County of San Diego

SEWER SYSTEM MANAGEMENT PLAN

FINAL | August 2020

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Digitally signed by Ryan F. Orgill
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REGISTERED PROFESSIONAL ENGINEER
RYAN F. ORGILL
No. 75802
CIVIL
STATE OF CALIFORNIA

CERTIFICATION

I certify under penalty of law that this Sewer System Management Plan, and the subparts contained herein, comply with the requirements set forth in the General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems, Order No. 2006-0003 within the time frames identified in the schedule provided in WDRs and as amended by a Memorandum of Agreement executed on June 27, 2006 between the Executive Director of the SWRCB and the California Water Environment Association. I further certify that this document and all attachments were prepared under the County of San Diego's direction and supervision in accordance with its policies and procedures to assure that qualified personnel properly provided, evaluated, and incorporated the information reflected in this document, that the information included in this document is, to the best of my knowledge and belief, true, accurate, and complete.

Daniel S. Brogadir Digitally signed by Daniel S. Brogadir Date: 2020.09.08 11:13:13 -07'00'

Daniel S. Brogadir, PE
County of San Diego, Department of Public Works
LUEG Program Manager

9/8/20

Date

ACKNOWLEDGEMENTS

The County of San Diego would like to acknowledge the following individuals for their outstanding efforts and contributions, which resulted in the creation of this document. The comprehensive plans included herein reflect the County's on-going commitment to the effective and efficient operation, maintenance and management of its wastewater collection system and achieving the County's goals and objectives.

County of San Diego

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Abbreviations

ASA	Alpine Service Area
BMP	Best Management Practice
Caltrans	California Department of Transportation
CAO	Chief Administrative Officer
CCTV	closed circuit television
CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
County	County of San Diego
County Code	San Diego Code of Regulatory Ordinances
County Plumbing Code	San Diego County Plumbing Code
CWA	Clean Water Act
CWEA	California Water Environment Association
District	San Diego County Sanitation District
DEH	Department of Environmental Health (San Diego County)
d/D	depth-to-diameter
DPW	Department of Public Works (San Diego County)
EPA	Environmental Protection Agency
ESRI	Environmental Systems Research Institute
FOG	Fats, Oils, and Grease
FSE	Food Service Establishment
GIS	Geographic Information System
GM/Deputy CAO of LUEG	General Manager/Deputy Chief Administrative Officer of the Land Use and Environment Group
gpcd	gallons per capita per day
gpd	gallons per day
gpd/ac	gallons per day per acre
gpd/du	gallons per day per dwelling unit
Greenbook	Standard Specifications for Public Works Construction (American Public Works Association)
I/I	inflow and infiltration
JSA	Julian Service Area
JWPCF	Julian Water Pollution Control Facility
LRO	Legally Responsible Official
LSA	Lakeside Service Area
LUEG	Land Use and Environmental Group
MAR	Maintenance Action Report

Metro	Metropolitan Wastewater Department (City of San Diego)
mgd	million gallons per day
MPRO	Media and Public Relations Office (San Diego County)
MRP	Monitoring and Reporting Program
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
O&M Program	County of San Diego Operations and Maintenance Program
OES	Office of Emergency Services
PDWF	peak dry weather flow
PVSA	Pine Valley Service Area
PWWF	peak wet weather flow
RDCWPCF	Ranch Del Campo Water Pollution Control Facility
SDRWQCB	San Diego Regional Water Quality Control Board
SDRSD	San Diego Regional Standard Drawings
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSOERP	Sanitary Sewer Overflow Emergency Response Plan
SVSA	Spring Valley Service Area
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
WDID	Waste Discharge Identification
WDR	Waste Discharge Requirements
WWM	Wastewater Management

EXECUTIVE SUMMARY

On May 2, 2006, the State Water Resources Control Board (SWRCB) adopted Order Number 2006-0003-DWQ, the Waste Discharge Requirements (WDRs), which requires all federal and state agencies, municipalities, counties, districts, and other public entities that own or operate a wastewater collection system greater than one (1) mile in length to develop and implement a system specific Sewer System Management Plan (SSMP). An SSMP must document how an agency manages its wastewater collection system. Each agency must present the SSMP to its governing body at a public meeting prior to certifying the document. To comply with the WDRs, the San Diego County Sanitation District (District) completed and certified its initial SSMP in August 2009. At that time the initial SSMP was prepared, the District was comprised of the following:

- Alpine Sanitation District
- Lakeside Sanitation District
- Spring Valley Sanitation District
- Pine Valley Sanitation District
- Julian Sanitation District
- Campo Maintenance District
- East Otay Mesa Maintenance District
- Winter Gardens Maintenance District

In 2010, the District Board of Directors consolidated the five sanitation districts and three maintenance districts into a single agency, which is now referred to as the San Diego County Sanitation District. Table ES.1 includes a summary of the service areas.

Table ES.1 San Diego County Sanitation District Sewer Service Areas

San Diego County Sewer Service Areas	
Alpine	Campo
Lakeside	East Otay Mesa
Spring Valley	Winter Gardens
Julian	Pine Valley

Additionally, since the certification of the SSMP and the consolidation into one agency, the District also eliminated several of the Waste Discharge Identification (WDID) numbers originally associated with the various districts which were originally registered as separate sanitation systems, with several containing less than the minimum 1.0 mile required by the WDRs. Whereas previously, the District was registered for up to six WDIDs, it is now registered under three

separate WDIDs. The Sewer Service Areas and the respective WDID under which each service area is registered, are summarized in Table ES.2.

Table ES.2 San Diego County Sewer Service Areas and WDID Numbers

Sewer Service Areas	WDID Number
County of San Diego Collection System Alpine Service Area Lakeside Service Area Spring Valley Service Area Winter Gardens Maintenance District East Otay Mesa Service Area	9SSO10662
Campo Water & Sewer Service Area (Rancho Del Campo CS)	9SSO10689
Julian Service Area (Julian Water Pollution Facility)	9SSO10673

ES.1 Monitoring and Reporting Program

On August 6, 2013 the SWRCB adopted Order Number WQ 2013-0058-EXEC, amending the Monitoring and Reporting Requirements (MRP) included in Order No. 2006-0003-DWQ. While in the previous version of the MRP Sanitary Sewer Overflows (SSOs) were categorized as Category 1 or Category 2, the revised MRP implements changes to SSO categories by adding a Category 3 SSO type. The intent of the revision is to improve data management to further assist with evaluation of high threat and low threat SSOs. To reflect the revised MRP requirements, the District updated its Sanitary Sewer Overflow Emergency Response Plan (SSOERP) in April 2015. Updates to the 2015 SSOERP have been includes in Appendix C for reference.

ES.2 Sewer System Management Plan Audit

In continued compliance with the WDRs, the District conducted an internal audit of the SSMP document in January 2018 and again as part the 2020 SSMP. As required, the audit was performed to evaluate the effectiveness of the SSMP components and confirm the District's compliance with the SSMP requirements of Section D.13 of the WDRs. The latest findings of the audit are summarized in the County of San Diego Sewer System Management Plan and Audit of Sewer System Management Plan, which is included in Appendix F for reference.

Generally, the District's Preventative Maintenance Program continues to effectively address the maintenance needs of the collection system. In addition to the routine cleaning and inspection of the system, the program includes the regular documentation, management, and maintenance of information pertaining to the wastewater infrastructure. Staff manually records preventative maintenance activities and documents notifications received of potential and actual SSO occurrences. Staff regularly tracks performance measures using activity logs to record the length of pipe cleaned, quantity and type of debris removed with the cleaning effort, cause and location of system obstructions and SSOs, and the scheduled maintenance of high frequency maintenance locations. Overall, District crews are on schedule to achieve the yearly cleaning and inspection goals for the wastewater collection system.

A review and evaluation of the information reported on CIWQS was performed to ascertain trends within the District's sewer service areas, including the frequency, location, and volume of SSOs. The information revealed that the primary cause of the SSOs reported between 2015 and 2019 was due to root concentrations. The reported SSOs were concentrated in three of the eight sewer service areas including Alpine, Spring Valley, and Lakeside. In response to these findings, the District implemented an herbicide treatment program that targets areas that have been identified and documented as consistently having high root concentrations or the pipelines are located in very steeply sloped areas and have high root concentrations.

In addition, the District has implemented Cityworks for record keeping of the Operation and Maintenance of the sewer system. This system integrates the GIS system, identifying the entirety of the collection system, along with Collections equipment, material, and labor. Daily work orders are created and sent to the Equipment Operators for all task's assigned, which include closed circuit television (CCTV), mechanical cleaning, root treatment, small repairs, SSO response, training, along with all other daily assignments. The information gathered from the daily work orders includes the production and cost for all activities. Information can be viewed by staff through the District's newly implemented Computerized Maintenance Management System (CMMS) asset mapping tool.

The District has also improved Operations and Maintenances procedures by installing SmartCovers. Over 32 SmartCovers have been installed with a near-term plan of adding 40 more within the collection system. The purpose of the SmartCovers is to reduce the risk of an SSO by alerting the District on rising flow trends within the maintenance hole. SmartCovers is a device that has an antenna attached on the maintenance hole cover and a sensor that monitors the height of the sewage flow at the maintenance hole invert. The flow information is transmitted wirelessly to mobile phone applications as well as desktop computers. The information transmits flow trends, alerts, and alarms. The SmartCovers are placed strategically within the system at remote environmentally vulnerable locations, at known SSO locations, and Special Maintenance lines.

Overall, the District has effectively managed and maintained information pertaining to the wastewater infrastructure by means of manually recording preventive maintenance activities and documenting notifications received electronically and regarding potential and actual SSO occurrences. The District will continue to monitor the performance measures it currently tracks and will implement necessary adjustments to the program when needed. In addition, the District has added one (1) Senior Equipment Operator and three (3) Equipment Operator positions, which has increased maintenance resources.

ES.3 Purpose

This SSMP provides a summary of the action plan implemented by the District to comply with the sanitary sewer system requirements imposed by the WDRs and other governing agencies. It includes a description of the activities and procedures that personnel follow to implement the various programs encompassed in its overall efforts to efficiently manage, operate, and maintain its sanitary sewer system and facilitate the reduction and potential elimination of SSOs. The goals of the SSMP include:

- Minimizing the frequency and impact of SSOs;
- Effectively and efficiently mitigating the impacts of SSOs should they occur;
- Providing adequate sewer capacity to convey peak flows;

- Maintaining and improving the condition of the collection system infrastructure to provide continual reliable service; and
- Engaging and educating the public regarding programs and issues related to the wastewater collection system.

Table ES.3 includes a summary of the mandatory components required by the WDRs and included in the SSMP.

Table ES.3 WDR Requirements and Chapter Location

WDR Element	Element Description	Chapter
(i)	Goals and Objectives	2
(ii)	Organization and Communication	3
(iii)	Legal Authority	4
(iv)	Operation and Maintenance Program	5
(v)	Design and Performance Provisions	8
(vi)	Overflow Emergency Response Plan	7
(vii)	Fats, Oils, and Grease (FOG) Control Program	6
(viii)	System Evaluation and Capacity Assurance Plan	9
(ix)	Monitoring, Measurement and Plan Modification	11
(x)	SSMP Program Audits	12
(xi)	Public Outreach Program	10

Each element of the SSMP is described in detail in the corresponding chapter shown in Table ES.3. Plans in support of the District's effort to meet the state requirements and formally document its current efforts are included in the appendices. The plans include detailed information regarding the District's specific policies and procedures to reduce SSOs and manage the wastewater collection system. The plans are included as appendices to facilitate implementing updates to the various programs as they are implemented, modified, and refined.

Chapter 1
INTRODUCTION

This SSMP has been prepared in compliance with the requirements of the SWRCB, Order 2006-0003, Statewide General WDR for Sanitary Sewer Systems, as well as SWRCB Order No. WQ 2013-0058-EXEC. The goal of the WDRs is to provide a consistent statewide approach for reducing SSOs. The 2020 SSMP builds upon the 2015 SSMP that was prepared by ATKINS Engineering in 2015.

This chapter includes a brief overview of the sewer service area and sanitary sewer system, a summary of the regulations that serve as the impetus for the development of this SSMP, and the purpose and organization of this SSMP.

1.1 Background

The District provides sewer service for approximately 36,000 customers within the unincorporated communities of the County. Illustrated on Figure 1.1, the District's service jurisdiction is comprised of eight (8) sewer service areas. Collectively, the District's wastewater collection and conveyance system includes approximately 432 miles of pipeline, 8,200 maintenance holes, and eight (8) lift stations.

In 2010, the District Board of Directors consolidated the five (5) sanitation districts and four (4) maintenance districts into a single agency which is referred to as the San Diego County Sanitation District. Harmony Grove was included within the District's sewer service areas but was reorganized into Rincon Del Diablo Municipal District on June 12, 2019 (per LAFCO File Number R017-10). Table 1.1 includes a summary of the current sewer service areas.

Table 1.1 San Diego County Sanitation District Sewer Service Areas

County of San Diego Service Areas	
Alpine	Campo
Lakeside	East Otay Mesa
Spring Valley	Winter Gardens
Julian	Pine Valley

Since the certification of the SSMP in June 2015 and the consolidation into one agency, the County also eliminated several of the WDID numbers originally associated with the various sanitation and maintenance districts which were originally registered as separate sanitation systems and were less than the minimum 1.0 mile as required by the WDRs. Whereas previously, the County system was registered under six WDIDs, it is now registered under three WDIDs. The County Service Areas and the respective WDID under which each service area is registered, are summarized in Table 1.2.

The Wastewater Management (WWM) Section of the County Department of Public Works (DPW) is responsible for operations and overall administration of the wastewater system within the County's service areas. Sewage generated within the Campo, Julian, and Pine Valley service areas are treated locally, while sewage in the Alpine, East Otay Mesa, Lakeside, Spring Valley,

and Winter Gardens service areas is conveyed through the City of San Diego's Metropolitan Wastewater Department (Metro) system by interjurisdictional agreement.

Table 1.2 County of San Diego Service Areas and WDID Numbers

County Service Areas	WDID Number
County of San Diego Collection System Alpine Service Area Lakeside Service Area Spring Valley Service Area Winter Gardens Maintenance District East Otay Mesa Service Area	9SSO10662
Campo Water & Sewer Service Area (Rancho Del Campo CS)	9SSO10689
Julian Service Area (Julian Water Pollution Facility)	9SSO10673

The Metro system is owned and operated by the City of San Diego and consists of all elements required for the collection, conveyance, and treatment of wastewater generated within its service area. Metro's service area consists of the City of San Diego, plus 12 other cities and special districts located within a 450 square mile area.

1.2 Service Areas and Wastewater System

The service areas listed in Table 1.1 differ significantly as each responds to historical circumstances, legal requirements, the extent of existing/projected growth, and the condition of conveyance and treatment facilities. The following provides a summary of the wastewater collection facilities within the service areas based on County's Geographic Information System (GIS) as of December 2017.

1.2.1 Spring Valley Service Area

The Spring Valley Service Area (SVSA) was formed as the Spring Valley Sanitation District in 1952 to operate and maintain the sewage collection and conveyance facilities for the unincorporated communities of Spring Valley, Casa de Oro, and Sweetwater. The areas are of an urban/suburban nature, and most require access to sewer collection facilities. The communities are located east and west of Highway 125, and north and south of Highway 94. The Spring Valley Sanitation District was recently consolidated into the San Diego County Sanitation Division and renamed the SVSA.

The SVSA is approximately 20 square miles in area, with an estimated population of 85,500 residents in year 2020 (2013 Master Plan, ATKINS). The service area is bounded by the cities of San Diego, La Mesa, Lemon Grove, National City, and Chula Vista. Ultimately, the sewage collected is conveyed to the City of San Diego's Metro system for treatment.

The majority of the collection system consists of 8-inch diameter pipe. The largest collection trunk is 54 inches in diameter. In addition to the Spring Valley Outfall, SVSA also operates and maintains 271 miles of sewer collection and transmission facilities, four (4) lift stations including the Jamacha, Ramona Avenue, Vista Del Lago, and Rancho San Diego Lift Stations, and one (1) flow meter station (SV08).

