BOX LOCATED ON PRIVATE PROPERTY SHALL BE IN AN AREA THAT ALLOWS 24 HR. ACCESS BY CITY OF REDDING PERSONNEL

DWG DATE: 3/88		SCALE: NTS	CITY OF REDDING • PUBLIC WORKS DEPARTMENT • ENGINEERING DIVISION
4 3	7/13 4/06	UPDATE REV. PARTS	APPROVED BY 10/9/13 CITY ENGINEER
MARK	DATE	REVISION	ABOVE GRADE WASTEWATER MONITORING STATION

APPENDIX D

REVISION RECORDS

Burney Water District
Sewer System Management Plan (SSMP)
Revision Record

Section Revised	Brief Description of Changes	Date	Revised By	Approved by BWD Board of Directors On
SSMP Developed	n/a	5/1/2011	BWD	
SSMP Requirement Background/Document Organization	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
District Service Area and Sewer System	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 2: Organization	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 3: Legal Authority	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 4: Operations and Maintenance	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 5: Design and Performance Provision	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 6: Emergency Response Plan	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 7: Fats, Oils, and Grease Control Program	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 8: System Evaluation and Capacity Assurance Plan	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 9: Monitoring, Measurements, and Program Modifications	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Section 10: SSMP Audits	Entire Section Revised	02/2017	Pace Engineering Job #306.29.200	
Appendix A: Names & Contact Information of Current Staff	Added Appendix A	02/2017	Pace Engineering Job #306.29.200	
Appendix B: Sanitary Sewer Overflow Emergency Response Plan	SSOERP Developed	02/2017	Pace Engineering Job #306.29.200	
Appendix C: City of Redding Std Specification and Details for Design and Construction of WW Collection Facilities	Added Appendix C	02/2017	Pace Engineering Job #306.29.200	
Appendix D: Burney Water District Confined Space Program	Added Appendix D	02/2017	Pace Engineering Job #306.29.200	
Appendix E: Burney Water District Occupational IIPP	Added Appendix E	02/2017	Pace Engineering Job #306.29.200	
Appendix F: SSMP Revision Record	Added Appendix F	02/2017	Pace Engineering Job #306.29.200	
Statewide General Waste Discharge Requirements (WDRs) Order No. 2022-0103-DWQ was issued December 2022				
Appendix D: Burney Water District Confined Space Program	Removed Appendix D	01/2023	BWD DZ	
Appendix E: Burney Water District Occupational IIPP	Removed Appendix E	01/2023	BWD DZ	
Appendix F: SSMP Revision Record	Changed Appendix F to D	01/2023	BWD DZ	
Appendix B: Sanitary Sewer Overflow Emergency Response Plan	Added APPENDIX C: Water Quality Sampling Guidelines for Spills Greater Than 50,000 Gallons	01/2023	BWD DZ	
Appendix B: Sanitary Sewer Overflow Emergency Response Plan	Updated Table 1 - Chain of Communication	01/2023	BWD and PACE Engineering	
Appendix B: Sanitary Sewer Overflow Emergency Response Plan	Updated SSO Reporting Requirements Flow Chart to include 50,000 Gallon Spill and Technical Report	01/2023	BWD and PACE Engineering	
Update SSMP	Reviewed and Revised Document as needed	01/2023	BWD and PACE Engineering	
Appendix B: Sanitary Sewer Overflow Emergency Response Plan	Revised SSO Reporting Form	01/2023	BWD DZ	

Burney Water District
Sewer System Management Plan (SSMP)
Revision Record

Section Revised	Brief Description of Changes	Date	Revised By	Approved by BWD Board of Directors On
Element 1: Goals and Introduction	Combined Background/Document Organization, System Overview and Goals into one section; Updated per WDRs	05/2023	Pace Engineering Job #306.44.400	
Element 2: Organization	Minor updates to include Legally Responsible Official; Updated Categories of spills from 3 to 4; Updated notification and reporting requirements	05/2023	Pace Engineering Job #306.44.400	
Element 3: Legal Authority	Added 1 sentence on page 14	05/2023	Pace Engineering Job #306.44.400	
Element 4: Operations and Maintenance	Removed Condition Assessment discussion; Added discussion about 2016 CCTV efforts and Collection System Improvement Project	05/2023	Pace Engineering Job #306.44.400	
Element 5: Design and Performance Provision	Updated subsection numbers and headings	05/2023	Pace Engineering Job #306.44.400	
Element 6: Spill Emergency Response Plan	Removed all discussion regarding the District's Sanitary Sewer Overflow Emergency Response Plan and created a standalone Spill Emergency Response Plan included in Appendix B	05/2023	Pace Engineering Job #306.44.400	
Element 7: Sewer Pipe Blockage Control Program	Updated from a Fats, Oils, and Grease Control Program to a Sewer Pipe Blockage Control Program	05/2023	Pace Engineering Job #306.44.400	
Element 8: System Evaluation, Capacity Assurance, and Capital Improvements	Incorporated System Evaluation and Condition Assessment from other Elements into Element 8. Revised per WDRs	05/2023	Pace Engineering Job #306.44.400	
Element 9: Monitoring, Measurements, and Program Modifications	Updated subsection numbers per WDRs	05/2023	Pace Engineering Job #306.44.400	
Element 10: SSMP Audits	Updated audit requirements per WDRs	05/2023	Pace Engineering Job #306.44.400	
Element 11: Communication Plan	Updated to include new regulatory requirements per WDRs	05/2023	Pace Engineering Job #306.44.400	
Appendix A: Names & Contact Information of Current Staff	Updated Names and Contact Information of current staff	05/2023	Pace Engineering Job #306.29.200	
Appendix B: Spill Emergency Response Plan	Updated the Sanitary Sewer Overflow Emergency Response Plan to a Spill Emergency Response Plan per WDRs	05/2023	Pace Engineering Job #306.44.400	