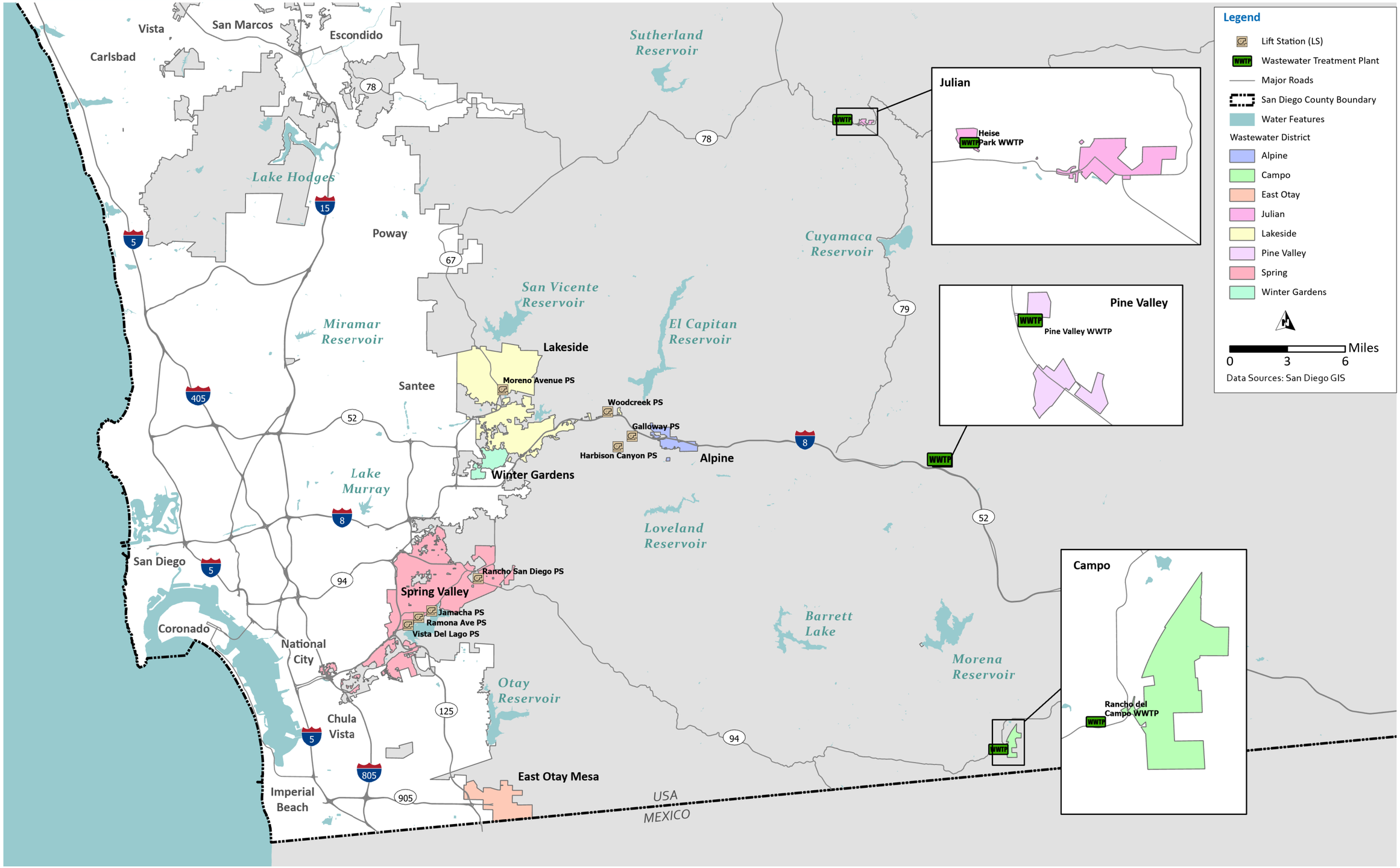

Figure 1.1 County of San Diego Sanitation District Service Areas

1.2.2 Lakeside Service Area

The Lakeside Sanitation District was formed in 1955 to operate and maintain the public sewer system for the unincorporated community of Lakeside. Recently, the Lakeside Sanitation District was consolidated into the San Diego County Sanitation District and is located east and west of Highway 67 and north of Interstate 8, approximately 21 miles east of the City of San Diego within the upper San Diego River Basin. The service area includes approximately 7.9 square miles with an estimated population of approximately 46,910 residents in year 2020 (2013 Master Plan, ATKINS). The limits of the service area are generally defined by the Upper San Diego River to the north, the Winter Gardens Service Area and the cities of El Cajon and Santee to the south and west, and the El Monte/Lake Jennings/Dunbar Lane areas to the east. The collected sewage is conveyed to the City of San Diego's Metro system for treatment.

The majority of the collection system consists of 8-inch diameter pipe. The largest collection trunk is 42 inches in diameter. The Lakeside Service Area (LSA) includes two (2) lift stations including the Wood Creek Pump Station and the Moreno Avenue Pump Station and one (1) flow meter station.

1.2.3 Alpine Service Area

The Alpine Sanitation District was formed in 1952 to operate and maintain the public sewer system for the unincorporated community of Alpine. The Alpine Sanitation District was recently consolidated into the County of San Diego Sanitation District and is located in the eastern foothills of the County, approximately 30 miles east of the City of San Diego. Most of the Alpine watershed is located within the Sweetwater River System, which drains into the San Diego Bay. The service area is comprised of approximately 1.4 square miles with an estimated population of 5,000 residents. The Alpine Service Area (ASA) also provides outside services to a subdivision and elementary school located along Harbison Canyon Road. A lift station pumps sewage from this site to the Galloway Pump Station where it joins the ASA discharge. Ultimately, the sewage collected is conveyed to the City of San Diego's Metro system for treatment.

Overall, the ASA includes approximately 21 miles of sewer collection and transmission facilities, which consist primarily of 8-inch diameter pipe, two (2) lift stations including the Galloway and Harbison Canyon Lift Stations. The largest sewer main in the collection system is 12 inches in diameter.

1.2.4 Julian Service Area

The Julian Service Area (JSA) was formed as the Julian Sanitation District in 1945 in the unincorporated mountain community of Julian. Julian is located approximately 60 miles northeast of San Diego along Highways 78/79. The service area is 0.19 square miles in size. The estimated population of JSA in the year 2020 is approximately 236 residents (2013 Master Plan, ATKINS).

The JSA sewer collection system consists of 6-inch and 8-inch sewer mains and primarily serves the Julian central business district area. The sewer collection system includes approximately three (3) miles of sewer pipe and a gravity conveyance line which transports sewage to the JSA Wastewater Treatment Facility. The treatment facility is located approximately one (1) mile west of Julian off of Highway 78.

1.2.5 Pine Valley Service Area

The PVSA was formed as the Pine Valley Sanitation District in 1968 and is located approximately 45 miles east of San Diego in the eastern portion of San Diego County off of Interstate 8, Pine Valley Road, and Old Highway 80. The PVSA incorporates approximately 0.04 square miles, consists of approximately 0.5 miles of 8-inch sewer collection pipe which conveys wastewater to a treatment plant, and serves an estimated population of approximately 43 permanent residents as well as non-residents and students (2013 Master Plan, ATKINS).

As the system facilities within the service area do not meet the minimum sewer system length requirements per the WDRs, the PVSA is not registered under a specific WDID. A summary of the service area is included as County WWM staff is responsible for the maintenance, operation, and management of the PVSA system.

1.2.6 Winter Gardens Service Area

The Winter Gardens Service Area was established as the Winter Gardens Sewer Maintenance District in January 1964 to provide sewer collection services to the Winter Gardens area. The Winter Gardens Service Area is bounded by Lakeside to the east, Santee to the west and El Cajon to the south. With the consolidation into the San Diego County Sanitation District, the service area's estimated population in year 2020 is approximately 11,570 (2013 Master Plan, ATKINS), consists of approximately 23 miles of wastewater pipelines that range in diameter between 6 and 15 inches, one (1) flow meter station, and is close to build out with little area remaining for future growth. Sewage flows are collected and conveyed to the City of San Diego's Metro system for treatment.

1.2.7 East Otay Mesa Service Area

The East Otay Mesa Sewer Maintenance District was established in June 1999 and consolidated into the San Diego County Sanitation District as the East Otay Mesa Service Area to provide sewage collection services for the unincorporated East Otay Mesa area. At present, the backbone sewer system consists of one (1) sewer outfall, approximately four (4) miles in length. Additional facilities are currently planned and flows are anticipated once planned projects are completed. The flows are conveyed to the City of San Diego's Metro system for treatment.

1.2.8 Campo Water and Sewer Service Area

The Campo Water and Sewer Maintenance District was established in 2007 to provide a more efficient governance structure for the previously existing service area and consolidated into the San Diego County Sanitation District as the Campo Service Area located in the unincorporated community of Campo. The service area currently consists of approximately 6.5 miles of sewer that range between 4 and 12 inches in diameter. A gravity conveyance line transports sewage to an on-site wastewater treatment facility. The estimated population in year 2020 was 784 residents (2013 Master Plan, ATKINS).

1.2.9 Wastewater Service Area Summary

Table 1.3 provides a summary of the approximate length of pipeline per service area while Table 1.4 provides a summary of the County operated and maintained lift stations.

Table 1.3 Approximate Length of Pipeline per County Service Area

County Service Area	Pipeline Length (feet)(1)	Pipeline Length (miles)
Alpine	111,848	21.2
Lakeside	542,043	102.7
Spring Valley	1,432,607	271.3
Pine Valley	2,726	0.5
Julian	14,996	2.8
Campo	34,883	6.6
East Otay Mesa	22,421	4.2
Winter Gardens	119,764	22.7
Total	**2,281,288**	**432**

Notes:
(1) Based on County GIS of San Diego GIS System as of December 2017.

Table 1.4 County Maintained Lift Stations

Service Area	Lift Station	Address	City/State/Zip
Spring Valley	Jamacha	9903 Jamacha Blvd.	Spring Valley, CA 91978
	Ramona Avenue	411 Ramona Avenue	Spring Valley, CA 91978
	Vista Del Lago	9041 Camino Lago Vista	Spring Valley, CA 91978
	Rancho San Diego	11971 Singer Lane	Spring Valley, CA 91978
Alpine	Galloway	444 Arnold Way	Alpine, CA 92001
	Harbison Canyon	215 Bridle Court	Alpine, CA 92001
Lakeside	Moreno Avenue	10955 Moreno Ave.	Lakeside, CA 92040
	Woodcreek	15935 Spring Oak Rd.	El Cajon, CA 92021

Wastewater treatment is provided by either the City of San Diego's Metro system or one of several locally-based plants operated by the respective County service areas. Table 1.5 provides a summary of the locally-based plants managed and operated by the County. Since the WDRs pertaining to the SSMP include requirements for wastewater collection systems, specific operations and maintenance (O&M) information pertaining to the County's wastewater treatment plants and the sewer lift stations are not included in this document.

Table 1.5 County Maintained Treatment Plants

Treatment Facility	Address	City/State/Zip
Rancho Del Campo WWTP	31035 Forrest Gate Rd.	Campo, CA 92006
Julian WWTP	2840 Highway 78	Julian, CA 92036
Pine Valley WWTP	Pine Valley County Park, Old Highway 80	Pine Valley, CA 91962

1.3 Waste Discharge Requirements

On May 2, 2006, the SWRCB adopted Order 2006-0003, the Statewide General WDR for Sanitary Sewer Systems, which requires all federal and state agencies, municipalities, counties, districts, and other public entities that own or operate a sanitary sewer system greater than one (1) mile in length to comply with the elements of the WDRs. The WDRs serve to provide a unified statewide approach for reporting and tracking SSOs, establishing consistent and uniform requirements for SSMP development and implementation, establishing uniformity in reporting, and facilitating consistent enforcement for violations.

On June 27, 2006, the Executive Director of the SWRCB executed a memorandum of agreement with the California Water Environment Association (CWEA), outlining a strategy and time schedule for CWEA to provide training on the (1) adoption of the program, (2) SSO database electronic reporting, and (3) SSMP development. This agreement also extended the completion dates for most tasks by six (6) months from the dates shown in the adopted WDRs.

The WDRs include directives for owners and operators of sanitary sewer systems to demonstrate adequate and efficient management, operation, and maintenance of the sanitary sewer system. Generally, the WDRs require that:

1. In the event of an SSO, all feasible steps be taken to control the released volume and prevent untreated wastewater from entering storm drains, creeks, etc.
2. If an SSO occurs, it must be reported to the SWRCB using California Integrated Water Quality System (CIWQS), the online reporting system developed by the SWRCB. The County completed its enrollment into the program and the demographic questionnaire, and electronic reporting commenced in January 2007.
3. An SSMP with all mandatory elements be developed and approved by the governing body that owns or is responsible for the operation of the sanitary sewer system. The SSMP must include provisions to provide proper and efficient management, operation, and maintenance of the sanitary sewer system.

Since 2006, the SWRCB adopted Order Number WQ 2013-0058-EXEC on August 6, 2013, amending the MRP included in Order No. 2006-0003-DWQ. While in the previous version of the MRP SSOs were categorized as Category 1 or Category 2, the revised MRP implements changes to SSO categories by adding a Category 3 SSO type. The intent of the revision is to improve data management to further assist with evaluation of high threat and low threat SSOs. To reflect the revised MRP requirements, the County updated its SSOERP in April 2015. Updates to the 2015 SSOERP have been includes in Appendix C for reference.

This SSMP includes the various plans and programs that comprise a comprehensive SSMP. The completion dates for each mandatory element was determined according to the size of population served by the federal and state agencies, municipalities, counties, districts, and other public entities that own or operate a sanitary sewer system. Based on an estimated population of approximately 36,000 customers, the County was required to comply with the schedule provided for agencies that serve a population between 10,000 and 100,000. The service areas included in this report and the respective WDIDs are summarized in Table 1.2.

1.4 Purpose

The County recognizes the importance of preventing sewage spills for the mutual protection of our surface waters and the overall environment to safeguard public health and safety. Therefore,

in a proactive approach to achieve WDR compliance, the County has prepared this comprehensive SSMP. This SSMP is designed to confirm that continuous improvement of system performance, response, monitoring, data recording, and documentation for future system assessments. The County considers the completeness and practicality of the SSMP a critical component for its long range plans to comply with all applicable requirements including those of the San Diego Regional Water Quality Control Board (SDRWQCB), State WDRs, and the Federal Clean Water Act (CWA).

This SSMP provides a summary of the action plan implemented by the County to comply with the sanitary sewer system requirements imposed by the WDRs and other governing agencies. In addition, it includes the specific details of the activities and procedures that personnel follow to implement the various programs encompassed in its overall efforts to efficiently manage, operate, and maintain its sanitary sewer system and facilitate the reduction and potential elimination of SSOs.

1.5 SSMP Elements and Organization

This SSMP includes detailed information demonstrating the County's efforts to comply with each of the mandatory and applicable elements required for its SSMP. The organization of this document is consistent with the SWRCB guidelines and includes the following 11 mandatory WDR elements:

(i) Goals.
(ii) Organization.
(iii) Legal Authority.
(iv) Operations & Maintenance Program.
(v) Design and Performance Provisions.
(vi) Overflow Emergency Response Plan.
(vii) Fats, Oils, and Grease (FOG) Control Program.
(viii) System Evaluation and Capacity Assurance Plan.
(ix) Monitoring, Measurement and Plan Modifications.
(x) Sewer System Management Plan Program Audits.
(xi) Communication Program.

Supporting information for an element is included in appendices to the SSMP, as applicable. Generally, information expected to require relatively frequent updates that can be modified without formal action is included in appendices. In addition, the 2020 Audit to the SSMP has been included in Appendix F.

Chapter 2

GOALS AND OBJECTIVES

The following sections include a summary of the County's goals that reflect its commitment to continue its effort to provide effective and efficient management, operation, and maintenance of the sanitary sewer system.

2.1 Regulatory Requirements for Goals Element

Establishing goals to properly manage, operate, and maintain all parts of its sanitary sewer system allows the County to achieve its ultimate goal of reducing and preventing SSOs and properly mitigating any SSO that may occur. To achieve the goals established by the County, it becomes imperative for County WWM staff to consistently maintain effective and quality working procedures and continue efforts towards identifying and implementing improvements in managing the sanitary sewer system.

The WDRs require that the County, at a minimum, develop goals that incorporate and achieve the following:

- Proper management, operation, and maintenance of all parts of the sanitary sewer system;
- Provide adequate capacity to convey peak flows;
- Minimize the frequency and volume of SSOs;
- Mitigate the impacts of SSOs if they occur;
- Inform and educate the public on programs, projects, and issues related to the sanitary sewer system; and
- Proper implementation of regulatory notification and reporting requirements.

2.2 Goals for County System Maintenance and Management

The County has established several internal core objectives to allow County WWM staff to focus on complying with the WDRs and develop strategies and procedures to achieve successful overall management and maintenance of the sanitary sewer system. Goals promote unified efforts towards implementing improvements as they affect the operations, maintenance, and management of the sanitary sewer system. They may also reflect performance, safety, levels of service, resource use, and other criteria.

The County's ultimate goals include operating and maintaining all portions of the County's sanitary sewer system to minimize the potential for SSOs and to quickly and effectively mitigate the impacts associated with an SSO if it were to occur so as to protect life, environment, and property while adhering to regulatory requirements. To achieve these goals, the County's SSMP includes methods for ensuring that adequate capacity to convey the peak wastewater flows is provided and that comprehensive procedures are established to meet all applicable regulatory notification and reporting requirements.

The County's DPW is responsible for ensuring the proper operation and maintenance of the wastewater collection system. Its mission statement is to:

- *Preserve and enhance public safety and quality of life through reliable, cost effective infrastructure.*
- *Foster partnerships that strengthen relationships with communities and industry.*
- *Provide quality and responsive service through highly motivated, professional, and knowledgeable staff in a safe and fair work environment.*
- *Continually improve quality of service through optimal resource management.*

Building on this mission statement, the County's wastewater collection system goal is to provide safe, effective, and efficient operation of the County's wastewater collection and conveyance system. This is accomplished through:

- Proper management, operation, and maintenance of all parts of the system.
- Reduced occurrences of and potential for SSOs.
- An effective FOG Control Program.
- Assurance of adequate capacity to convey peak wastewater flows.
- A current long-range planning and improvement plan.
- Compliance with all regulatory requirements.
- Protection of the public's health and safety.
- Effective public information and education efforts.

Chapter 3

COUNTY ORGANIZATION & COMMUNICATION

An organizational chart for the County's DPW Engineering Services Division illustrates the administrative, maintenance, and management positions responsible for implementing, managing, and updating the overall measures included in this SSMP. This chapter identifies the County staff responsible for implementing the plans and procedures included in the SSMP, responding to SSO events, and meeting the SSO reporting requirements.

The communication plan that accompanies the organizational chart serves to define the role of each position so that all elements of this SSMP are addressed on a regular basis and that all appropriate staff is properly informed. A specific response and notification plan to document the SSO emergency response and reporting procedures was developed and is included in the County of San Diego Sanitary Sewer Overflow Emergency Response Plan (SSOERP) (Appendix C of this SSMP). The emergency response plan identifies the staff positions responsible for managing the SSO response, investigating the SSO cause, and reporting the SSO to the appropriate parties. The SSOERP also includes a consolidated list of contact information of key personnel with regards to SSOs. The sequence of communication for reporting SSOs, and the appropriate agencies to be notified, is also included.