APPENDIX E

COLLECTION SYSTEM PROBLEM AREAS

SEWER SYSTEM MANAGEMENT PLAN - APPENDIX E
BURNEY WATER DISTRICT
WASTEWATER COLLECTION AND TREATMENT IMPROVEMENT PROJECT
2017 PIPELINE CCTV INSPECTION RESULTS

Pipe ID	Street	Upstream MH	Downstream MH	Structural Quick Rating	O&M Quick Rating	Overall Pipe Rating	Overall Pipe Rating Index	Comments	Improvement Needed	Type	LF or How many spot repairs	Pipe Type	Pipe Size	Grease Build up	Date CCTV	Month/Year Repaired	Repaired By:
51	Easement	98	96	5100	5100	10.00	5.00	96 Checked Weekly for backups - From USMH: 20% water level 74'- 86' 223'-04"-225', minor offset joint 123'02", 220'01", 223'10", 287'06", 398'06" Minor root from top 349'08" Root Ball 455'07" Grease Build-up throughout pipe; From DSMH16'11" Pipe Broken, Root ball	Immediate	ALL PIPE	472.6	VCP	6"	Yes	8/30/2016	10/22	RTA
171	Alley	68	67	5100	0000	5.00	5.00	From USMH: Lateral filled with grease 41'02", Major offset PVC joint 52'07", PVC from 52'07" to 58', Major Offset PVC joint 58', Lateral offset 99'05", Boulder/Roots broken into pipe at 112'01" Camera couldn't fit around; From DSMH: Sag in pipe Offset Joint 60' Boulder 66'01"	Immediate	ALL PIPE	177.7	VCP/PVC	6"	Yes	8/22/2016	7/22	RTA
77	Elm St	113	112	0000	5100	5.00	5.00	From DSMH Little to no flow in pipe, Fist size rock in pipe 164'07" (Pipe is not broken), Root Intrusion just past lateral (169') 169'01" -170'08"	Immediate	SPOT	1	VCP	6"		8/9/2016	10/22	RTA
109	Poplar St	124	123A	0000	5100	5.00	5.00	From DSMH Root ball fills entire pipe 67'10"	Immediate	SPOT	1	VCP	6"		8/15/2016	10/22	RTA
697	Sapphire Rd	250	479	0000	5100	5.00	5.00	30% -50% water level 8'-15' 273'-300', 360'-end Root Intrusion 233'06" fills 25% of pipe, 473'04" fills 25% of pipe	Immediate	SPOT	2	ABSCP	8"		7/28/2016		
583	Easement	190-1	190	0000	5100	5.00	5.00	Grease Build-up filling 90% of pipe 8'02", Root intrusion from top half 8'05", Water Level 20% 26'- 32', Major Offset PVC joint 55'06" (end PVC @58'08"), 210'04" 50% water level 55'-60', 122'-144', 210'-214', slight right @ 350'	Immediate	SOME PIPE	90.0	VCP/PVC	6"	Yes	7/20/2016	11/22	RTA
173	Timber Dr	51E	51D	0000	5100	5.00	5.00	From DSMH Little to no flow in pipe, Rock in pipe 300'(PIPE IS NOT BROKEN), Root ball fills entire pipe 357' 08"	Immediate	SPOT	1	VCP	6"		8/11/2016	10/22	RTA
113	Holly Ave	52B	52A	0000	5100	5.00	5.00	From DSMH Rag Pile 47', 85', 98', Root ball fills entire pipe 205' 10"	Immediate	SPOT	1	VCP	6"		8/15/2016	10/22	RTA
251	Alley	72D	72C	0000	5100	5.00	5.00	From DSMH Root Ball fills entire pipe 23'02"	Immediate	SPOT	1	VCP	6"		8/18/2016		
709	Galena Cir	249	479	4G00	4B00	244.00	4.00	From DSMH: Water level 50%-100% 11'-241'	Future			ABSCP	6"		7/25/2016		
715	Bartel St	246	400	0000	4900	36.00	4.00	From USMH Water level 50% - 100% 193'-294', minor Root intrusion 359'07", Lateral half filled with blockage 400'08"	Future			ABSCP	8"		7/22/2016		
601	Easement	185	184	4800	0000	32.00	4.00	From USMH Water Level 30% -50% Off and On throughout entire pipe, Full 374' - 414', 533'-end	Future			VCP	10"		8/24/2016		
343	Marquette St	210	141	0000	4700	28.00	4.00	From DSMH Water Level Full Start - 40', Looks like Soap Piles 23'- 40' 82'-87', major offset joint 70'09", Rag Build up 238' Water Level 30% -50% 319'- end	Future			VCP	6"		8/5/2016		
293	Parking Lot	211	136	0000	4400	16.00	4.00	From USMH: Grease dangling from top of pipe 60'05"-64' Water level 30% to full 109'-end of video (177'), Couldn't finish CCTV due to possible collapsed Pipe can't tell by video	Investigate More			VCP	8"	Yes	8/30/2016		
153	Yard	101	100	5131	0000	8.00	4.00	From USMH: Lateral filled with conc & offset 19'08", lateral offset 44'10", major offset joint 106'02" Water level 50% 106'02"-111', water level 20% 136'-156'. Water level 50% 181'-187", Major grease build up on bottom of pipe 187', root intrusion around lateral 208'10",	Future			VCP	6"	Yes	8/16/2016		
585	Main HWY 299	192	190	0000	4200	8.00	4.00	From USMH: Stick coming out of Lateral across dia. of pipe, camera cannot get around. From DSMH: Minor Grease build up throughout pipe, Water Level 50% start - 23' 160'-205', 50%-Full 280'-306' Major Grease Build up 450', Stick through Lateral 520'10"	Future			VCP	6"	Yes	7/29/2016	5/23	RTA
663	Bailey Ave	214	402	4200	0000	8.00	4.00	From DSMH: Water Level 30% 25'-35', 42'-93', 50% 126'-227' 30% 227'-end	Future			VCP	8"		7/27/2016		
689	Alley	261	479	3100	5100	8.00	4.00	261 Checked Weekly for backups - From USMH: Root Intrusion from bottom of Pipe 28', Water Level 30-50% 44'-156', Lateral Lined with Grease 86'04", 88'02", offset joint 156' Many Piles of roots throughout bottom of pipe, can't tell if loose in pipe or if still connected; Pipe broken from root ball from top right side of pipe 263'06", Rag stuck in lateral 305'02", Offset Joint 367' Offset Joint with root intrusion 370'02", Root intrusion in lateral 370'06", Top of Pipe broken 384'07"	Immediate	ALL PIPE	427.2	ABSCP	8"		7/27/2016	8/22	RTA
31	Tamarack Ave	92F	92E	0000	4200	8.00	4.00	From DSMH: Water level 30-50% 62'-122', PVC Pipe 179'-182', Major offset joint 182', Water level 30% 177' - 200', 205'-245', water level 50%-full 330' - 360'	Immediate	SPOT	1	VCP	6"		8/30/2016		
85	Cedar St	111	110	0000	4100	4.00	4.00	From DSMH: Root ball intrusion from top of pipe fill 3/4 of pipe 359'06", rag pile 366'06" (1.5' from USMH)	Immediate	SPOT	1	VCP	6"		8/10/2016	9/22	RTA
695	Sapphire Rd	256	250	0000	4100	4.00	4.00	From USMH: Rags caught on joint 40'08", water level 30% - full 151'-233' , Root intrusion from top left 230'11",	Immediate	SPOT	1	PVC	6"		7/14/2016		
453	Cypress Ave	415	29	0000	4100	4.00	4.00	From DSMH: Obstruction in pipe joint 24'06" Camera could not get around, no video from reverse.	Immediate	SPOT	1	VCP	6"		8/3/2016	7/22	RTA
	Maple Leaf St	533	225	0000	4100	4.00	4.00	From USMH: Root intrusion fill lateral 298'06", water level 30% 397'-end Grease build up in MH 225?	Immediate	SPOT	1	VCP	6"		7/29/2016	11/22	RTA
647	Burney Ct	202A	190B	0000	4100	4.00	4.00	From DSMH: Water level 30%-full 0'-111', 144'-168', 191'-209', Root ball top 3/4 of pipe 265'07"	Immediate	SPOT	1	VCP	6"		7/20/2016	11/22	RTA
497	Serpentine Ln	434	262	4G31	0000	167.00	3.98	262 Checked Weekly for backups - From USMH: Water level 30-50% 0'-50', Grease build-up in lateral 170'07", minor Grease build-up through out pipe, Water level 50% 250'-258', 289'-340', 369'- 386' 399'-408' Significant grease build-up 374', offset joint 411'10"	Future			ABSCP	6"	Yes	7/22/2016		
615	Blue Bird Ln	184	6	0000	4711	29.00	3.63	From USMH: Water level 30% 0'- 122' 152'-163' 215'-291', Grease build-up starts 52', lateral filled with grease 117'08" minor Root intrusion from top 119', Water Level 30-50% 332'- 396', 407'-460', water level 50%-full (large amount of floatables, not sure if grease or rags) 490'-588', root intrusion from top left @ pipe/MH joint 608'02"	Future			VCP	12"	Yes	8/31/2016	11/22	RTA
73	Easement	89A	88A	3300	4131	16.00	3.20	From USMH: Water level 30% 4'- 5' 54'-62' 212'-230'-, Root ball intrusion top half of pipe 4'11", water level 30-50% 103'-133' 306'-344', Root intrusion through joint/stick 323'04" (appears to be cleared out by camera) Water level 30-50% (think due to stick being pushed through pipe by camera) 403-478'	Immediate	SPOT	1	VCP	6"		8/10/2016	11/22	RTA
201	Parking Lot	82A	83	3B00	4711	86.00	3.19	82A Checked Weekly for backups - From USMH: Water level 50%-Full 35'-122' ,minor Root intrusion at joint 128', Water level 30% 278'-299' 342'-end (off & on), minor grease build up in lateral 377'11"	Future			VCP	8"		8/17/2016	11/22	RTA
275	Ontario Ave	37	36	3400	4131	19.00	3.17	From USMH: Root Ball fill pipe 126'08", root ball through joint 353'04", water level 50% 330'- 362'	Immediate	SPOT	2	VCP	12"		8/25/2016	11/22	RTA
417	Easement	152A	152	4A13	3111	47.00	3.13	From USMH: Water level 30-50% 0'-93' 189'-272' 347'-end, Pipe cracked Circumferential 24', 264'02" minor root intrusion through joint/crack pipe 28', root intrusion through joint 99'06", root intrusion around lateral 181'01",	Immediate	SPOT	4	VCP	12"		8/31/2016		