3.1 Regulatory Requirements for the Organization and Communication Element

It is required that the County's SSMP clearly identify the staff responsible for implementing measures outlined in this SSMP. The WDRs require that the County identify the following:

1. The name of the responsible or authorized representative;
2. The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures of the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
3. The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the persons 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, and/or California Emergency Management Agency as well as downstream receiving agencies affected by the SSO).

3.2 Discussion on Organizational Structure

The County's organizational structure for the Public Works WWM staff responsible for implementing and overseeing the SSMP program is described in the following sections. Additionally, the general responsibilities of the personnel and chain of communication are included.

3.2.1 Governance

The County's elected governing body is composed of a Board of Supervisors consisting of five (5) elected members. Each member is elected to a four-year term, with terms overlapping. The

Board of Supervisors develops the policies of the County and is responsible for appointing a Chief Administrative Officer (CAO) to oversee the daily operations of the County. The County CAO is directly responsible to the Board of Supervisors for the administration and daily operations of all County functions. The Board of Supervisors must certify the completed SSMP and ultimately share the responsibility for the effective and efficient management of the sanitary sewer system.

Under policy direction of the County CAO, the General Manager/Deputy CAO of the Land Use and Environment Group (LUEG) (GM/Deputy CAO of LUEG) oversees and leads the County's operations, long-term operating strategy, master planning, Capital Improvement Program (CIP), and budget for the DPW. The GM/CAO of LUEG serves to unify the County's efforts in land use, environmental protection and preservation, recreation, and infrastructure development and maintenance.

In response to the administrative direction from the CAO, the GM/Deputy CAO of LUEG oversees the following departments:

- Executive Office.
- SanGIS.
- Agriculture, Weights & Measures.
- Air Pollution Control District.
- Environmental Health.
- University of California Cooperative Extension.
- Parks & Recreation.
- Planning & Land Use.
- Public Works.
- Library.

Figure 3.1 reflects the organization of the DPW and the Engineering Services Division relative to the overall County organization. The WWM Section within the Engineering Services Division is the principal section that will be responsible for the implementation of the SSMP elements.

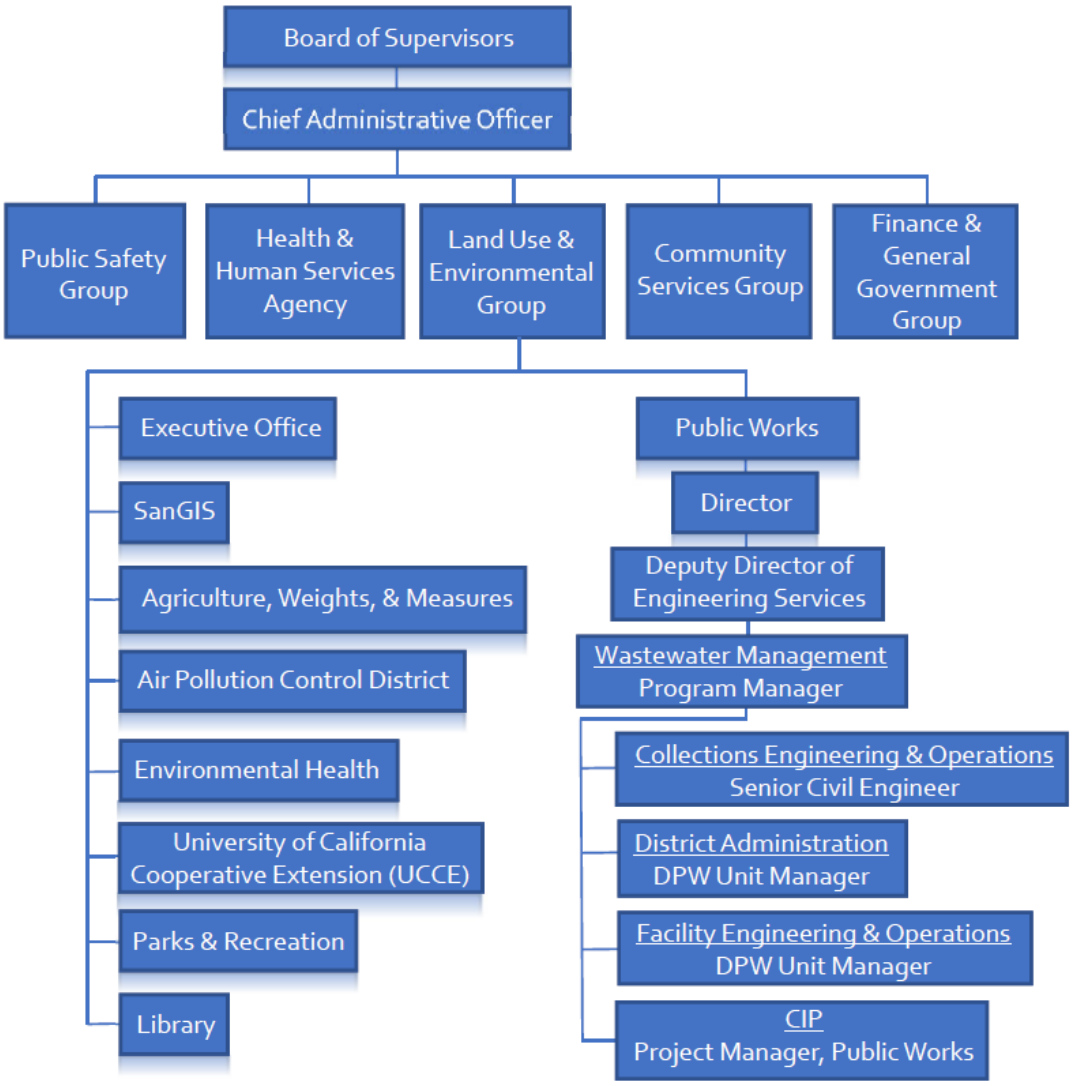

Figure 3.1 County of San Diego Overall Organization Chart

3.2.2 Wastewater Maintenance Organization

The Director of Public Works, who reports directly to the Deputy CAO of LUEG, oversees four (4) Divisions which include Land Development, Engineering Services, Transportation, and Management Services. Within the Engineering Services Division there are three (3) primary Programs that include CIP Project, CIP Construction Engineering/Lab, and WWM. The three (3) sections within the WWM Program include Facility Engineering & Operations, Collections Engineering and Operations, and District Administration.

The operations staff within the Collections Engineering and Operations section is primarily responsible for ensuring the County's wastewater collection system is properly maintained and operational. Within the last two years, the County has added one (1) Senior Equipment Operator and three (3) Equipment Operators. The staff positions within this section include the following:

- Senior Civil Engineer (1)
- Sanitation Regional Supervisor (2)

- Civil Engineer (2)
- Senior Equipment Operator (3)
- Equipment Operator (15)

All 23 positions are currently filled. In addition to the staff within Collections Engineering and Operations listed above. Additionally, County staff from the Facility Engineering & Operations, District Administration, and CIP sections provides some staff and technical support for the WWM Department to assist in the implementation of various SSMP elements.

The organizational chart presented on Figure 3.2 shows the sections and positions identified within the County's WWM Program that are responsible for concurrently implementing and managing various components of plans and procedures required to satisfy the elements of the SSMP.

Highlighted on the organizational chart are the current fiscal year's budgeted positions in the WWM's Program. The boxes shown in dashed lines identify sections and programs that provide as-needed day-to-day support of the sanitary sewer system, but these sections also have other, unrelated duties. Examples of functions provided by these sections may include engineering, system mapping assistance, and permit oversight.

The organizational chart will be revised as necessary to reflect changes and/or updates of key staff positions, responsibilities between the sections, programs and/or sections that support WWM Program activities, changes in the restructuring of chains-of-command made to better align responsibilities and the ability of staff to comply with the WDRs, and to include changes and/or additions to positions for activities needed to successfully implement the various elements of the SSMP.

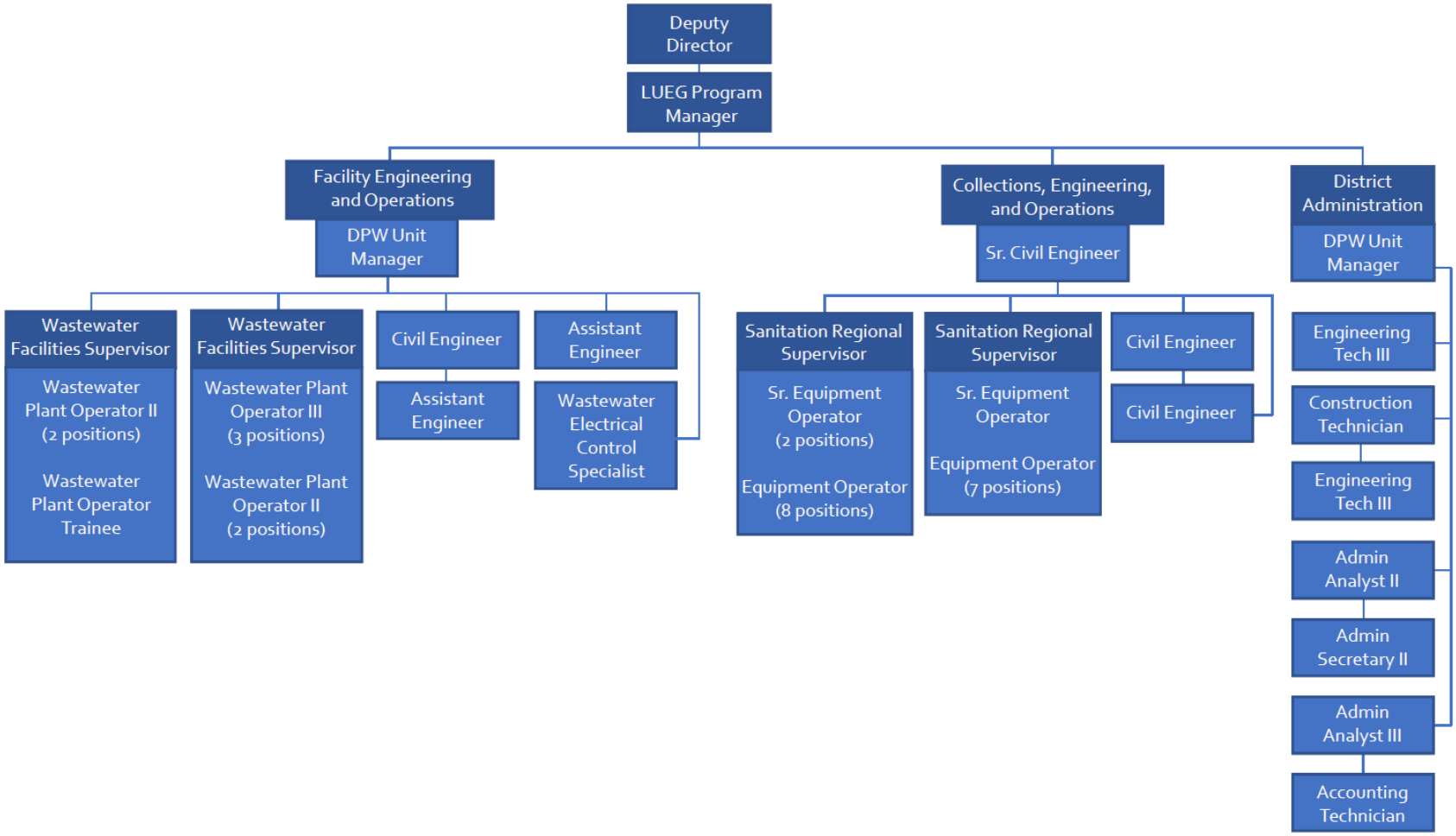

Figure 3.2 WWM Organization Chart

3.2.3 Description of General Responsibilities

The following information provides a brief summary of the roles and responsibilities for the County staff supporting the sanitary sewer.

Chief Administrative Officer (CAO)

The CAO acts under the administration of the Board of Supervisors and is subject to its direction. The CAO provides overall administrative leadership, supervision, and control of County business. In addition, the CAO directs and coordinates, through departments and offices, all County program planning, development, and implementation, and directs the preparation, review, presentation, and control of all County and special district budgets.

The CAO provides program and financial decision making support to the Board of Supervisors, allocates financial resources within Board policy, presents reports and provides recommendations to the Board of Supervisors and other legislative organizations, represents the County, acts as liaison with other public and private agencies, committees, and task forces, and provides information to the media, public, and agency representatives on County-wide activities or issues.

General Manager/Deputy CAO of Land Use & Environment Group (GM/Deputy CAO)

Under policy direction of the CAO, the GM/Deputy CAO of LUEG plans, directs, organizes, executes, and evaluates the overall activities of the County's LUEG to assist the CAO in the direction and coordination of County operations, program planning, development, and implementation. The GM/Deputy CAO of LUEG reviews and approves departmental budget requests, delivers the group budget to the CAO and the Board of Supervisors, directs budget and personnel control related activities, including the development of workload and staffing reports, directs organizational and procedural studies and the preparation of recommendations, consults with and advises County department heads and others on administrative policy, organization, and procedures, prepares reports and correspondence, acts as liaison with other public and private agencies and provides information to County departments, the public, the media, and agency representatives on departmental activities. The GM/Deputy CAO of LUEG represents the CAO or Assistant CAO in the absence of, or at the direction of the CAO, and works with other Deputy CAOs and department heads in support of the goals of the CAO and the Board of Supervisors.

The LUEG is comprised of departments responsible for planning for growth in population, housing, employment, recreational and infrastructure needs, assessment of environmental impacts including enforcement of environmental regulations, and preserving the viability of business.

Director of Public Works

The Director of Public Works plans, directs, manages and oversees the activities and operations of the DPW including the Land Development, Engineering Services, Transportation, and Management Services. The Director coordinates assigned activities with other County departments and outside agencies and provides administrative support to the GM/Deputy CAO of LUEG.

The Director is responsible for planning, directing, organizing, coordinating, and evaluating the overall activities of the DPW which provides services in the areas of waste management,

highway safety, airports, land development, flood control, road operations, engineering design, and transit. The Director manages the development and implementation of county-wide policy and procedures related to public works functions, directs the development and implementation of department plans and programs, reviews and approves negotiated contracts for outside services or equipment, reviews program efforts, and evaluates division progress.

The Director is also responsible for developing the department's annual budget and monitoring revenue and expenditure transactions, conducting fiscal analysis and preparing cost projections, identifying operational problems and formulating appropriate solutions, preparing reports and correspondence, acting as liaison with other public and private agencies and providing information to County departments, the public, and agency representatives on departmental activities and issues, and providing courteous, high quality service to members of the public by personally responding to requests for service or making appropriate referrals.

Deputy Director of Engineering Services

Under administrative direction of the Director of Public Works, the Deputy Director of Engineering Services plans, organizes, and directs the activities of a division providing services in the areas of wastewater. The Deputy Director develops and implements countywide policies and procedures related to the DPW's engineering services. He directs the development and implementation of departmental plans and programs, reviews and approves negotiated contracts for outside services or equipment, reviews the division's efforts and direction, and evaluates program progress.

The Deputy Director of Engineering Services oversees the division's annual budget, conducts fiscal analysis and prepares cost projections, identifies operational problems and formulates appropriate solutions, prepares executive and technical reports and correspondence, acts as liaison with other public and private agencies and provides information to county departments, the public, and agency representatives on departmental activities and issues. Additionally, the Deputy Director of Engineering Services performs special studies and projects as assigned by the Director.

LUEG Program Manager

Under the administrative direction of a Deputy Director or Assistant Director of Public Works, the LUEG Program Manager has significant responsibility for formulating and administering County policies and programs for public works services and projects throughout the unincorporated area of San Diego County. The LUEG Program Manager is responsible for managing all activities and directing supervisory personnel assigned to a significant division of the DPW. He plans, organizes, directs, and manages various public works related activities and is responsible for developing, recommending, and implementing County policy and procedures for a variety of public works services.

The LUEG Program Manager directs the development and implementation of short and long-range countywide and departmental plans and objectives relative to the program's functions, directs the development, implementation, and monitoring of appropriate performance indicator data collection and analysis, monitors the program's progress toward accomplishing objectives, and reviews and evaluates the program's work, and risks.

The LUEG Program Manager oversees the program's annual budget and monitors revenue and expenditure transactions, prepares executive and technical reports and correspondence, acts as

a liaison with other public and private agencies, provides information as needed to County and non-county departments, agencies, and the public, performs special studies and projects as assigned by the Deputy Director, Assistant Director, or Director of the DPW, supervises subordinate managers, supervisors, and staff, and acts in the absence of the Deputy Director or Assistant Director.

Administrative Secretary II

To perform a wide variety of personal secretarial duties for a County manager or executive; to assist the manager or executive with routine administrative duties; and to perform related work as required.

This is the journey level class of the series under general supervision responsible for providing personal secretarial services to executives or managers who serve as Assistant/Deputy Directors of small to medium-sized departments, unclassified managers, or managers with significant administrative responsibility which includes serving as a division chief, formulating and implementing department policy and acting as a liaison with a variety of outside agencies.

DPW Unit Manager of Facility Engineering & Operations

Under general direction, the DPW Unit Manager of Facility Engineering and Operations is responsible for managing all activities and directing staff assigned to a major section within a division of DPW. The DPW Unit Manager formulates and administers policies and programs, and coordinates operations related to wastewater facilities.