465	Hudson St	26A	26	513O	0000	257.00	3.02	From USMH: Little to no flow all of pipe, broken pipe soil exposed 39', cracked pipe 12o'clock to 6 o'clock 39' - 53'11", 68'04"- 70'09" 73'02" - 75'10", 85'06"- 87'01", 110'07"- 112', 131'-132', 143'06"-145' , crack in pipe 63'05", 82'05", 116'11", 164'01", 165'08", possible offset joint 241'04", lateral filled with roots 276'07", roots in lateral 298'05" (lateral has a bend, roots before bend, stop at bend)	Immediate	MOST PIPE	300	VCP	6"		8/3/2016		
611	Blue Bird Ln	184B	184A	3D00	0000	75.00	3.00	184A Checked Weekly for backups - From DSMH: Water Level 30-50% 0'-56' 74'- 107' 132'-152' 217'07"-251' 382'-405', Full 56'- 74', Root intrusion 73'06", pipe material change VCP to Conc 107'06", conc to VCP 217', root intrusion in incoming pipe @ 222'07", minor root intrusion @ joint 371'05',	Future			VCP/Conc	6"		8/31/2016		
565	Cascade Ave	197	196	3A00	0000	42.00	3.00	From USMH: Water level 30-50% 14'-82', PVC 184'08"-187',	Future			VCP	6"		8/23/2016		
517	Easement	64	63A	3A00	0000	39.00	3.00	From DSMH: Lateral offset 33'02", 75'08", 132'06", Pipe material change vcp to PVC 213'05", PVC to vcp 220', water level 30% to full 273'- end	Future			VCP/PVC/Conc	8"		8/23/2016		
549	Roff Way	275	274	3A00	0000	39.00	3.00	From DSMH: Water Level 30% 7'-23', water level 50% 42'-62', 175'-238',	Future			ABSCP	6"		8/23/2016		
127	Alley	99A	99	3A00	0000	39.00	3.00	From DSMH: Water Level 30-50% all of pipe	Future			VCP	8"		8/17/2016		
455	Cypress Ave	29	28	3A00	0000	36.00	3.00	From USMH: Water level root around lateral 118'00", root intrusion around capped lateral 303'05"	Future			VCP	6"		8/3/2016		
273	Michigan St	39	38	3600	0000	18.00	3.00	From DSMH: Water level 50% to full 44'-70', water level 30% 97'-108' 294'-329', **Root Ball fill entire pipe 484'01" @ MH 39= Cleanout**	Future			VCP	6"		8/18/2016		
355	Marquette St	141	19	3500	0000	15.00	3.00	From USMH: Water level 30% 5'-16', 26'-34', 96'-116', 130'-204', water level 30-50% 237'-274', offset joint 327'07" & 332'04" (water level 30% in segment)	Immediate	SPOT	1	VCP	8"		8/5/2016		
33	Tamarack Ave	92E	92G	5133	1100	15.00	3.00	From USMH: Root intrusion pipe offset & Broken soil visible 5'06", water level 30% 26'-58', minor root intrusion at joint 81'07", water level 30-50% 159'-184', root intrusion @ joint 326'08", minor root intrusion from top of pipe 360'04"	Immediate	SPOT	2	VCP	6"		8/30/2016		
365	Hudson St	24	23	3400	0000	12.00	3.00	From USMH: Water level 30-50% 22'-46', 77'-81', 222'-234', 293'-302',	Future			VCP	8"		8/3/2016		
499	Serpentine Ln	430	432	3300	0000	9.00	3.00	From DSMH: Flow very slow-rag buildup 0', water level 50%-75% 5'06"-16', No water @ MH 430	Future			ABSCP	6"		7/22/2016		
	Serpentine Ln	432	434	3300	0000	9.00	3.00	From USMH: Water level 50% to full 10'-40', 278'-289',	Future			ABSCP	6"		7/22/2016		
161	Easement	85	82A	0000	3200	6.00	3.00	82A Checked Weekly for backups - From DSMH: Root intrusion @ joint 4'11", water level 30% 28'-35' water level 30-50% 89'-end, large root intrusion 103'06"	Immediate	SPOT	2	VCP	8"		8/17/2016	11/22	RTA
181	Easement	123	122	0000	5111	6.00	3.00	From DSMH: Root intrusion @ joint 193'08", Root ball fill pipe 258'-262'	Immediate	SPOT	2	VCP	6"		8/16/2016	10/22	RTA
177	Maple St	131	51	0000	5111	6.00	3.00	From DSMH: Root ball/intrusion 0', root ball fill pipe 281'04" (End of video)	Immediate	SPOT	2	VCP	6"		8/15/2016	10/22	RTA
425	Ash Ave	23A	152B	3200	0000	6.00	3.00	Water level 30% due to grease build up- looked like camera broke up the build up	Future			VCP	10"		8/9/2016		
469	Cypress Ave	28	27	3100	0000	3.00	3.00	From USMH Pipe cracked 6 o'clock to 12 o'clock 18'11"-19'5", root intrusion around lateral 97'05"	Immediate	SPOT	1	VCP	8"		8/3/2016		
277	Ontario Ave	36	35	0000	3100	3.00	3.00	From USMH: Root Ball Intrusion 2 o'clock 16'04" @ lateral	Immediate	SPOT	1	VCP	12"		8/25/2016	11/22	RTA
331	Mackinac St	133	132	0000	3100	3.00	3.00	From DSMH: Water level 30-50% 6'-60', grease build-up at joint 12 o'clock to 4 o'clock 58'01", grease build-up along "top edges" of water minimal	Future			VCP	6"	Yes	8/11/2016		
471	Marquette St	147	146	0000	3100	3.00	3.00	From DSMH: Root intrusion @ joint 266'02" root ball @ C/O 147	Immediate	SPOT	1	VCP	8"		7/28/2016	11/22	RTA
13	Park Ave	175	173	0000	3100	3.00	3.00	From USMH: Root intrusion through lateral 150'01", minor sags off & on through pipe, water level doesn't go above 30%	Future			VCP	8"		7/15/2016	12/22	RTA
413	Ash Ave	152C	152B	0000	3100	3.00	3.00	From USMH: Root intrusion fill top 1/2 of pipe, pipe broken 100'06"	Immediate	SPOT	1	VCP	6"		7/27/2016	10/22	RTA
613	Blue Bird Ln	184A	184	3100	0000	3.00	3.00	184A Checked Weekly for backups - From DSMH: Water level 30% 4'-30' 200'-215', root intrusion around lateral 16'04",	Future			VCP	6"		8/24/2016		
	Commerce Way	223A	223	0000	3100	3.00	3.00	From USMH: Root Intrusion with grease buildup 7'06", grease build-up throughout pipe, minor offset joint 105'07" 143'	Immediate	SPOT	3	VCP	8"	Yes	7/19/2016	11/22	RTA
243	Lassen St	77A	73	3100	0000	3.00	3.00	From USMH: Pipe broken on bottom 328'02" (right before entering MH 73)	Immediate	SPOT	1	VCP	6"		8/18/2016	11/22	RTA
415	Easement	152B	152A	3B21	0000	50.00	2.94	From USMH: Water Level 30% 35'-45', root intrusion around lateral 105'08", water level 50%-full 117'- end, root intrusion/pipe broken 203'07"	Immediate	SPOT	1	VCP	12"		8/9/2016		
35	Easement	92G	92D	3B00	1100	55.00	2.89	From USMH: Water level 30-50% 67'-96', water level 30% 136'-146' 165'-173' 203'-231' 246'-286' , root intrusion at joint 316'10"	Future			VCP	6"		8/30/2016		
597	Cascade Ave	193	186	3A21	5121	40.00	2.86	From DSMH: Water level 50% 98'- 156', root intrusion/pipe cracked 141'05" minor grease build-up throughout pipe, root intrusion @ joint 425'06", root ball fills pipe 503'02" (@ CO 193)	Immediate	SPOT	1	VCP	6"		8/23/2016		
37	Easement	92D	92C	3A00	1100	37.00	2.85	From USMH: Water Level 50% 0'- 69' 90'-117', root intrusion 47'01"	Future			VCP	6"		8/30/2016		
189	Easement	125	45A	0000	4131	8.00	2.67	From USMH: Root ball intrusion @ lateral 26'04" & 82'04", water level 30% 57'-63', root intrusion @ joint 124'06"	Future			VCP	6"		8/16/2016		
409	Easement	153B	153A	3100	4111	8.00	2.67	From DSMH: Pipe Broken soil exposed 7'02" - 8'02", root intrusion @ joint 33'05", root ball 126'01"	Immediate	SPOT	3	VCP	6"		8/4/2016		
657	Mountain View Rd	203B	203A	1100	3400	13.00	2.60	From USMH: Grease build-up top of pipe 46'02" & 52'-56', major offset joint 515' & 516'	Immediate	SPOT	1	VCP	6"	Yes	7/20/2016		
495	Serpentine Ln	262	261	0000	4212	10.00	2.50	261 & 262 Checked Weekly for backups - From USMH: root intrusion @ joint 461'01" & 569'02", minor root intrusion @ joint 470', root ball fill 3/4 of pipe 481'02", root ball fill all of pipe 557'08"	Immediate	SPOT	3	ABSCP	8"		7/27/2016	10/22	RTA
47	Fir St	94	93	0000	4111	5.00	2.50	From USMH: Root intrusion around lateral 182'07", root ball fill pipe 250'06"	Immediate	SPOT	1	VCP	6"		8/9/2016		
79	Woods Ave	112	111	0000	4111	5.00	2.50	From USMH: Offset PVC joint 84'04", VCP to PVC 84'04", PVC to VCP 86', root intrusion @ joint 130', root ball @ lateral fill lateral 226'07",	Immediate	SPOT	3	VCP	6"		8/9/2016		
581	Burney Ct	190D	190A	0000	4111	5.00	2.50	From DSMH: Water Level 50% 0'-25', root intrusion @ joint 414'06", root ball @ clean out MH 190D	Future			VCP	6"		7/20/2016		
559	Roff Way	198A	198	1100	4100	5.00	2.50	From DSMH: Pipe cracked circumferential 14'-15', offset joint 113', root ball fill pipe 171' Camera could not get around	Immediate	SPOT	3	VCP	6"		8/23/2016		
75	Easement	88A	88	3100	2100	5.00	2.50	88 Checked Weekly for backups - From USMH: root intrusion & pipe broken 53',	Immediate	SPOT	1	VCP	6"		8/10/2016		
589	Main HWY 299	198B	187A	1100	4121	7.00	2.33	From USMH: Root intrusion 5'07", water level 50% 62'-72', root ball118'05", offset joint 266'02"	Immediate	SPOT	2	VCP	8"		7/29/2016	5/22	RTA
53	Tamarack Ave	96	92F	3211	0000	7.00	2.33	96 Checked Weekly for backups - From USMH: major offset joint 73'02" water level 50% 173'-182',	Immediate	SPOT	4	VCP	6"		8/30/2016		