The DPW Unit Manager of Facility Engineering & Operations plans, directs, and coordinates the activities of staff involved in operating, repairing, and maintaining County wastewater facilities, evaluates the work of subordinate supervisors and support staff, reviews wastewater system activities to confirm conformation with safety practices, regulations, and ordinances, estimates costs associated with wastewater facility repair and construction projects and recommends materials, supplies, and equipment for procurement.

DPW Unit Manager of District Administration

Under general direction, the DPW Unit Manager of District Administration is responsible for managing all activities and directing staff assigned to a major section within a division of DPW. The DPW Unit Manager formulates and administers policies and programs, and coordinates activities related to wastewater related operations activities.

The DPW Unit Manager of District Administration plans, directs, supports, and coordinates various activities required for ensuring the operation, repair, and maintenance of County wastewater facilities, evaluates the work of support staff, and is involved with wastewater system related activities.

Senior Civil Engineer, Collections Engineering and Operations

Under general direction, the Senior Civil Engineer is responsible for managing highly visible and sensitive projects, and for supervising subordinate engineering staff performing a variety of projects. The Senior Civil Engineer plans, assigns, trains, instructs, assists, supervises, and evaluates the work of professional and technical staff, prepares technical and engineering correspondence and reports, provides technical expertise on matters pertaining to policies, procedures, practices and standards, plans, organizes, directs and controls resources assigned to

best accomplish the assigned functions within budget and at maximum effectiveness, and enforces the appropriate County policies and Director's Letters of Instructions.

Civil Engineer

Under general supervision, the Civil Engineer performs complex engineering research and design project work and is responsible for a wide variety of engineering projects or programs. The Civil Engineer serves as a group lead/supervisor, by preparing engineering plans, specifications, and cost estimates related to departmental projects and programs, prepares engineering documents and specifications for a variety of projects, reviews and checks engineering design drawings for construction, repair, and maintenance projects, calculations, and contractors' shop drawings.

Assistant Engineer

Under general supervision, an Assistant Engineer provides support to Civil Engineers on complex engineering project work. An Assistant Engineer supports tasks, such as, preparing engineering plans, specifications, and cost estimates related to departmental projects and programs, prepares engineering documents and specifications for a variety of projects, reviews and checks engineering design drawings for construction, repair, and maintenance projects, calculations, and contractors' shop drawings.

Wastewater Electrical Control Specialist

The Electrical Specialist is responsible for overseeing and maintaining electrical and electronic systems and equipment at County sewerage facilities; ensuring the continued operation of all electrical/electronic systems, equipment and devices supporting County water systems, sewage treatment plants, pumping and metering stations, and providing technical guidance and advising on electrical and instrumentation devices.

The Electrical Specialist uses, maintains, calibrates, and repairs pneumatic and electronic testing and measuring instruments, and repairs electronic equipment following blueprints and manufactures' specifications. Additionally, he examines construction plans and specifications, and recommends any changes necessary to comply with electrical codes.

Wastewater Facilities Supervisor

Under general supervision, the Wastewater Facilities Supervisor is certified as a Grade V, or Grade III at a minimum, Wastewater Treatment Plant Operator by the State of California Water Resources Control Board and is responsible for performing technical duties related to the operation and maintenance of wastewater treatment plants, wastewater pumping stations, and potable water distribution systems, and related work as required.

The Wastewater Facilities Supervisor is responsible for assigning, reviewing, and evaluating the work of subordinate staff, inspecting, coordinating, and participating in the daily operation and maintenance of wastewater pump station tasks, operating and directing others on the mechanical regulation of equipment controlling the flow and treatment of sewage or sludge, and ensuring that working orders are carried out in the plant or assigned unit of the plant according to the readings of meters, gauges and other control and measuring devices.

Sanitation Regional Supervisor

Under general supervision, the Sanitation Regional Supervisor supervises Sr. Equipment Operators, Equipment Operators, Sewer Construction Maintenance Workers, or Public Work

Trainees involved in the operation and maintenance of sewer and water distribution sewerage systems. The Sanitation Regional Supervisor is a first line supervisory class found only in the DPW, WWM Section.

The Sanitation Regional Supervisor is responsible for planning, assigning, and supervising sanitation crews involved in the operation, construction, repair, inspection, and maintenance of sewerage systems in various County sanitation districts, sewer maintenance districts and to perform related work as required.

Wastewater Plant Operator III

Under general supervision, a Wastewater Plant Operator III possess a Grade III Waste Treatment Plant Operator certificate and may be assigned responsibility for a geographical district to perform technical duties related to the operation, maintenance and installation of rural wastewater treatment plant systems including pumping stations and for to perform related work as required.

The Wastewater Plant Operator III is responsible for a wide variety of tasks, including skilled wastewater treatment plant operations, routine plant maintenance, laboratory, routine housekeeping duties at a treatment plant, daily operation and maintenance of wastewater pump station, and operation and maintenance of all segments of wastewater treatment plant processes including primary, secondary, effluent disposal by percolation beds or spray irrigation, handling of solids by use of digester, drying beds, and landfill disposal. He may perform routine maintenance duties to machinery and equipment, prepares logs and reports, and assumes the duties of a Wastewater Facilities Supervisor during their absence.

Wastewater Plant Operator II

Under general supervision, a Wastewater Plant Operator II is responsible for a wide variety of tasks including the operation, maintenance and installation of rural wastewater treatment plant systems and pumping stations. Responsibilities include operating and maintaining wastewater pump stations and all segments of wastewater treatment plant processes, including primary and secondary, effluent disposal, handling of solids by use of digester, drying beds and landfill disposal, and routine treatment plant maintenance and housekeeping duties.

A Wastewater Plant Operator II possesses a Grade II or higher Wastewater Treatment Plant Operator certificate and carries out working orders in the plant or assigned unit of the plant according to the readings of meters, gauges, and other control and measuring devices.

Wastewater Plant Operator Trainee

Under immediate supervision, a Wastewater Plant Operator Trainee learns how to operate, maintain, and repair plant equipment and acquire experience to obtain state certification. Responsibilities include skilled wastewater treatment plant operations, routine plant maintenance, laboratory, and routine housekeeping duties at a treatment plant.

Senior Equipment Operator

Under general supervision, a Senior Equipment Operator provides technical guidance and training to sewer maintenance equipment operators and workers, directs the work of subordinate classes during split crew operations, completes reports, inventories, inputs information using a PC, and may supervise other operators in the absence of the Sanitation Regional Supervisor.

The Senior Equipment Operator operates a variety of sewer maintenance equipment and hand tools used to repair or maintain sewers, performs minor servicing repair and equipment, operates CCTV equipment, maintains traffic signs and assists with traffic control, maintains mileage and service records, performs sewer investigations that include smoke testing and dye testing.

Equipment Operator

Under general supervision, an Equipment Operator operates a variety of sewer maintenance equipment and hand tools used to repair or maintain sewers, performs minor servicing repair and equipment, operates CCTV equipment, maintains traffic signs, assists with traffic control, maintains mileage and service records, and performs sewer investigations that include smoke and dye testing.

Construction Technician

Under general supervision, the Construction Technician performs a wide variety of para-professional construction work in the field and in an office setting. The Construction Technician is a specialized position related to construction inspection, which includes private development reviewer as well as support to engineering staff and occasionally manage special programs/projects within the section.

Engineering Technician III

Under general supervision, the Engineering Technician III performs a wide variety of para-professional engineering work that requires a substantial degree of independent performance in field, laboratory, or office settings, and involves the selection or adaptation of standard procedures or equipment. The Engineering Technician assists in the preparation of contracts, contract plans, and specifications employing varying techniques and equipment; prepares quantity lists; computes progress estimates, and progress payments; maintains contract or enforcement files; performs general office engineering work, such as handling inquiries for information and complaints; issues sewer related permits; performs research; and maintains engineering, surveying, correspondence, and legal records.

The Engineering Technician may also type simple forms; perform field inspections of construction projects for adherence to standards; issue violation notices, stop work orders, and citations related to enforcement; examine, check, and analyze grading plans, subdivision maps, parcel maps, and records of surveys to insure completeness and accuracy in accordance with laws, regulations, and ordinances.

Administrative Analyst III

The Administrative Analyst III provides manager and executives with general administrative support in a wide variety of areas such as, but not limited to, financial management, budget preparation, purchasing, contract administration and monitoring, cost benefit analysis, personnel, general administration, and special projects requiring quantitative and analytical skills.

The majority of work is performed in compliance with countywide operating policies and procedures, and local, state and federal regulations. The Administrative Analyst III provides supervision and direction to subordinate analysts and clerical staff. Under direction, the Administrative Analyst III advises and assists higher-level management with day-to-day

operations of a department or section of a department, and performs the most complex administrative and analytical work requiring interpretation and the use of discretion in the application of specialized knowledge and resources to accomplish work.

Administrative Analyst II

The Administrative Analyst II provides managers and executives with general administrative support in a wide variety of areas such as, financial management, budget preparation, purchasing, contract administration and monitoring, cost benefit analysis, personnel, general administration, and special projects requiring quantitative and analytical skills.

The majority of work is performed in compliance with countywide operating policies and procedures, and local, state and federal regulations. Under general supervision, the Administrative Analyst II is expected to exercise judgment within guidelines and to independently provide management with the expertise necessary to identify, evaluate, and resolve organization and administrative problems, including recommending changes in policies and procedures and developing methods for implementation.

Accounting Technician

Under general direction, an Accounting Technician performs accounting tasks including collecting, classifying, and summarizing fiscal data, interpreting financial data, and monitoring financial reporting procedures. The Accounting Technician maintains and reconciles subsidiary and control accounts, compiles basic data for special and regular financial statements and reports, determines whether expenditures have been made in accordance with valid procedures and within budgetary constraints, determines whether revenues have been properly recorded, prepares expenditure and revenue claims and routine periodic accounting reports, monitors the county budget calendar, and prepares and maintains procedure manuals for units supervised.

3.2.4 Authorized Representative

The Director of Public Works is the County's Legally Responsible Official (LRO) and authorized representative registered with the State of California to officially sign and certify SSO reports submitted via CIWQS. In addition, the LRO is responsible for certifying the SSMP milestones. The County has also identified the Wastewater Facilities LUEG Program Manager within the Engineering Services Division's WWM Section as the alternate LRO to serve as a backup. The SSMP is also submitted by the Board of Director's for approval.

3.3 County Communication Structure for Collection System Issues

Communication of activities is important in order to keep managerial staff informed of successes and potential problems. Additionally, implementation of the various elements of the SSMP will require constant coordination between the various sections identified in the organizational chart. Therefore, clearly identifying the specific positions and staff as well as establishing communication protocols is necessary so that appropriate personnel are properly informed to respond to sanitary sewer system related issues in the most effective and efficient manner.

3.3.1 SSMP Communication Structure

Continual communication among the Public Works Operations and Engineering Divisions as well as along the levels of hierarchy facilitates and supports activities that allow the Public Works

Operations Division to inform the appropriate staff about the operation and management of the collection system.

Generally, the communication plan will follow the chain of command identified in the organizational chart. Specific levels of authority will be required to facilitate implementation and enforcement of the plans and procedures developed for the SSMP. As the various plans and procedures are implemented, an assessment of the effectiveness of the plans will best be determined by the labor force that executes and evaluates the immediate impacts of the plans and procedures. Efficient and timely responses will be essential so that the adopted plans and procedures are effective for the management and operation of the wastewater system. Figure 3.3 shows the communication protocol that the County should follow for the SSMP. Figure 3.3 also provides a summary of general responsibilities among the staff as it affects the management, operation, and maintenance of the County's sanitary sewer system. The responsibilities listed are to illustrate the overall importance of continual communication among the organization regarding wastewater related issues.

3.3.2 SSO Response and Communication Structure

A communication structure related specifically to SSO responding and reporting is discussed in Chapter 7 of this SSMP and more thoroughly documented in Appendix C, which contains a copy of the County's SSOERP.

An SSO is reported to either the County's Spring Valley Operations Center or the County's Emergency Call Center (New Connections). The call is routed directly to the Standby Duty Supervisor or Standby Duty Operator during normal business hours and during non-business hours, weekends, and designated County holidays.

The staff member receiving the notification is considered the First Responder and has primary responsibility for coordinating and managing all emergency activities to properly respond to the occurrence. The First Responder must immediately go to the reported SSO location to assess the cause and extent of the SSO, recruit necessary assistance from appropriate personnel and/or outside services, determine and direct immediate remedial action, initiate notification of mandatory and advisory agencies, coordinate sample collection and laboratory sample processing, if required, and complete the Sanitary Sewer Overflow Field Report. The size and conditions of the SSO will determine which regulatory agencies will be notified. Notifications to the following agencies will be performed as required:

- San Diego County's Sheriff Department (as necessary).
- California Emergency Management Agency (Cal OES).
- SDRWQCB.
- San Diego County Flood Control District (as necessary).
- County of San Diego Risk Management Division (when a public SSO enters a home or business).

A response and notification procedure are documented in the SSOERP, included in Appendix C. Figure 2-1 of the SSOERP illustrates the response procedures for the potential scenarios (public or private SSOs) and clearly delineates responsibilities for First Responders and ultimate sewer maintenance crew and/or contractor assignments. Table 2-3 of the SSOERP describes the SSO notification requirements, procedures, timeline, and the regulatory agencies that are to be notified as well as other stakeholders as needed.

3.4 Summary and Continuing Efforts

When the County updates its plans and procedures, and/or revises the SSMP, the SSMP should be updated as necessary to include the specific responsibilities associated with each position. To maintain compliance with the WDRs, the County's organizational chart must include the administrative, maintenance, and management positions responsible for implementing, managing, and updating the overall measures contained in this SSMP.

Figure 3.3 Communication Plan and SSMP Responsibilities

Chapter 4

LEGAL AUTHORITY

As a means to prevent Sanitary Sewer Overflows (SSOs) and protect the health and safety of people, property, and the environment, each governing agency must confirm that existing codes, ordinances, policies and procedures include the necessary requirements to implement and fulfill the specific needs of the agency. This chapter of the SSMP includes a discussion of the County's current legal authority for the collection and conveyance of wastewater within its jurisdiction.

4.1 Regulatory Requirements for Legal Authority Provisions

The WDRs require that the County show, through ordinances, service agreements, or other legally binding procedures, that the County possesses the legal authority to:

1. Prevent illicit discharges into its sanitary sewer system including, but not limited to, inflow and infiltration (I/I), storm water, chemical dumping, unauthorized debris, and cut roots, etc.;
2. Require that sewers and connections be properly designed and constructed;
3. Provide access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the County;
4. Limit the discharge of fats, oils, grease (FOG), and other debris that may cause blockages; and
5. Enforce any violation of its sewer ordinances.

4.2 Background for Legal Authority

The California Water Code of the California Code of Regulations, the Federal Clean Water Act (CWA) of the United States Code, and the California WDR grant the County the authority to establish codes, agreements, policies, and procedures for the construction, operation, and maintenance of a wastewater collection system, and the ability to enforce the necessary requirements. Below is a discussion of the relevant sections granting the County this authority.

4.2.1 California Water Code Section 13271, California Code of Regulations

Section 13271 of the California Water Code, Title 23 of the California Code of Regulations, prohibits the discharge of sewage and hazardous material into the waters of the State and requires the proper notification of authorized agencies in the event of an SSO. Entities which do not properly follow the requirements of this section may be found guilty of a misdemeanor and punished by fine, imprisonment, or both.

4.2.2 CWA, Section 1251 of Chapter 33 of the United States Code

In 1972, the federal Congress enacted the Federal Water Pollution Control Act, commonly known as the CWA. The CWA prohibits the discharge of pollutants, including sewage, into public waters of the United States. The federal government has the authority to enforce compliance with the

CWA via specific permits, such as National Pollutant Discharge Elimination System (NPDES) permits, as well as court action such as administrative orders and consent decrees.

4.2.3 Code of Federal Regulations, Title 40, Protection of the Environment

The Environmental Protection Agency (EPA), in its general pretreatment regulations (40 CFR Part 403) prohibits any user from discharging solid or viscous pollutants, such as FOG waste, in amounts which will cause obstructions (blockages) to the flow in the wastewater system and interfere with the operation of the wastewater system.

4.2.4 California Waste Discharge Requirements

On May 2, 2006, the SWRCB adopted the Statewide General WDR for Sanitary Sewer Systems, Order No. 2006-0003. The WDRs are applicable to all federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one (1) mile in length that collect and/or convey untreated or partially treated wastewater to publicly owned treatment facilities in the state of California. Specifically, the WDRs require all affected agencies, municipalities, counties, districts, and other public entities to take a proactive approach to confirm a system-wide operation, maintenance, and management plan is established to effectively reduce the potential, quantity, and frequency of SSOs that may occur and impact surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.

4.3 Summary and Evaluation of the County's Existing Legal Authority

The County's legal authority and powers pertaining to the County's wastewater collection system originate from the powers granted by the State and Federal governments and are codified in the San Diego Code of Regulatory Ordinances (County Code). The County Code provides for the regulation of contributors to the County's wastewater collection system through the issuance of permits and enforcement of general requirements. Through the County Code, the County establishes the authority to confirm the proper and efficient operation, management, and maintenance of the County's wastewater collection system. These controls include, but are not limited to, limiting the types of substances allowed to be discharged into the County's wastewater collection system; establishing requirements for the proper design, construction and connections to the County's collection system; ensuring access to County sewer pipelines for inspecting, monitoring and enforcing activities; limiting the discharge of FOG, and other types of debris that cause blockages; and enforcing violations of its sewer related ordinances, codes, and laws. Additional codes and policies that are applicable may be included at a later date.

The County has executed various agreements with the eight (8) service areas that address the conveyance, treatment, and disposal of wastewater. Service areas and persons requiring wastewater collection service by the County are required to comply with the County's codes, design criteria, and construction standards. The County Board of Supervisors acts as the board for each of the service areas.