459	Hudson St	26B	419	1100	5111	7.00	2.33	From DSMH: Root Intrusion @ joint, joint offset 5'0", large crack 239'-241'04", root ball fill all of pipe 253'01"	Immediate	SPOT	2	VCP	6"		8/3/2016		
359	Marquette St	142	141	3200	4113	13.00	2.17	From USMH: Root intrusion @ joint 5'00" 16'06" 20'10", root ball in lateral 20'04", root ball fill 1/4 of pipe 85'07", water level 50% 139'-151' 339'-347'	Immediate	SPOT	1	VCP	6"		8/5/2016		
341	Bainbridge Dr	13	12A	2A00	0000	26.00	2.00	From USMH: Water level minor 0'-23', 33'-59' water level 30-50% 92'-198'	Future			VCP	12"		8/25/2016		
139	Main HWY 299	103A	103	3112	3100	8.00	2.00	From DSMH: Pipe cracked, camera did not pick up 8'07", pipe cracked circumferential 14'-16', thick roots through joint-joint offset 18', VCP to PVC 18', PVC to VCP 26' , joint offset 26', 72'02", minor root intrusion-pipe cracked 83'06", large rag pile @ lateral 140'10"	Immediate	SPOT	2	VCP	6"		8/10/2016		
339	Bainbridge Dr	14	13	2300	0000	6.00	2.00	From USMH: Water level 30-50% 17'-59', water level minor 68'-78', 86'-98', root intrusion around lateral 92'00",	Future			VCP	12"		8/25/2016		
421	Grogan St	166	23A	2300	0000	6.00	2.00	From USMH: Water level 30% 0'- 12', water level 50% 347'-end	Future			VCP	8"		7/18/2016		
307	Ontario Ave	34	12	0000	3111	4.00	2.00	From USMH: Water level 30% 12'-62' 109'-120' root intrusion through lateral 179'10", root ball intrusion around lateral 284'07", root ball through joint-joint offset 331'01" water level 50% 331'-341', major root intrusion 416'10"	Immediate	SPOT	3	VCP	12"		8/25/2016		
175	Timber Dr	51D	51C	0000	3111	4.00	2.00	From USMH: Grease Build-up top of pipe, thick grease starting 109'-115', thick roots camera can't fit around 117'08"	Immediate	SPOT	1	VCP	6"	Yes	8/15/2016		
165	Alley	68C	68B	1100	3100	4.00	2.00	From DSMH: Root Ball @ joint-joint offset-continue into lateral 25'05", minor grease in lateral 58'07", major grease build-up on bottom of pipe just upstream from lateral, major offset joint 208'05",	Immediate	SPOT	2	VCP	6"	Yes	8/22/2016		
335	Superior St	16	15	2100	0000	2.00	2.00	From USMH: Water level 30%-full 0'- 41',	Future			VCP	12"		8/25/2016		
19	Bartel St	176	175	2100	0000	2.00	2.00	From USMH: Minor root intrusion around lateral 181'01", water level 50% 389'-444' 492'-501', grease build-up along top of pipe 461'- 476' off & on to end of pipe	Future			VCP	8"	Yes	7/15/2016		
651	Carberry St	203D	203E	0000	2100	2.00	2.00	From USMH: Pipe is very dark-looks like ABSCP not PVC, camera having a hard time moving forward in pipe, wheels just spin - believe due to grease build-up, root ball 11 o'clock 380'02"	Immediate	SPOT	1	PVC	8"	Yes	7/18/2016		
289	Superior St	54	53	2D00	3213	61.00	1.97	From DSMH: Grease build-up along "top edges" of water, water level 30% to full 26'-71' 205'-235', 276'01" - end, grease blockage on bottom of pipe cause water to back-up behind it 186' , 276'01", root ball intrusion @ joint 204'10" , 240'02", 276'10", 281', 286', minor root intrusion @ joint 258'11",	Immediate	SPOT	3	VCP	6"	Yes	8/18/2016		
191	Easement	45A	45	2400	1100	9.00	1.80	From USMH: Water level 30-50% 139'- 149', root intrusion around lateral 147', root intrusion @ joint 493'00",	Future			VCP	8"		8/16/2016		
433	Sugar Pine St	407	405	0000	4113	7.00	1.75	From USMH: Root intrusion @ joint 5'01", 99'08", 276', root ball around lateral 173'04", root ball through lateral 447'10"	Immediate	SPOT	3	VCP	6"		7/27/2016		
67	Oak St	116A	116	2200	1100	5.00	1.67	From USMH: Root intrusion @ joint 174'07",	Immediate	SPOT	1	VCP	6"		8/9/2016		
285	Winnipeg St	57	54	0000	3216	12.00	1.50	From USMH: Grease build-up along "top edge" of water all of pipe, minor root intrusion @ joint 25'07", 34'07", 43'11", 66'08", 98'02", 111'11", 116'07", 130'05", 157'07", 162'01", root ball @ joint 134'07", 143'10",	Immediate	SPOT	2	VCP	6"	Yes	8/30/2016		
69	Easement	116	90	0000	2111	3.00	1.50	From USMH: Root intrusion @ offset joint 5', water level 30% 28'-33', root intrusion @ MH/pipe joint 177'	Immediate	SPOT	1	VCP	6"	Yes	8/10/2016		