Generally, the County requires compliance with several sections of the County Code including Title 1, General Regulations, Title 6, Health and Sanitation, and Title 9, Construction Codes and Fire Code. The County also requires compliance with the latest approved edition of the Standard Specifications for Public Works Construction (Greenbook), Regional Supplemental Amendments to the Standard Specifications for Public Works, and the latest edition of the San Diego Regional

Standard Drawings (SDRSD). Collectively, the documents serve to facilitate the control of I/I; require proper design, construction, installation, testing, and inspection of new and rehabilitated sewers and laterals; enforce violation of ordinances, and promote and protect the health, safety, and general welfare of the citizens of the County.

The following sections include a summary of the County's existing codes as they apply to its sanitary sewer system.

4.3.1 Prevention of Illicit Discharges

The WDRs require the County to prevent discharges of illicit and undesirable substances from entering the wastewater collection system. Illicit discharges include, but are not limited to, the release of I/I, storm water, chemical dumping, unauthorized debris and constituents, and cut roots. Discussed below is the County's authority to control the discharge of the prohibited substances. The following sections in Division 8 of Title 6, of the County Code establish the County's authority to prohibit illicit discharges into the County's wastewater collection system.

Section 68.162, Limitations on Use of Sewer, includes a general description of the various types of substance restricted by the County from being directly or indirectly discharged into the collection system. The restrictions are applicable to all users of the County's system except as permitted by other County ordinances.

This section of the code provides the County the authority to regulate the types of substances permitted to be discharged into the wastewater collection system by further restricting the substances allowable into the system by including a description of the effects on the system the County intends to avoid. Generally, the prohibited items include substances with characteristics that may cause:

- Obstructions to the flow in the sewer system;
- Interference with the operation of the Publicly Owned Treatment Works;
- Damage or create a hazard to the County's wastewater collection system structures;
- A public nuisance or create a hazard to life; and/or
- Interference with the maintenance of the sewage collection system.

Regulating the type of substances allowable in the County's wastewater collection system serves to protect and maintain its integrity.

Section 68.163, Opening Maintenance Hole, makes it unlawful to open or enter, or cause to be open or enter, any maintenance hole in any public sewer, to dispose of garbage or other deleterious substances or storm or surface water, or for any other like purpose.

Section 68.209, Throwing Refuse in Maintenance Holes Prohibited, serves to prevent the discard of any refuse, trash, rubbish or obstruction into the maintenance holes of the trunk line sewers located within or owned by a sanitation or maintenance district.

The County's codes define the general prohibited discharges allowable in the County's wastewater collection system. However, while specific on the intended results to avoid, is vague on the types of specific constituents that the County should not allow in the collection system. Specific constituents should be identified and continual coordination is imperative to confirm that substances that may be detrimental to the operation and maintenance of the system are not permitted into the system.

4.3.2 Proper Connections and Construction

The requirements for the design and construction of new, rehabilitated, and replaced sewer system facilities, including mains, tie-ins, service laterals, cleanouts, maintenance holes, and other system appurtenances, are necessary to confirm the proper operation of the sewer system. The County's Codes require that the design, construction, and installation of sewer related facilities be in compliance with the County's standards and specifications. The following includes a summary of the specific sections of the County Code that establishes the County's authority to require and confirm that wastewater facilities are properly designed and constructed.

4.3.2.1 Title 6, Division 8 – Sewage and Refuse Disposal

Section 68.145, Sewers in County Highway, requires that sewer permits from the County's DPW be obtained for the construction, installation, repair or removal of any sewer or appurtenance that will require excavation or fill upon or under any public highway in the County except State highways.

Section 68.146, Sewers in State Highway, requires that a sewer permit from the California Department of Transportation (Caltrans) be obtained prior to obtaining a sewer permit from the County's DPW for the construction of a sewer in a State highway.

Section 68.147, Main Line Sewers, provides the County the authority to require the review and approval of plans and specifications for compliance with County, state, and other governmental laws or ordinances and compliance with the County's design standards prior to granting a permit.

Section 68.159, Work and Plans Shall Conform, codifies the County's current design and performance criteria. The County Code requires that all work performed and all plans and specifications required under the provisions of the chapter conform to the requirements prescribed by the San Diego Area Regional Standard Drawings and the Greenbook and any amendments approved and adopted by the Board of Supervisors and filed in the Office of the Clerk of The Board of Supervisors. Additionally, compliance with the Regional Supplemental Amendments to the Greenbook is also required. Collectively, the documents provide design and construction information for the County's sewer facilities and serve to facilitate the control of I/I; require proper design, construction, installation, testing, and inspection of new and rehabilitated sewers and laterals; control the discharge of FOG; enforce violation of ordinances; and promote and protect the health, safety, and general welfare of all of the citizens of the County.

Section 68.161, Connecting Sewer In Undedicated Street, prohibits the connection of any sewer which has been or may be constructed in any street, highway, alley, right of way, or other public place prior to the dedication and acceptance of such street, alley, right of way, or other public place by the Board of Supervisors on behalf of the public with any public sewer of the County, unless the sewer is laid under the supervision and to the satisfaction of the Director or the Board of Directors of the County Sanitation District in which the sewer is located and in compliance with the conditions of the County's applicable codes and ordinances.

Section 68.204, Persons Authorized to Make Sewer Service Lateral Connections-Fees, serves to authorize the County, its officers, employees or agents to perform the construction or make any sewer service lateral connections with or to any trunk line sewer within the boundaries of a service area, or with or to any trunk line sewer which is the property of a service area.

4.3.2.2 Title 9, Division 4 - San Diego County Plumbing Code

The San Diego County Plumbing Code (County Plumbing Code) is included in the San Diego County of Regulatory Ordinances, Title 9, Division 4. The County Code adopts Title 24, Part 5 of the California Plumbing Code of Regulations which incorporates, by adoption, the 2006 edition of the Uniform Plumbing Code (UPC) with California Amendments, and the 2007 California Plumbing Code portion of the California Building Standards Code with the County's modifications, additions, and deletions. The County Plumbing Code is applicable to the unincorporated areas of San Diego County.

Section 94.1.1004, Adoption of the Appendices A, B, D, G and I of the California Plumbing Code, adopts the listed appendices in their entirety as part of the County Plumbing Code.

Chapter 1 of Division 4 includes definitions, requirements for permits and inspection for installing or altering systems, regulations for the erection, construction, enlargement, alteration, repair, moving, removal, conversion, demolition, equipment use and maintenance of buildings and structures, including their inspection and provides penalties for violation of this chapter. This chapter applies to all new construction and to any alterations, repairs, or reconstruction, except as otherwise provided for in this chapter.

The codes are specific for wastewater facilities and provide the County the authority to require, review, and approve design and construction plans for facilities discharging flows into the County's wastewater collection system. The County's authority also includes the review of design and construction plans for main line sewers or sewer service laterals within a street, highway, alley, or right of way not dedicated or granted to a sanitation or maintenance district within which the line or lateral is to be located.

4.3.3 Accessibility for Maintenance, Inspection, and Repair

The County Code does not expressly document access requirements for maintenance or repair of the wastewater collection system. Instead, accessibility is specific for sewage pumping and treatment plants and for the inspection of construction work performed under this section. The access requirements for maintenance and repairs of the wastewater collection system are managed through the plan review and permitting procedures for new sewer service where County staff confirms that sewer system facilities are constructed to specific standards within the public right-of-way or within easements. The following sections include a summary of the County's existing codes and ordinances as included in Title 6, Division 8.

Section 68.156, Inspection by Director, in Article 5 of Chapter 1 of the County Code provides the County the authority to perform the inspections and approve the work performed under the provisions of the chapter. Additionally, the section requires that all permittees comply with all applicable provisions the adopted version of the County Plumbing Code. Written final approval and acceptance by the Director is required prior to any facility constructed, altered or otherwise accomplished under the provisions of this chapter, be placed in service by the permittee.

Section 68.158, Maintenance Instructions, in Article 5 of Chapter 1 of the County Code allows the Director of Public Works access to any sewage pumping plant and sewage treatment plant to inspect as often as deemed necessary to determine whether such facilities are properly maintained and operated.

Section 68.206, Inspections of Sewer Connections, of Chapter 2 of the County Code requires that all connections made to trunk line sewers or sewer service laterals within a sanitation or maintenance district remain exposed and all ditches left open until the connection with the trunk line sewer or sewer service lateral has been inspected and approved by an inspector of the appropriate County department. This section also requires that in the event that a connection is made to a sewer that traverses a private property, the plumber or homeowner shall install the pipe to the main sewer and shall uncover the main sewer line so that a saddle connection can be properly made by a person authorized by the County, in compliance with the County's codes, and inspected by a County authorized inspector. In addition, this section requires the homeowner to obtain all easements necessary for the proper installation of the necessary pipeline.

The codes imply that the County may have accessibility rights in that it requires the Director of Public Works to issue a permit before a sewer line may be constructed and connected. As such, the Director of Public Works has the opportunity to confirm that new sewer lines are accessible by County staff. Since this is not an explicit requirement, and it is based on the County's best engineering abilities, no new sewer pipes should be designed without proper access to the facilities for maintenance, repair, replacement and/or rehabilitation purposes. Typically, County staff reviews access and easement requirements during the plan review process for new sewer facilities. To provide adequate access to all facilities, the County should explicitly define which facilities the staff can access for the purpose for maintenance inspection, cleaning, and repair efforts.

4.3.4 Limit FOG Discharge

The County's Department of Environmental Health (DEH) issues the permits and conducts the inspections for Food Service Establishments (FSEs). Working with DEH and the Media and Public Relations Office (MPRO), the DPW can emphasize the importance of minimizing the discharging of FOG into the wastewater collection system. Best management practices (BMPs), which include simple and effective practices that residents and FSEs can implement to prevent and reduce the quantity of FOG discharged into the sanitary sewer system can be developed and made readily available. Several acceptable BMPs can be included on the County's website to facilitate dissemination of and access to the information.

The County's concentrated effort for addressing FOG related issues has been its proactive preventive maintenance program. The routine inspections performed of FSEs by the DEH provides the County an opportunity to reiterate the importance of limiting FOG discharge into the County's wastewater collection system and reduce the potential of SSOs due to excessive FOG. Practical BMPs should continue to be included in the permit conditions as a method to enforce the County's efforts.

4.3.5 Violation Enforcement

Title 1, Division 1, titled General Provisions, Division 6 titled Appeals and Nuisance Abatement, and Division 8 titled Administrative Remedies include provisions, policies, and procedures for implementing and enforcing violations of the County Code. Additionally, Title 6, Division 8 titled Health and Sanitation allows the County to revoke permits issued. Additionally, the County DEH enforces the Health and Safety Code sections pertaining to Retail Food activities, collectively known as CalCode.

The following are the specific sections of the County Code that establish the County's authority to enforce violations of the County's codes as they pertain to the wastewater collection system:

4.3.5.1 Title 1, Division 1 – General Provisions

Section 11.111, Public Nuisance, defines a public nuisance as any violation of the County's code, whether it is an affirmative act, failure to act or failure to comply with any provision of the County Code.

Section 11.116, Violations-Criminal Penalties, summarizes the general penalties for violating sections of the code and for continued violations. The code specifically states that any person who violates any provision or fails to comply with any requirement of this code shall be guilty of a misdemeanor except where the code or State Law specifically provides the offense is an infraction. The County and any prosecuting agency have discretion to charge any misdemeanor offense as an infraction.

(a) A conviction for a misdemeanor is punishable by a fine not to exceed $1,000 or by imprisonment in the County Jail for a period not to exceed six (6) months, or by both fine and imprisonment.

(b) A conviction for an infraction that violates the County Building Code, Electrical Code, Plumbing Code, Mechanical Code or Fire Code shall be punishable as follows:

  (1) A fine of not more than $100 for the first violation;

  (2) A fine of not more than $500 for the second violation of the same provision of this code within one (1) year;

  (3) A fine of not more than $1,000 for each violation of the same provision of this code within one (1) year.

(c) A conviction for all other infractions shall be punishable as follows:

  (1) A fine of not more than $100 for a first violation;

  (2) A fine of not more than $200 for a second violation of the same provision of this code within one (1) year;

  (3) A fine of not more than $500 for each additional violation of the same provision of this code within one (1) year.

(d) The penalties for the second and additional violations in paragraphs (b)(2) and (3) and (c)(2) and (3), above are based upon the dates the violations occur regardless of the dates of conviction. The increased penalties apply even if multiple violations are prosecuted together.

(e) As used in this code "conviction" or "convicted" means a plea of guilty or verdict of guilty or a conviction following a plea of nolo contendere.

Section 11.121, Violations - Criminal, Civil, and Administrative Remedies, allows the County to use any or all of the following remedies to address any violation of this code or failure to abide by any requirement of this code:

(a) Criminal prosecution;

(b) Civil action for any legal and/or equitable remedy including, but not limited to injunctive relief, declaratory relief, civil penalties, damages, restitution, site restoration and cost recovery;

(c) Nuisance abatement as provided by this code (Division 6, Chapter 2, Section 16.201); and

(d) Administrative action as provided by this code (Division 8, Chapters 1 and 2).

4.3.5.2 Title 1, Division 6 – Appeals and Nuisance Abatement

In Chapter 2, Section 16.202.5, Administrative Procedures, provides the County authority to institute administrative proceedings for the abatement of a public nuisance, as defined in Section 11.111 of the Code, resulting from a violation of any statute, regulation or ordinance the County enforces. The administrative procedures include hearings to be conducted in accordance with Section 16.209, Hearing Procedure, and Section 16.210, Hearing Officer's Determination.

4.3.5.3 Title 1, Division 8 – Administrative Remedies

This Division summarizes the County's administrative citation program as an alternative method of enforcing violations of the County's Code. Chapter 1, Administrative Citations, gives the County the authority to implement administrative citations and fines. Chapter 2, Administrative Civil Penalties, outlines the procedures by which County enforcement officials may assess administrative civil penalties as an alternative enforcement method.

Chapter 1 – Administrative Citations

Section 18.104, Administrative Citations, allows a County enforcement officer to issue an administrative citation to any person that has been found responsible for the violation of any County Code, ordinance, and any state law enforceable by the County.

Section 18.106, Amount of Fines, summarizes the administrative fines for a violation imposed pursuant to this chapter shall be $100 for the first citation, $200 for the second citation, $500 for the third citation and $1,000 for the fourth or subsequent citation issued for a repeat violation of the same ordinance provision by the same person within one (1) year from the date of an administrative citation. The maximum fine for a fourth or subsequent citation, however, shall be $500 in cases where the applicable code or ordinance only authorizes the violation to be charged as an infraction. The fine amounts shall be cumulative where multiple citations are issued, however, the maximum amount of accumulated fines, excluding any late payment charges or other costs, shall not exceed $10,000 per parcel or structure for any related series of violations.

Chapter 2 – Administrative Civil Penalties

Section 18.201, Authorization and Purpose, summarizes the procedure by which County enforcement officials may assess administrative civil penalties as an enforcement method for any violation of this code, and other County ordinance and any State law that County officials enforce. The remedies presented in the Chapter 2 may be implemented in addition to all other remedies the County may pursue and only govern enforcement actions brought pursuant to this chapter. Nothing in this chapter limits the

ability of any enforcement official to seek the maximum civil penalties allowed when following any other enforcement procedure or in any civil action.

Section 18.203, Civil Penalties, allows a Director to assess civil penalties against a responsible person pursuant to the administrative procedures in this chapter as follows:

(a) At a daily rate the Director determines pursuant to the criteria in Section 18.205.

(b) For County Code or ordinance violations, up to $1,000 per day per violation against each responsible person, but no more than $50,000 in civil penalties for any one (1) violation against a responsible person in any 12-month period.

(c) For State code violations, up to $2,500 per day per violation against each responsible person, but no more than $125,000 in civil penalties for any one (1) violation against a responsible person in any 12-month period.

(d) When more than one (1) person is responsible for a violation each responsible person may be separately assessed. A person may be found responsible for different violations, or repeat violations, which are subject to separate cumulative maximums.

4.3.5.4 Title 6, Division 8 – Sewage and Refuse Disposal

Section 68.211, Revocation of Permits and Disconnection of Facilities, of Chapter 2 (Connections to Sewers) permits the County to revoke the permit issued to any person in the event of a violation by the permittee of any provision of the chapter. The section authorizes the County to disconnect from the public sewer any connection sewer, main line sewer, or other facility which is constructed, connected, or used without permit, or which is constructed, connected, or used contrary to the provisions of the chapter.

Chapter 5

OPERATIONS AND MAINTENANCE PROGRAM

This chapter of the SSMP discusses the County's operations, maintenance and other related measures and activities as they pertain to its sanitary sewer system.

5.1 Regulatory Requirements for Operations and Maintenance Program

The WDRs require that the SSMP contain descriptive measures of the County's O&M program that are implemented by County staff to facilitate proper and efficient management and maintenance of the sanitary sewer system and the affected appurtenances. The WDRs require that the SSMP include a description of each of the following components as they apply to the County's sanitary sewer system:

1. Maintenance of up-to-date sanitary sewer system map showing all gravity line segments and maintenance holes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
2. Routine preventive 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. The Preventive Maintenance Program utilizes Cityworks; a CMMS system to document scheduled and performed activities, such as work orders;
3. Development of 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 maintenance holes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
4. Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and repair contractors to be appropriately trained; and
5. Development of equipment and replacement part inventories, including identification of critical replacement parts.

5.2 County's Operations and Maintenance Program

The County prepared a comprehensive document titled County of San Diego Operations and Maintenance Program (O&M Program) which includes a summary of the County's current procedures and practices as they pertain to the O&M activities related to its sanitary sewer

system. The County's O&M Program contains information pertaining to the following components for compliance with the WDRs:

- Inventory and Mapping of the Sanitary Sewer System Assets.
- Annual and Seasonal Preventative Maintenance Program.
- Vulnerable Asset Review Program.
- SSOERP.
- FOG Reduction and Management Program.
- Wastewater System Inspection and Assessment Program.
- CIP Project Identification.
- CMMS.
- Equipment and Replacement Part Inventories.
- Training Program.

5.3 Discussion of Regulatory O&M Components

To address the requirements listed in Section 5.1 and as required by the WDRs, the following subsections provide a summary of the applicable O&M procedures currently being implemented. The following paragraphs correlate to the WDR components listed in Section 5.2. The complete O&M Program is included in Appendix A.

5.3.1 Sanitary Sewer System Mapping

The locations of the County maintained wastewater system pipes and associated appurtenances were originally documented using assessor parcel map books. The map books, which were originally prepared based on information obtained from as-built drawings and record drawings, have been converted to GIS using Environmental Systems Research Institute's (ESRI's) ArcGIS software to develop a GIS database of the facilities which facilitates management of O&M activities and expedites data management and retrieval for reporting purposes.

Revisions and/or updates to the assessor parcel map books are typically identified by the District Operations and Engineering staff while performing routine operation and maintenance activities. Discrepancies between information contained on the GIS/as-built/record drawings/assessor's parcel map books and field conditions are manually documented on the map books. The map book pages containing comments are submitted to the County's Cartography staff for updating of electronic files. With the recent conversion of the County's as built information to GIS, the County has developed a formal standard operating procedure for updating GIS information.

Additionally, the County implemented a CMMS asset mapping tool to facilitate viewing wastewater facility related data. The County's intranet-based viewer is specific to the County's wastewater collection system and allows County staff to view newly revised data, associated as-built drawings, and perform data queries.

5.3.2 Preventive Maintenance Program

The County's sanitary sewer system, as do other aging utilities serving mature communities, has required frequent maintenance due to age, extended use, debris accumulation, and tree root intrusion. To minimize and prevent system blockages and preserve and extend the useful life of the sanitary sewer system, the County's Preventive Maintenance Program has primarily included

the routine cleaning of its wastewater pipelines. The County's Preventive Maintenance Program includes scheduled cleaning and root control and is further documented in the O&M Program.

5.3.2.1 Mechanical Cleaning

The County's collection system staff conducts the routine cleaning of the County's wastewater collection facilities one (1) sewer and/or maintenance district at a time in the direction of flow to convergence locations. Additionally, crews clean high frequency maintenance locations (Special Maintenance Sites) on a quarterly basis. These locations include several of the County's pipelines with areas identified as having excessive amounts of grease and sludge accumulation and root concentrations. Five (5) crews consisting of two (2) staff members each are assigned to perform daily routine cleaning tasks.

5.3.2.2 Root Treatment

The County's collection system staff primarily uses the jet-rodder/vactor vehicles in areas with high root concentrations and is currently evaluating implementing a chemical root treatment and maintenance program where the frequency of root treatment is based on information captured during the televising of the system.

As necessary, the jet-rodder/vactor is used to clear roots from the wastewater collection system. Pipelines identified as locations with root intrusion problems are cleaned and routinely evaluated. As locations are identified as requiring cleaning for root control, location information is recorded in the CCTV database, assessed, and evaluated for inclusion in the subsequent Special Maintenance Sites cleaning cycle.

Recently, the County implemented a root control program that includes incorporating chemical root treatment into its maintenance program. The need and frequency of the root treatment will be determined based on information captured during ongoing monitoring and televising of the system. The County has identified several specific areas of the system in which the program in is currently being implemented for further evaluation.

5.3.3 Sanitary Sewer System Inspection and Condition Assessment Program

Regular and systematic inspection and assessment of sanitary sewer system facilities provides a means to monitor the condition of the facilities, the effectiveness of the maintenance operations, and provides a basis for identifying and scheduling capital improvements. In addition, the overall assessment can be used to determine the funding required to repair, rehabilitate, and replace an aging collection system and to prioritize the allocation of funds and optimize the expenditure and efforts to operate a sewer collection system.

5.3.3.1 Installation and Use of SmartCover Monitoring System

The County currently has 32 SmartCovers in place and is planning to install an additional 40 SmartCovers in the near future. The purpose of the SmartCovers is to reduce the risk of an SSO by alerting the County on rising flow trends within the maintenance hole. SmartCovers is a device that has an antenna attached on the maintenance hole cover and a sensor that monitors the height of the sewage flow at the maintenance hole invert. The flow information is transmitted wirelessly to mobile phone applications as well as desktop computers. The information transmits flow trends, alerts, and alarms. The SmartCovers are placed strategically within the system at remote environmentally vulnerable locations, at known SSO locations, and Special Maintenance lines.

5.3.3.2 System Inspection and Assessment

The County employs CCTV technology for the inspection of its pipelines. The CCTV inspections are performed subsequent to pipe cleaning and debris removal and of all new and rehabilitated pipelines to identify potential defects, determine the effectiveness of the cleaning efforts, and confirm contractor compliance with County design and construction standards. The County's CCTV truck is equipped with GraniteNet software developed by Cues. Using the GraniteNet software, permanent records of the inspections are made by capturing still images of the information on the TV screen and recording the information on a portable hard drive. Inspection information is recorded and rated according to the County procedures summarized in the O&M Program in Appendix A. Daily progress is recorded by the staff member and utilized for tracking and reporting purposes.

Generally, condition assessment of the sewer pipelines is performed in the field during the CCTV inspection process by the County field crews performing the inspections. Defects detected are recorded on the system's hard drive to document the defect(s) and potential problem(s) requiring repair and to identify the necessary repair method. Permanent records of the detected defects are produced by capturing images of the information on the CCTV screen and recording the images on the local drive that is maintained at the Spring Valley Operations Yard.

Progress is recorded by staff members and provided to the Senior Civil Engineer of Collections Engineering and Operations and utilized for tracking and reporting purposes. As the necessity to televise a particular location or portion of the wastewater collection system arises, staff is assigned to accommodate the request. The County televises the sewer system one (1) complete service area at a time. Overall, the County televises approximately 10 percent of the system each year.

In addition, the County is in the final year of a complete condition assessment of the sanitary sewer gravity pipelines. The inspection information will be uploaded into the County's local hard drive. This assessment will be utilized to assess the operational and structural condition of each pipeline segment and maintenance hole. The assessment will allow the District to prioritize maintenance and Capital Improvement projects as well as determining five year/ten-year budgets and rate adjustments if needed.

5.3.3.3 Repair and Rehabilitation Projects

The County's District Engineering Division is responsible for performing various types of wastewater facility repairs and rehabilitation improvements. Repair and rehabilitation work performed by crews may include point repairs at cracks, joints, and service interfaces, repairing collapsing or broken sewer pipe, removing obstructions in the sewers that hinder cleaning operations, maintenance hole rehabilitation, video inspection and other related work. District Engineering staff is able to implement mitigation efforts and perform repairs for pipelines of various sizes to restore or replace failing wastewater collection sewer lines. The types of repairs performed by County staff vary according to the location, depth, and utilities located in the vicinity of the necessary repair. As required, the County retains outsides services for repair work that must be completed quickly, is excessively deep, and/or that are located in areas with extensive utilities. Repairs that require resources beyond those available within the District Engineering Division or require further prioritization and planning are coordinated and scheduled with the County's Major Maintenance Project or CIP Division.

5.3.3.4 CIP Development

Several factors determine the priority of projects identified during the assessment process, although the condition of the pipe is usually the primary factor. Additional factors may include goals to reduce SSOs, providing sufficient system capacity, reducing I/I in pipes located below the water table, and/or reducing maintenance efforts by improving the pipe condition. Other considerations include coordinating surface and utility improvements with the other agencies that may be impacted by improvements. Integrating the results of the inspection and assessment efforts, with the capacity modeling efforts, the County will pursue a proactive and comprehensive long-range planning effort.

5.3.3.5 Computerized Maintenance Management System

The County utilizes Cityworks for the record keeping system for the Operation and Maintenance of the sewer system. This system integrates the GIS system, identifying the entirety of the collection system, along with Collections equipment, material, and labor. Daily work orders are created and sent to the Equipment Operators for all task's assigned, which include CCTV, mechanical cleaning, root treatment, small repairs, SSO response, training, along with all other daily assignments. The information gathered from the daily work orders includes the production and cost for all activities.

5.3.4 Training Program

Prior to performing any work on County facilities, staff is trained on the existence and the provisions of the wastewater operations and maintenance policies, procedures, safety policies, and the equipment used. Training for operation of County equipment includes "on-the-job" training in conjunction with bi-weekly "tailgate" meetings to discuss safety issues.

District Engineering staff is encouraged to participate in Sewer Collection System Maintenance classes, sessions provided by various vendors, and obtain Wastewater Treatment Certification through CWEA. Training programs for County District Engineering staff may include, but are not limited to:

- Training on 11 Safety Related Director Letters of Instruction
- Trenching/Shoring
- Asbestos and Silica
- Confined Space
- First Aid/CPR
- Heat Illness Prevention
- Traffic Control and Flagger
- Chain Saw
- Forklift
- Omnibus Transportation Act
- Backhoe Operator
- Fire Extinguisher
- Stormwater Pollution Prevention
- Chlorine safety
- Fall Protection
- Wildfire Smoke Protection

As necessary and determined by appropriate managerial staff, training programs may also include supplemental technical training required to efficiently and safely perform specific job-related duties.

A training program specifically for the management and operation of the County's wastewater collection system should include, but not be limited to:

- Purpose and procedures for proper implementation of the Inspection and Assessment Program including related activities, equipment, and inspection and assessment criteria.
- Procedures for tracking all training activities.
- Proper operation and maintenance of equipment utilized for performing job related duties.
- Repair and rehabilitation program and available resources.
- Importance of communication between all affected County staff including, but not limited to, staff within Facility Engineering & Operations, Collection Engineering & Operations, District Administration, and CIP Sections.
- Importance of following all safety policies and procedures.
- Procedures for tracking and documenting all job-related information.
- Procedures and specific tasks related to effective and efficient execution of SSO Emergency Response.
- Preventative Maintenance Program and related activities.

All appropriate staff should be required to participate in regularly scheduled training sessions to assist staff in awareness of their responsibilities and executing their duties. These training sessions should be organized to include the latest County policies and procedures as well as other relative materials. Training sessions should incorporate hands-on field demonstrations to insure the preparedness of all personnel to all anticipated situations. Field demonstrations should be performed to test equipment, response time, training effectiveness, resources, and manpower capabilities.

5.3.5 Equipment and Replacement Part Inventories

The District Engineering Division maintains an inventory of vehicles and replacement parts. The inventory of vehicles and equipment available for performing the daily routine operations and maintenance of the County's wastewater collection system includes the type and quantity of the equipment.

The County's vehicles and sewer system replacement parts are made readily accessible to maintenance staff. The replacement parts maintained in the Spring Valley Operations Yard are for the specific types of repairs the District Engineering staff performs. The Sanitation Regional Supervisor may purchase equipment from approved vendors using an assigned Purchase Card or "P-Card."

As necessary, maintenance staff solicits the utilization of resources, including equipment and staff. For implementation of repairs that extend beyond the County's internal resource capabilities, the County retains the services of professional contractors.

Chapter 6

FOG CONTROL PROGRAM

This chapter of the SSMP discusses the County's efforts to address FOG related issues including identification of Special Maintenance Sites and source control.

6.1 Project Selection

To comply with the WDRs, the County is required to evaluate its service area to determine whether a FOG Control Program is necessary. If deemed necessary, the County is required to develop and implement a FOG Control Program to effectively control the quantity of FOG that is discharged into the County's sanitary sewer system. The FOG 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;
2. A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
3. The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
4. An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance scheduled for each section; and
5. Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (6) above.

6.2 Purpose of a FOG Control Program

The County is committed to complying with the mandates set forth under the WDRs. To comply with this element of the SSMP, the County needs to either prepare a FOG Control Program, or demonstrate its existing preventative maintenance program effectively reduces the quantity and/or the effects of FOG on the wastewater collection system that may cause sewerage collection system blockages or SSOs.

To determine whether a comprehensive FOG Control Program and implementation of control mechanisms were required, the County prepared a FOG Characterization Study to identify the sources and nature of FOG in its wastewater collection system. In addition, the location of Special Maintenance Sites and SSOs due to FOG were identified.

6.3 FOG Characterization Study

The primary goal of the 2015 FOG Characterization Study (ATKINS, 2015) in Appendix B was to identify the source and nature of FOG within the County's wastewater collection system. The study served to compile and categorize information provided by the County that pertains to the County's wastewater collection system as it relates to FOG. By identifying and locating the sources of FOG in the wastewater collection system, FOG build-up in the system can be

controlled and subsequently reduced, thereby increasing the system operating efficiency and reducing the number of sewer line blockages and overflows.

To locate the likely sources of FOG, a comprehensive list of the existing businesses permitted by the County of San Diego Health Department was obtained. Approximately 232 FSEs likely to use, produce, and/or contribute FOG to the wastewater collection system were identified and mapped as potential sources of FOG within the 2015 FOG Characterization Study.

A list of Special Maintenance Sites per service area associated with the 2015 FOG Characterization Study as well as an updated list of sites provided by the County since the development of the 2015 Study is provided in Appendix B. This list includes locations that are being cleaned by wastewater maintenance staff within the Alpine, Lakeside and Spring Valley Sanitation Districts, and Winter Gardens Maintenance District. The Special Maintenance Sites include pipe segments identified as having high concentrations of FOG and roots and sludge accumulations.

Additionally, historical SSO records reported to the RWQCB since January 2007 to identify additional locations of potential problem sites due to excessive FOG concentrations were also reviewed. New locations identified since 2015 have been included in Appendix B.

6.4 Special Maintenance Sites

There are currently over 400 pipe segments identified by County wastewater maintenance staff as Special Maintenance Sites. Approximately six percent of the Special Maintenance Sites are located within the ASA, 17 percent of the sites are in the LSA, 69 percent are in the SVSA, and approximately 8 percent are in the Winter Gardens Service Area. Currently, there are no Special Maintenance Sites identified within the Julian, Pine Valley, Campo, or East Otay Mesa Service Areas.

Table 6.1 summarizes the total length of pipe of Special Maintenance Sites within each service area.

Table 6.1 Pipeline Lengths of Special Maintenance Sites

Service Area[(1)]	Pipeline Length (feet)	Pipeline Length (miles)
Alpine	6,233	1.2
Lakeside	17,175	3.3
Spring Valley	69,748	13.2
Winter Gardens	8,383	1.6
Total	**101,539**	**19.2**

Notes:
(1) There are no Special Maintenance Sites located in Julian, Pine Valley, Campo, or East Otay Mesa.

As shown in Table 6.1, County wastewater maintenance crews are currently responsible for the quarterly cleaning of approximately 101,539 lineal feet (19 miles) of Special Maintenance Sites pipe. The Special Maintenance Sites within the Winter Gardens Service Area include only sludge and root accumulation. Currently, there are no Special Maintenance Sites due to FOG conditions within the Winter Gardens Service Area.

6.5 Reported SSOs

Historical records obtained from the San Diego RWQCB website were reviewed to determine the approximate location of the SSO reported by the County between 2010 and December 2019. This also included information pertaining to SSO occurrences at private laterals. Since several of the SSOs reported did not include addresses, the County's Maintenance Action Report (MAR) summary spreadsheet was reviewed to identify the approximate locations of SSO occurrences between the years 2010 through 2015. Based on the review of the data obtained from the San Diego RWQCB website in conjunction with the MAR summary, the approximate location of several SSO occurrences were identified to confirm whether FSEs were contributing to the FOG issues within the County. The FSEs were also mapped, which is described in Section 6.6.

6.6 Mapping

Mapping the information allows the County to visually identify areas with excessive FOG concentrations and historical SSOs as well as identify areas susceptible to potential SSOs. Additionally, it allows the County to determine the potential impact of each FSE based on its proximity and relative location to Special Maintenance Sites or other potential FOG contributors. This information serves to assist the County in determining where its resources should be focused to systematically and effectively reduce the potential for overflows and operational problems in a cost-effective manner.

Exhibits 1, 2, and 3, included in Attachment D of the 2015 FOG Characterization Study, illustrate the approximate location of the FSEs identified within the ASA, LSA and Winter Gardens Service Area, and SVSA, respectively. Also shown on the figures are the locations of the current Special Maintenance Sites. The Special Maintenance Sites illustrated have been identified as requiring maintenance due to grease conditions. The locations of the SSOs were also superimposed. The figures illustrate the locations of the reported SSOs for which specific information was available, and that were reported by the County. The SSO locations are shown relative to the FSEs and the Special Maintenance Sites.

6.7 Results

Overall, the data indicates that FOG related SSOs are not associated with FSEs. Rather, most FOG related issues appear to be due to residential discharge of FOG into the system.

Section 5.2 of the 2015 FOG Characterization Study includes a summary of the findings in each of the affected service areas. A copy of the Characterization Study is included Appendix B for reference. In addition, Carollo mapped the locations of SSOs since the 2015 Study and determined that residential discharge was a contributing factor to FOG in the system. Figures are located within Appendix B.