Pipe ID	Street	Upstream MH	Downstream MH	Structural Quick Rating	O&M Quick Rating	Overall Pipe Rating	Overall Pipe Rating Index	Comments	Improvement Needed	Type	LF or How many spot repairs	Pipe Type	Pipe Size	Grease Build up	Date CCTV	Month/Year Repaired	Repaired By:
723	Oak View St	231	232	2111	0000	3.00	1.50	From DSMH: Major offset joint 225'06", 365'02", very little flow all of pipe	Immediate	SPOT	2	VCP	6"		7/29/2016		
91	Easement	109A	116	0000	2111	3.00	1.50	From USMH: Water level 30% 139'-152', root intrusion @ joint 195'05", root ball @ MH/pipe joint 318'07"	Future			VCP	6"		8/10/2016		
489	Missouri Way	170	168	1200	1100	3.00	1.00	From USMH: Major offset joint 72'07", 76', 413'05", VCP to PVC 72'07", PVC to VCP 76', root intrusion @ offset joint 416'04"; From DSMH: 74'08" to offset joint	Immediate	SPOT	3	VCP	8"		7/15/2016		
59	Woods Ave	120	119	0000	1200	2.00	1.00	From USMH: Root intrusion @ joint 5'06", root ball through lateral 56'01",	Future			VCP	6"		8/9/2016		
17	Bartel St	174	176	1100	1100	2.00	1.00	From USMH: Pipe looks like VCP not PVC, Water level 30-50% 140'-183', root intrusion @ joint - pipe cracked 187'06",	Immediate	SPOT	1	PVC	8"		7/15/2016		
629	Toronto Ave	209	203	1100	1100	2.00	1.00	From USMH: Minor root intrusion @ joint 328'05",	Future			VCP	8"		7/19/2016		
391	Bailey Ave	402	144	0000	1200	2.00	1.00	From DSMH: Root intrusion @ joint 259', 285'	Immediate	SPOT	1	VCP	8"		7/28/2016		
351	Main HWY 299	20	19	1100	0000	1.00	1.00	From USMH: Minor water level of & on throughout pipe, Crack 3 o'clock to 6 o'clock 391'04"	Immediate	SPOT	1	VCP	12:00		8/8/2016		
429	Hudson Ave	26	25	0000	1100	1.00	1.00	From USMH: Minor water level 216'-224', root ball intrusion through lateral 358'06",	Future			VCP	8"		8/3/2016		
235	Siskiyou St	41	40	1100	0000	1.00	1.00	From USMH: Water level 30% off & on throughout pipe cracked circumferential 136'08"	Immediate	SPOT	1	VCP	10"		8/18/2016		
265	Michigan St	60	37	0000	1100	1.00	1.00	From DSMH: Root intrusion from top, broken pipe on top 39'02"	Immediate	SPOT	1	VCP	6"		8/22/2016		
509	Parking Lot	66	65	1100	0000	1.00	1.00	66 Checked Weekly for backups - From USMH: grease build-up, major offset lateral-soil exposed 83', root intrusion-broken pipe- crack circumferential 147'04"	Immediate	SPOT	2	VCP	6"	Yes	8/22/2016		
159	Alley	86	85	1100	0000	1.00	1.00	From USMH: Cracked pipe 3 o'clock to 9 o'clock small amount of soil coming through 128'04"	Immediate	SPOT	1	VCP	8"		8/17/2016		
45	Fir St	95	94	0000		1.00	1.00	From DSMH: Root intrusion through lateral 52'06",	Future			VCP	6"		8/9/2016		
141	Orchard Way	103	101C	0000	1100	1.00	1.00	From DSMH: Minor root intrusion @ joint 152'	Future			VCP	6"		8/10/2016		
81	Cedar St	115	111	0000	1100	1.00	1.00	From DSMH: Root intrusion @ offset joint 5'	Immediate	SPOT	1	VCP	6"		8/9/2016		
65	Oak St	117	116A	0000	1100	1.00	1.00	From USMH: Root intrusion @ joint 181'10"	Immediate	SPOT	1	VCP	6"		8/9/2016		
61	Oak St	119	118	0000	1100	1.00	1.00	From USMH: Root intrusion @ joint 64'	Immediate	SPOT	1	VCP	6"		8/9/2016		
101	Juniper Ave	129	50	0000	1100	1.00	1.00	129 Checked Weekly for backups - From USMH: root intrusion @ offset joint 5',	Immediate	SPOT	1	VCP	6"		8/15/2016		
295	Parking Lot	136	135	1100	0000	1.00	1.00	From DSMH: Major offset joint 156'07" standing water in portion of pipe offset, camera can't get over offset; From USMH: 8'01" major offset joint	Immediate	SPOT	1	VCP	8"		8/11/2016		
393	Marquette St	143	142	0000	1100	1.00	1.00	From DSMH: Water level 30-50% to full 5'- 110', 200'-250', 280'- 320', root intrusion @ joint 107', offset joint 265'07",	Immediate	SPOT	1	VCP	6"		8/5/2016		
389	Marquette St	144	143	0000	1100	1.00	1.00	From USMH: Root intrusion @ joint 65'11"	Future			VCP	6"		8/30/2016		
395	Huron Ave	149	148	0000	1100	1.00	1.00	From DSMH: Root ball intrusion @ offset joint 153'02", root ball 326'05" @ C/O	Immediate	SPOT	1	VCP	6"		8/5/2016		
379	Birch Ave	158	24	0000	1100	1.00	1.00	From USMH: Minor root intrusion @ joint 379'02"	Future			VCP	6"		8/4/2016		
369	Ponderosa Ave	161	162A	0000	1100	1.00	1.00	From DSMH: Root intrusion @ offset joint 5',	Immediate	SPOT	1	VCP	6"		8/4/2016		