6.8 Conclusions

The County's concentrated effort for addressing FOG related issues has been its proactive preventive maintenance program and the routine cleaning of its Special Maintenance Sites. Only one (1) SSO, which occurred in June 2008, was reported as having been caused due to excessive FOG in the wastewater collection system and this SSO is related to FOG generated by residential customers. The majority of the SSO occurrences have been primarily due to debris accumulation in the pipelines. Overall, the data indicates that the SSOs are not associated with FSEs. Rather, most FOG related issues appear to be due to residential discharge of FOG into the system. Implementing a FOG program at this time would place additional burdens on County

staff and the rate payers. Instead, the County should continue to maintain the collection system and monitor grease related spills.

6.9 Recommendations

The following recommendations were included in the FOG Characterization Study and are intended to be consistent with existing operations and maintenance procedures.

6.9.1 Adjust Frequencies

The County is currently updating the Special Maintenance locations based on the completion of the Countywide CCTV condition assessment and the association CCTV inspection reports. The County is also implementing placement of SmartCovers on a select group of Special Maintenance pipeline to monitor flow trends at the maintenance holes. The rising flow trends may be used to adjust the cleaning frequency.

In addition, the County has established a quarterly cleaning cycle for its Special Maintenance Sites. However, establishing a cleaning schedule based on objective standards could reduce the frequency of scheduled routine cleaning occurring at particular locations and optimize the use of the County's crews. Table 3-1 in the FOG Characterization Study provides objective guidelines for establishing the condition findings of the Special Maintenance Sites and includes a description for each potential condition finding. An updated list of locations since the 2015 Study is in Appendix B.

Prior to implementing changes to the current cleaning schedule, it is recommended that sewer maintenance crews conduct a thorough evaluation of each Special Maintenance Site including pipe segment location, length, diameter, and current cleaning schedule and frequency interval to establish the purpose for designating the site as a Special Maintenance Site. Additionally, County maintenance crews should continue to thoroughly document the type and quantity of debris removed from each pipe segment. The results of the initial evaluation will establish a basis from which the County's wastewater maintenance staff can begin tracking and monitoring the condition findings and other critical elements of each site to determine if the pipe segment has been appropriately designated as a Special Maintenance Site and whether the current cleaning frequency should be modified. Based on the thorough and routine monitoring of the sites and the information obtained, the cleaning frequency can be adjusted and re-evaluated as necessary.

6.9.2 Public Outreach

Working with the County's DEH and the County's MPRO, the DPW can emphasize the importance of minimizing the discharge of FOG into the wastewater collection system. BMPs, which include simple and effective practices that residents and FSEs can implement to prevent and reduce the quantity of FOG discharged into the sanitary sewer system can be developed and made readily available. Several acceptable BMPs can be included on the County's website to facilitate dissemination of and access to the information.

In addition, the routine inspections performed of FSEs by the DEH provides the County an opportunity to reiterate the importance of limiting FOG discharge into the County's wastewater collection system and reduce the potential of SSOs due to excessive FOG. Practical BMPs should continue to be included in the permit conditions as a method to enforce the County's efforts.

Chapter 7

SANITARY SEWER OVERFLOW EMERGENCY RESPONSE PLAN

This chapter of the SSMP provides a summary of the County's SSOERP. A copy of the County's SSOERP is included in Appendix C for reference.

7.1 Regulatory Requirements for Overflow Emergency Response Plan

The WDRs require that the County develop and implement an overflow emergency response plan which identifies measures to protect public health and the environment. At a minimum, the plan must include the following:

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

7.2 Discussion of Overflow Emergency Response Plan

The County prepared the SSOERP that establishes the formal procedures for County staff to contain, correct, and clean up SSOs. The SSOERP is intended to provide the County with a comprehensive document that includes components necessary for minimizing the effects of SSOs on the environment while protecting the public's health and safety.

The SSOERP includes a strategy for the WWM Department to mobilize labor, material, tools, and equipment to contain, mitigate, and clean-up residuals from an SSO and correct or repair any condition which may cause or contribute to an un-permitted sewage discharge. The

document provides the necessary guidelines for County staff to respond to an SSO event and contains the following elements:

- Introduction and Regulatory Requirements.
- SSOERP.
- Public Advisory of Sewage Contamination Procedures.
- SSO Reporting Requirements.
- Training Requirements.
- SSOERP Updating Requirements.
- Various Attachments.

To address the components listed in Section 7.1 and as required by the WDRs, the following subsections provide a summary of the applicable procedures that are currently being evaluated for implementation and included in the SSOERP. Further detailed descriptions of the policies and procedures as they pertain to responding to SSOs are included in the SSOERP document included in Appendix C.

7.2.1 SSO Notification Procedures

The SSOERP includes procedures for proper notification of the appropriate staff in a timely manner. Notifications of possible SSOs are received via telephone calls. All telephone calls or complaints for actual or possible SSOs are routed directly to the appropriate WWM staff from either the County's Customer Service or dispatch personnel at the County's call center if the notification is received during non-business hours. If the Standby Duty Supervisor is not available or non- responsive, then the Standby Duty Operator is notified.

7.2.1.1 Lift Station Alarms

The County's Facility Engineering & Operations staff is responsible for responding to any possible or actual SSO reported at a lift station. When personnel at the County call center receives an alarm, dispatch personnel shall alert the Standby Duty Supervisor or the Standby Duty Operator during non-business hours, weekends, and County holidays. After receiving notification of an alarm activated at a lift station, the Standby Duty Supervisor or the Standby Duty Operator will proceed to the lift station to assess the situation and resolve the problem. If the First Responder requires assistance, he will contact the appropriate personnel for assistance.

7.2.1.2 Public Advisory

The County DEH has primary responsibility for determining when to post notices of polluted surface waters or ground surfaces that resulted from uncontrolled wastewater discharges from its facilities. The DEH may also make a determination and direct County WWM staff to post notices. The postings do not necessarily prohibit the use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination.

The posting of notices shall be done as soon as practical following the initial response to the overflow. Signs should be posted on either side of the point of entry where sewage entered the body of water or public facility and the nearest public access point to that body of water or public facility. Examples of signs are included in Attachment H of the SSOERP, contained in Appendix C.

Should additional notification of sewage contamination be deemed necessary, County WWM staff shall, in cooperation with the County's MPRO, provide further notices through the use of

pre-scripted notices made available to be printed or electronic news media for immediate publication or airing, or by other measures, such as door hangers. Examples of pre-scripted notices, which are included in Attachment I of the SSOERP contained in Appendix C, should be modified to accurately reflect the conditions at the time of publication and/or airing.

7.2.1.3 Regulatory Notification

In the event of a significant overflow [any SSO greater than 10,000 gallons per day (gpd)], the County must notify Federal and State Agency representatives no later than 24 hours, and preferably within two (2) hours, after the overflow. Table 2-3 contained in the County SSOERP identifies the agencies to be notified and when they are to be notified based on the type and volume of SSO. Additionally, SWRCB Order No. WQ 2008-0002-EXEC requires that for any discharge of sewage that results in a discharge to a drainage channel or a surface water, the responsible agency shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the State Office of Emergency Services (OES), the local health officer or directors of environmental health with jurisdiction over the affected water bodies, and the appropriate Regional Water Quality Control Board. Additionally, the County is required to, as soon as possible, but no later than 24 hours after becoming aware of a discharge to a drainage channel or a surface water, submit to the SDRWQCB a certification that the OES and the local health officer or directors of environmental health with jurisdiction over the affected water bodies have been notified of the discharge.

In addition, SWRCB adopted Order No. WQ 2013-0058-EXEC, which amends the Monitoring and Reporting Program No. 2006-0003-DWQ of the Statewide General WDR for Sanitary Sewer Systems. The amendment serves to implement changes to SSO categories by adding a Category 3 SSO type. This change is intended to improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). It also simplified the notification requirement for SSOs reaching surface waters, modified other notification requirements slightly, and added a requirement for submittal of a technical report and a water quality monitoring plan for spills to surface water above 50,000 gallons

After the appropriate parties on the SSO notification list (Table 2-3) have been contacted, the County will contact all other regulatory agencies (see Attachment E of the SSOERP) as required, as well as other impacted parties if there has been an overflow.

7.2.2 SSO Response

The County's SSOERP includes response priorities, safety, and overflow containment, correction, and clean-up measures for potential or actual SSOs of various types. Specific actions to be performed by WWM staff for public and private SSOs are outlined and described. To summarize the SSO response procedures, a flow chart that illustrates the County's emergency response procedures, including notification and request of additional resources as required in the event of a large SSO, is included and offers a concise overview of the steps required to quickly respond to an actual or possible SSO event.

7.2.3 Procedures for Prompt Notification of Regulatory Agencies

The volume, impact, and location of an SSO determine the level of notifications required to comply with County and regulatory requirements. Table 2-3 of the SSOERP summarizes the officials and agencies to be notified and under what conditions they are to be notified of an SSO.

Attachment E of the SSOERP includes a list of the specific names and telephone numbers of the individuals to be notified. The contact list should be updated as necessary and verified at least every six (6) months.

7.2.4 Training of Appropriate Staff and Contractor

Appropriate staff will participate in regularly scheduled training sessions to assist response crews in awareness of their responsibilities and executing their duties. The training sessions will be organized based on the latest SSOERP as well as other reference materials. Training will also incorporate hands-on field demonstrations to insure the preparedness of all response personnel to all anticipated situations.

Training and event participation will be documented and maintained. Currently, Facility Engineering & Operations and District Engineering staff is encouraged to receive training through various vendors and to participate in Collection System Maintenance classes, and obtain Wastewater Treatment Certification through the CWEA. Additional certification requirements may be imposed in the future if deemed necessary by the SDRWQCB.

7.2.5 Emergency Procedures and Response Activities

Guidelines for traffic and crowd control to limit public access to areas potential impacted by un-permitted discharges of sewage based on the various types of SSOs are also provided. Traffic and crowd control guidelines are included in Section 2.6 of the SSOERP.

Additional response activities are detailed in Chapter 3 of the SSOERP that may include posting of notices which shall be done as soon as practicable following the initial response to the overflow.

7.2.6 SSO Prevention and Containment

The County follows an O&M Program to prevent SSOs. The County's Preventative Maintenance Program includes the routine cleaning and inspection of the wastewater pipelines and specifically the Special Maintenance Sites that require a higher frequency of cleaning.

The SSOERP provides the guidance to facilitate and confirm that the proper response to any type of potential SSO occurrence. The SSOERP includes a strategy for the WWM staff to mobilize labor, material, tools, and equipment to contain, mitigate, and clean-up residuals from an SSO and correct or repair any condition which may cause or contribute to an un-permitted sewage discharge. Appropriate mitigation measures to contain the SSO and recover spilled sewage to minimize the impact to the public or environment are included. Additionally, County staff will implement monitoring measures and perform a thorough assessment of the site for potential future SSOs and to prevent SSOs from reoccurring. The efforts serve to minimize and correct any adverse impact on the environment that may potentially result from an SSO.

Chapter 8

DESIGN AND PERFORMANCE PROVISIONS

This chapter of the SSMP discusses the County's design and construction standards and serves to fulfill the Design and Performance Provisions required by the WDRs.

8.1 Regulatory Requirements for Design and Performance Element

The WDRs require that the SSMP address the following:

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

8.2 Discussion on Design and Performance Provisions

To address the components listed in Section 8.1 and as required by the WDRs, the following subsections provide a summary of the applicable provisions currently being implemented by the County.

8.2.1 Design and Construction Standards and Specifications

Criteria for the design and construction of new, rehabilitated, and replaced sewer system facilities, including main, tie-ins, service laterals, cleanout, maintenance holes, and other system appurtenances, are necessary to confirm the proper operation of the wastewater collection system.

All public sewer mains constructed within the County or under contract to the County shall be constructed in accordance with Title 6 of the County Code. Section 68.159 of the County Code codifies the County's current design and performance criteria. The code requires that all work be performed and all plans and specification required under the provisions of the Chapter 1 in Division 8 (Sewage and Refuse Disposal) shall conform to the requirements prescribed by the SDRSD and the Greenbook. Additionally, compliance with the Regional Supplemental Amendments to the Standard Specifications for Public Works' Construction and the San Diego County Standards for Sewer Construction is also required.

Minimum design standards for sewer mains, sewer maintenance holes, sewer laterals, and general guidelines for performing the hydraulic analysis are included in the San Diego County Standards for Sewer Construction. Additionally, the County's Standards for Sewer Construction references the Greenbook regarding sewer connection locations, pipe installation and pipe bedding sections. A copy of the County's current San Diego County Standards for Sewer Construction are included in Appendix D for reference.

Design considerations for facilities that the County considered non-standard, such as treatment plants, pump or lift stations, force mains, internal sealing of existing sewers, outfall sewers,

energy dissipaters, regulating devices, and/or flow measurement devices, not included in the San Diego County Standards for Sewer Construction shall require prior approval from the County before design can begin and prior to final acceptance.

8.2.2 Inspecting and Testing

Section 68.156 of Article 5 of the County Code requires that all work done under the provisions of Chapter 1 of Division 8 shall be subject to inspection by and shall meet the final approval of the Director of Public Works. This section also requires compliance with the applicable provisions of the County Plumbing Code.

The County requires that all main line sewers, service laterals and structures be tested in the presence of a County inspector and in accordance with Section 306-1.4.4 and Mandrel Test per Section 306-1.2.12 of the Greenbook. The Greenbook includes procedures and standards for inspecting and testing the installation of sewer mains and related appurtenances and for the rehabilitation and repair of existing sanitary sewer systems. In addition, it includes inspection and testing criteria for various pipe materials and installation methods. Section 500-1.2.6 requires the Engineer to review pipeline inspection video submitted by the Contractor to verify the pipeline point repair or replacement when retained for construction and installation of wastewater pipelines and maintenance holes prior to backfilling.

Compliance with the Greenbook requires the contractor performing work on the County's sewer facilities to be responsible for conducting a CCTV inspection for all new and rehabilitated sanitary sewer systems and other appurtenances. Final acceptance of the sewer lines will be subject to the internal television inspection.

Chapter 9

SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

Identified as an element of the SSMP, the WDRs require each agency to prepare a System Evaluation and Capacity Assurance Plan. The County registered its service areas and was issued multiple Waste Discharge Identification (WDIDs) Numbers. The service areas are owned and operated by the County with several of the maintenance and/or district sewer flows being conveyed into the City of San Diego's Metro system under a comprehensive Regional Wastewater Disposal Agreement enacted between the City of San Diego and the participating agencies within the Metro system. The sanitation and sewer maintenance districts included in this report and the respective WDIDs are summarized below in Table 9.1.

Table 9.1 County of San Diego Service Areas and WDID Numbers

County Service Areas	WDID Number
County of San Diego Collection System Alpine Service Area Lakeside Service Area Spring Valley Service Area Winter Gardens Maintenance District East Otay Mesa Service Area	9SSO10662
Campo Water & Sewer Service Area (Rancho Del Campo CS)	9SSO10689
Julian Service Area (Julian Water Pollution Facility)	9SSO10673

This chapter of the SSMP discusses the County's capacity management measures to address the current and future capacity requirements of the maintenance and sanitation district's collection systems and the recommended capacity improvement projects.

9.1 Regulatory Requirements for System Evaluation and Capacity Assurance Plan

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

1. **Evaluation**: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates for the capacity of key system components, hydraulic deficiencies

(including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

2. **Design Criteria**: Where design criteria does not exist or is deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
3. **Capacity Enhancement Measures**: The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
4. **Schedule**: The Enrollee shall develop a schedule of completion dates for all portions for the CIP developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D.14 of the WDRs.

9.2 Discussion on System Evaluation and Capacity Assurance Plan

The County's most recent efforts in performing an evaluation of the sanitary sewer systems are documented in the following studies that address the wastewater collection systems for several of the sanitation and/or maintenance districts.

- Alpine & Lakeside Sewer Service Areas Sewer Master Plan (ATKINS,2013)
- Campo Sewer Service Area Sewer Master Plan (ATKINS,2013)
- Julian Sewer Service Area Sewer Master Plan (ATKINS,2013)
- Pine Valley Sewer Service Area Sewer Master Plan (ATKINS,2013)
- Spring Valley Sewer Service Area Sewer Master Plan (ATKINS,2013)
- Winter Gardens Sewer Service Area Sewer Master Plan (ATKINS,2013)
- East Otay Mesa Sewer Maintenance District Master Plan Update (PBS&J,2006)

The master plans are listed with their published author and date. The County is planning to perform an update to the master plans in early 2021.

9.2.1 Summary of Master Plans

The following sections provide brief descriptions of each Master Plan available for review at the time this document was prepared.

Alpine & Lakeside Sewer Service Areas Master Plan

The Alpine & Lakeside Sewer Service Areas Master Plan was completed in 2013. The Master Plan included an evaluation of both the ASA and LSA. It is anticipated that an update to the 2013 Master Plan will commence in 2021.

This Master Plan presented an assessment of the hydraulic capacity of the existing major sewer pipelines and provide a general assessment of the condition of the existing sewer collection system and pump stations located within the ASA and LSA to develop a comprehensive 10-year CIP. The improvement projects identified were considered to correct system deficiencies under existing and build-out peak dry weather flow (PDWF) and peak wet weather flow (PWWF) conditions. Additionally, facilities necessary to provide sewer service to undeveloped areas based on the designated land use, accommodate the anticipated increase in flows, and confirm that there was sufficient capacity in the existing sanitary sewer system were identified.

Campo Sewer Service Area Master Plan

The Campo Sewer Service Area Master Plan was completed in 2013. The Master Plan included an evaluation of the Campo sewer service area. It is anticipated that an update to the 2013 Master Plan will commence in 2021.

The objective of this Master Plan was to document the available treatment capacity and general facility operational assessment, evaluate the system capacity, and provide an assessment of the condition of identified portions of the existing sewer collection system in order to develop a comprehensive 10-year CIP. The improvement projects identified were considered to correct system deficiencies under existing and build-out PDWF and PWWF conditions. Additionally, facilities necessary to provide sewer service to undeveloped areas based on the designated land use, accommodate the anticipated increase in flows, and confirm that there was sufficient capacity in the existing sanitary sewer system were identified.