399	Washburn Ave	181	152E	0000	1100	1.00	1.00	From DSMH: Root intrusion @ offset joint 305'05"	Immediate	SPOT	1	VCP	6"		7/25/2016		
607	Snyder Ln	194	184D	0000	1100	1.00	1.00	From DSMH: Root intrusion @ joint 294' root ball @ c/o 295'	Future			VCP	6"		8/24/2016		
325	Mountain View Rd	199	18	1100	0000	1.00	1.00	From USMH: VCP to PVC 272'05" offset joint 272'05", 277'08" PVC to VCP 277'08", minor root intrusion @ joint 280'06"	Immediate	SPOT	1	VCP	6"		8/8/2016		
633	Mountain View Rd	201	201A	1100	0000	1.00	1.00	From USMH: Offset joint 170'02"	Immediate	SPOT	1	VCP	8"		7/19/2016		
649	Mountain View Rd	203	202A	0000	1100	1.00	1.00	From USMH: Minor root intrusion around lateral 65'11", root intrusion-pipe looks broken around lateral 147'05", root intrusion @ joint 195'02",	Immediate	SPOT	1	VCP	8"		7/19/2016		
571	Commerce Way	223	221	0000	1100	1.00	1.00	From DSMH: Grease build-up along "top edges" of water off & on throughout pipe, root intrusion @ offset joint 96'06", water level 30-50% 250'-270'	Immediate	SPOT	2	VCP	8"		7/19/2016		
731	Oak View St	230	229	0000	1100	1.00	1.00	From DSMH: Pipe alignment left 89',	Future			VCP	6"		8/1/2016		
705	Galena Cir	251	252	0000	1100	1.00	1.00	From DSMH: Root intrusion @ joint 5', root ball intrusion 182'06" @ C/O?	Immediate	SPOT	1	ABSCP	6"		7/21/2016		
317	Hudson St	269	268	1100	0000	1.00	1.00	From DSMH: Offset joint 5', pipe cracked circumferential 278'08"	Immediate	SPOT	1	VCP	6"		8/22/2016		
435	Sugar Pine St	405	402	0000	1100	1.00	1.00	From USMH: Root intrusion @ offset joint 96'07" VCP to PVC 463'11", major offset joint 463'11", 466'05" PVC to VCP,	Immediate	SPOT	2	VCP	6"		7/27/2016		
487	Missouri Way	420	170	1100	0000	1.00	1.00	From USMH: Offset joint, soil exposed 182'04",	Immediate	SPOT	1	VCP	8"		7/15/2016		
83	Woods Ave	111A	111	0000	1100	1.00	1.00	From DSMH: Root intrusion @ offset joint 5'	Immediate	SPOT	1	VCP	6"		8/9/2016		
111	Poplar St	123B	123A	0000	1100	1.00	1.00	From DSMH: Root intrusion @ joint 11'02", root intrusion @ c/o	Immediate	SPOT	1	VCP	6"	Yes	8/15/2016		
407	Easement	152D	153A	0000	1100	1.00	1.00	From USMH: Root intrusion @ offset joint 91'11", VCP to PVC 150'08" offset joint 150'08" PVC to VCP 153'02"	Immediate	SPOT	1	VCP	6"		7/25/2016		
609	Snyder Ln	184D	184B	0000	1100	1.00	1.00	From USMH: Root ball through lateral 17', root intrusion @ offset joint 18'02"	Immediate	SPOT	1	VCP	6"		8/24/2016		
591	Main HWY 299	187A	187	1100	0000	1.00	1.00	From USMH: Pipe cracked @ offset joint 6'	Immediate	SPOT	1	VCP	8"		8/24/2016		
627	Toronto Ave	209A	209	1100	0000	1.00	1.00	From USMH: Offset joint soil exposed 5',	Immediate	SPOT	1	VCP	8"		7/18/2016		
345	Saginaw St	20A	20	0000	1100	1.00	1.00	From DSMH: Root intrusion @ offset joint 17'04"	Immediate	SPOT	1	VCP	6"		8/8/2016		
219	Siskiyou St	43A	43	0000	1100	1.00	1.00	From DSMH: Major root intrusion @ joint 5'	Immediate	SPOT	1	VCP	6"		8/17/2016		
195	Parking Lot	47B	47	0000	1100	1.00	1.00	From USMH: Root intrusion @ joint 23'06"	Future			VCP	6"		8/16/2016		
209	Trinity St	81A	81	1100	0000	1.00	1.00	From DSMH: Major offset joint 109'01" , 111'	Immediate	SPOT	1	VCP	6"		8/17/2016		
149	Yard	101F	101E	0000	0000	0.00	0.00	From DSMH: 6" to 4" 116'10"				VCP			8/16/2016		
Recommended for immediate improvement.																	

APPENDIX F

SSMP INTERNAL AUDIT FORM

Burney Water District

Internal SSMP Audit Form

1. Evaluate the implementation and effectiveness of the District's SSMP in preventing spills.
2. Evaluate the District's compliance with the latest General Order. Note any sections that need to be updated.
3. Identify SSMP deficiencies in addressing ongoing spills and discharges to waters of the State.
4. Identify necessary modifications to the SSMP to correct deficiencies.
5. Provide a schedule for addressing deficiencies.

6. Summarize audit findings and provide suggestions for moving forward.
7. Provide input from sewer system operators on audit findings.

Internal Audit Completed By:

Printed Name	Signature	Date

Internal Audit Reviewed By:

Printed Name	Signature	Date
Printed Name	Signature	Date
Printed Name	Signature	Date
Printed Name	Signature	Date
Printed Name	Signature	Date