Julian Sewer Service Area Master Plan

The Julian Sewer Service Area Master Plan was completed in 2013. The Master Plan included an evaluation of the Julian sewer service area. It is anticipated that an update to the 2013 Master Plan will commence in 2021.

The objective of this Master Plan was to document the available treatment capacity and general facility operational assessment, evaluate the system capacity, and provide an assessment of the condition of identified portions of the existing sewer collection system in order to develop a comprehensive 10-year CIP. The improvement projects identified were considered to correct system deficiencies under existing and build-out PDWF and PWWF conditions. The community of Julian is predominately built out and treatment plant and disposal capacity is considered limited due to the high cost of treatment plant expansion of the Julian Water Pollution Control Facility (JWPCF).

Pine Valley Service Area Master Plan

The Pine Valley Sewer Service Area Master Plan was completed in 2013. The Master Plan included an evaluation of the Pine Valley sewer service area. It is anticipated that an update to the 2013 Master Plan will commence in 2021.

The objective of this Master Plan was to document the available treatment capacity and general facility operational assessment, evaluate the system capacity, and provide an assessment of the condition of identified portions of the existing sewer collection system in order to develop a comprehensive 10-year CIP. The improvement projects identified were considered to correct system deficiencies under existing and build-out PDWF and PWWF conditions.

Spring Valley Sewer Service Area Master Plan

The Spring Valley Sewer Service Area Master Plan was completed in 2013. It is anticipated that an Update to the 2013 Master Plan will be started in early 2021.

This Master Plan presented an assessment of the hydraulic capacity of the existing major sewer pipelines and provide a general assessment of the condition of the existing sewer collection system and pump stations located within the SVSA to develop a comprehensive 10-year CIP. The improvement projects identified were considered to correct system deficiencies under existing and build-out PDWF and PWWF conditions. Additionally, facilities necessary to provide sewer service to undeveloped areas based on the designated land use, accommodate the anticipated

increase in flows, and confirm that there was sufficient capacity in the existing sanitary sewer system were identified.

Winter Gardens Sewer Service Area Sewer Master Plan

The Winter Gardens Sewer Area Master Plan was completed in 2013. It is anticipated that an Update to the 2013 Master Plan will be started in early 2021.

This Master Plan presented an assessment of the hydraulic capacity of the existing major sewer pipelines and provide a general assessment of the condition of the existing sewer collection system within the Winter Gardens service area to develop a comprehensive 10-year CIP. The improvement projects identified were considered to correct system deficiencies under existing and build-out PDWF and PWWF conditions. Additionally, facilities necessary to provide sewer service to undeveloped areas based on the designated land use, accommodate the anticipated increase in flows, and confirm that there was sufficient capacity in the existing sanitary sewer system were identified.

East Otay Sewer Service Area Master Plan Update

The East Otay Mesa Sewer Service Area Master Plan was completed by PBS&J in 2006. It is anticipated that an Update to the 2006 Master Plan will be started in early 2021.

This planning study presented an assessment of the major sewer pipeline facilities required to support future development within the service area. The improvement projects identified were considered to support a build-out PDWF condition.

9.2.2 Capacity Assessment Overview

The capacity assessment completed as part of each master plan was based on the results of the hydraulic modeling performed for the collection system in each district and is summarized in the following subsections.

2013 Sewer Master Plans

Master plans were prepared in the year 2013 for Alpine and Lakeside, Campo, Julian, Lakeside, Pine Village, Spring Valley, and Winter Gardens included a capacity assessment based on the results from hydraulic modeling or a spreadsheet model for each service under existing and built-out conditions. The hydraulic capacity of major facilities was determined based on the quantity of wastewater flows generated and expected to be generated within each of the specific service areas. The estimated average flows were estimated based on land use types. Factors were then developed for the PWWF and PDWF for existing and new sewers under 15-inches and/or greater or equal to 15-inches, which was used a basis when evaluating system capacities.

The system evaluation was performed to identify improvements necessary to adequately convey existing wastewater discharges and support future development flows through build-out conditions. The master plans adequately address the dry and wet weather capacity issues for the system limits at the time. Additionally, the master plans include a summary of improvement projects and planned sewer facilities to accommodate planned growth, improve hydraulic capacity, and to service undeveloped areas where applicable.

East Otay Mesa Sewer Maintenance District Master Plan Update

The East Otay Mesa Sewer Maintenance District Master Plan Update included a capacity assessment of the proposed backbone infrastructure based on the results from the hydraulic

modeling performed for the service area under future estimated PDWFs. The hydraulic capacity of the proposed major service area facilities was determined based on the quantity of wastewater flows expected to be generated within the service area. The estimated average flows were determined based on the developed land use, planned development and wastewater generation factors for dry weather conditions. PDWFs were estimated by applying a dry weather peaking factor to the average flow based on the quantity of the tributary population.

The system evaluation was performed to identify improvements necessary to adequately convey future development flows through the build-out condition. At the time of the Master Plan, there were no existing facilities within the service area. The Master Plan includes a summary of the proposed backbone infrastructure to accommodate planned growth.

9.2.2.1 System Evaluation Tools

The County established hydraulic design criteria for use in the planning studies for each service area. The following paragraphs summarize the process and the results.

Hydraulic Model Development

The hydraulic model for each study area was developed based upon the County's prior studies and/or master planning efforts and available data. The models focused on the County's main sewer trunk lines. This is typical within the industry for hydraulic modeling as these facilities convey the highest flows and are generally more likely to experience future increases in flow from new development. The County's trunk sewers serve to collect and ultimately convey the wastewater flows to the Metro sewer system.

The following provides a brief summary of the models created for each study area.

- Alpine & Lakeside Sewer Service Areas– InfoWorks CS (Innovyze, Version 8.5)
- Campo Sewer Service Area – Spreadsheet
- Julian Sewer Service Area - Spreadsheet
- Pine Valley Sewer Service Area - Spreadsheet
- Spring Valley Sewer Service Area - InfoWorks CS (Innovyze, Version 8.5)
- Winter Gardens Sewer Service Area - InfoWorks CS (Innovyze, Version 8.5)
- East Otay Mesa Sewer Service Area – SewerCAD (Bentley)

The methodology used for the spreadsheet tool included a steady state hydraulic analysis spreadsheet using Manning's formula to evaluate flow conditions, such as, wastewater flow depth, flow rate, and velocity within pipes and maintenance holes. This tool was used for smaller service areas, such as, Campo, Julian, and Pine Valley and included physical collection system data, existing and forecasted populations, and per capital unit generation rates.

The hydraulic model application used for Alpine and Lakeside, Spring Valley, and Winter Gardens service areas was InfoWorks CS (Innovyze, Version 8.5). The models were developed using the physical collection system data, existing and forecasted populations, per capita unit generation rates, diurnal patterns, and rainfall events. The model was then calibrated to flow metering records for dry and wet weather conditions. Once the model was calibrated, it was utilized to evaluate the existing collection system under existing and projected dry and wet weather flow conditions in order to identify potential recommended improvements to the existing collection system.

The hydraulic model for the East Otay Mesa Sewer Maintenance District Master Plan Update was developed using SewerCAD. SewerCAD is a hydraulic analysis computer model developed by Bentley that simulates flow conditions, such as wastewater flow depth, flow rate, and velocity, within pipes and maintenance holes in a wastewater collection system. The model can provide a representation of hydraulic flow conditions either, over an extended period of time "Extended Period Simulation (EPS)" or an instant in time "Steady-State" in the sewer's capacity. The Steady-State simulation was utilized in the Master Plan Update, which is an appropriate method for sizing proposed backbone infrastructure. Model attributes, including maintenance holes, pipelines, and pump stations were input into the model with the goal of maximizing gravity flow and connecting into the City of San Diego's existing sewer system, the study area was divided into basins that flow either northerly to the Otay Valley Trunk Sewer system or southerly to the Otay Mesa Trunk Sewer system. Logical connections to the City's system were determined from basin delineations using information from current development plans, general and specific plans, and existing topographic maps.

9.2.2.2 Wastewater Generation Rates

Estimates for wastewater generation rates are typically prepared using population and/or land use data. It is also typical to express wastewater generation estimated in terms of equivalent dwelling units.

The following provides a summary of the methodology used in each service area to develop the wastewater generation rates used.

Alpine and Lakeside Sewer Service Areas

The wastewater generated within the Alpine and Lakeside sewer service areas is collected by County-owned facilities that ultimately connect to Metro for treatment and disposal. The combined flows enter Metro through the Lakeside Interceptor and, as such, the District has proportioned approximately 4.841 million gallons per day (mgd) of their 17.503 mgd of Metro capacity rights to the Alpine and Lakeside sewer service areas. The County has installed local sewer flow meters, which include two flow meters within the ASA, five meters within the LSA, and six interconnections from Padre Dam Municipal Water District along the Cottonwood Trunk Sewer and the Lakeside Interceptor.

Wastewater generation rates were then developed by population and land use, which were the basis for forecasting wastewater flows. The existing metered flows were compared with land use data and population estimates to develop unit wastewater generation rates. Unit generation rates were estimated using two sources for comparison purposes: 1) population estimates compiled by SANDAG (Series 11), and 2) the County's current land use data (Referral Map, May 2008). Based on the findings of the unit generation rate analysis by land use and population, recommended unit rates were established for use in forecasting future wastewater flows.

SANDAG data was utilized to estimate the per capita generation rates for residential and non-residential flows. Table 3.3 in the 2013 Master Plan summarizes the unit factors by service area. Based on 2008 flow data and 2008 SANDAG data, it is estimated that the residential generation rate is 70 gallons per capita per day (gpcd) and the non-residential rate is 25 gpcd within the ASA and 65 gpcd for residential and 25 gpcd for non-residential within the LSA. This was based on a total wastewater generation of 0.357 mgd within the ASA and 2.593 mgd within the LSA. Using population estimates, the total projected wastewater generation through the year 2030 is 0.89 mgd within the ASA and 4.03 mgd within the Lakeside service.

Land use generation rates were then established for single-family residential (240 gallons per day per dwelling unit (gpd/du)), multi-family residential (180 gpd/du), commercial (500 gallons per day per acre (gpd/ac)), industrial (500 gpd/ac), and institutional types (500 gpd/ac). Additional details are located in Table 3.4 in the 2013 Master Plan. These factors were then used to develop wastewater generation estimates through build-out. Using this approach, a total of 1.72 mgd is estimated for the ASA and 6.61 mgd for the LSA. To avoid exceeding its proportioned capacity rights through build-out, the County should continue to monitor flows into Metro over the next five to ten years to determine whether the recommended phased populations are consistent with future flow projections.

Campo Sewer Service Area

The wastewater generated within the Campo sewer service area is collected by County-owned facilities and conveyed to the County-owned RDCWPCF, where flows are treated to secondary standards and disposed via percolation ponds. The County records daily effluent flow readings for the RDCWPCF and the 2010 readings were used for this evaluation.

Wastewater generation rates were then developed by population and land use, which were the basis for forecasting wastewater flows. The existing metered flows were compared with land use data and population estimates to develop unit wastewater generation rates. Unit generation rates were estimated using two sources for comparison purposes: 1) population estimates compiled by SANDAG (Series 11 – population forecast data and Series 11 – existing population), and 2) the County's current land use data (Referral Map, May 2008). Based on the findings of the unit generation rate analysis by land use and population, recommended unit rates were established for use in forecasting future wastewater flows.

SANDAG data was utilized to estimate the per capita generation rates for residential and non-residential flows. Table 3.1 in the 2013 Master Plan summarizes the unit generation rate based on population. Based on 2010 flow data and 2008 SANDAG data, it is estimated that the residential generation rate is 60 gpcd, non-residential generation rate is 25 gpcd, and student generation rate is 25 gpcd. This was based on a total wastewater generation of 47,432 gpd within the Campo service area. Using population estimates, the total projected wastewater generation through the year 2030 is 0.056 mgd.

Land use generation rates were then established for single-family residential (240 gpd/du), multi-family residential (180 gpd/du), commercial (500 gpd/ac), and institutional types (500 gpd/ac). Additional details are located in Table 3.2 in the 2013 Master Plan. These factors were then used to develop wastewater generation estimates through build-out. Using this approach, a total of 0.088 mgd is estimated for the Campo service area. Therefore, the treatment and discharge capacity of 0.10 mgd at RDCWPCF is sufficient through build-out.

Julian Sewer Service Area

The wastewater generated within the Julian sewer service area is collected by County-owned facilities and conveyed to the County-owned JWPCF, where flows are treated to secondary standards and stored in two emergency storage ponds prior to irrigation of surrounding lands for effluent disposal. The County records daily effluent flow readings for the JWPCF and the 2010 readings were used for this evaluation.

Wastewater generation rates were then developed by population and land use, which were the basis for forecasting wastewater flows. The existing metered flows were compared with land use

data and population estimates to develop unit wastewater generation rates. Unit generation rates were estimated using two sources for comparison purposes: 1) population estimates compiled by SANDAG (Series 11 – population forecast data and Series 11 – existing population), and 2) the County's current land use data (Referral Map, May 2008). Based on the findings of the unit generation rate analysis by land use and population, recommended unit rates were established for use in forecasting future wastewater flows.

SANDAG data was utilized to estimate the per capita generation rates for residential and non-residential flows. Table 3.1 in the 2013 Master Plan summarizes the unit factors by service area. Based on 2010 flow data and 2008 SANDAG data, it is estimated that the residential generation rate is 60 gpcd, non-residential generation rate is 25 gpcd, and student generation rate is 20 gpcd. This was based on a total wastewater generation of 30,333 gpd within the JSA. Using population estimates, the total projected wastewater generation through the year 2030 is 0.033 mgd.

Land use generation rates were then established for single-family residential (170 gpd/du), multi-family residential (130 gpd/du), commercial (500 gpd/ac), and institutional types (500 gpd/ac). Additional details are located in Table 3.2 in the 2013 Master Plan. These factors were then used to develop wastewater generation estimates through build-out. Using this approach, a total of 0.046 mgd is estimated for the JSA. Therefore, the treatment and discharge capacity at JWPCF of 0.080 mgd is sufficient through build-out.

Pine Valley Service Area

The wastewater generated within the Pine Valley sewer service area is collected by County-owned facilities and conveyed to the County-owned PVWPCF, where flows are treated to secondary standards and sent to the groundwater system via percolation ponds. The County records daily effluent flow readings for the PVWPCF and the 2010 readings were used for this evaluation.

Wastewater generation rates were then developed by population and land use, which were the basis for forecasting wastewater flows. The existing metered flows were compared with land use data and population estimates to develop unit wastewater generation rates. Unit generation rates were estimated using two sources for comparison purposes: 1) population estimates compiled by SANDAG (Series 11 – population forecast data and Series 11 – existing population), and 2) the County's current land use data (Referral Map, May 2008). Based on the findings of the unit generation rate analysis by land use and population, recommended unit rates were established for use in forecasting future wastewater flows.

SANDAG data was utilized to estimate the per capita generation rates for residential and non-residential flows. Table 3.1 in the 2013 Master Plan summarizes the unit generation rate based on population. Based on 2010 flow data and 2008 SANDAG data, it is estimated that the residential generation rate is 80 gpcd, non-residential generation rate is 25 gpcd, and student generation rate is 10 gpcd. This was based on a total wastewater generation of 12,448 gpd within the PVSA. Using population estimates, the total projected wastewater generation through the year 2030 is 0.013 mgd.

Land use generation rates were then established for residential (80 gpd/du), commercial (250 gpd/ac), and institutional types (250 gpd/ac). Additional details are located in Table 3.2 in the 2013 Master Plan. These factors were then used to develop wastewater generation estimates

through build-out. Using this approach, a total of 0.014 mgd is estimated for the PVSA. Therefore, the treatment and discharge capacity of 0.040 mgd at PVWPCF is sufficient through build-out.

Spring Valley Service Area

The wastewater generated within the Spring Valley sewer service area is collected by County-owned facilities that ultimately connect to Metro for treatment and disposal. The combined flows enter Metro through the Spring Valley Interceptor and, as such, the County has proportioned approximately 10.353 mgd of their 17.503 mgd of Metro capacity rights to the Spring Valley sewer service. The County has 14 flow meters in the SVSA and there are 35 interconnections with the cities of Chula Vista, La Mesa, Lemon Grove, National City, and San Diego. Additional data is provided in the appendices of the 2013 Master Plan. The City of San Diego bills the County for wastewater flows from the Spring Valley SSA based on readings from Metro meter SV-8M, metered interconnections with the cities of Chula Vista and La Mesa, and estimated house counts at the remaining interconnections. Existing flows by meter that were used as the baseline for this evaluation are provided in Table 3-1 of the 2013 Master Plan.

Wastewater generation rates were then developed by population and land use, which were the basis for forecasting wastewater flows. The existing metered flows were compared with land use data and population estimates to develop unit wastewater generation rates. Unit generation rates were estimated using two sources for comparison purposes: 1) population estimates compiled by SANDAG (Series 12), and 2) the County's current land use data (Referral Map, May 2008). Based on the findings of the unit generation rate analysis by land use and population, recommended unit rates were established for use in forecasting future wastewater flows.

SANDAG data was utilized to estimate the per capita generation rates for residential and non-residential flows. Table 3.2 in the 2013 Master Plan summarizes the wastewater rates by population. Based on flow data and 2008 SANDAG data, it is estimated that the residential generation rate ranged between 60 gpcd to 90 gpcd and the non-residential generation rate was 25 gpcd. This was based on a total wastewater generation of 7.07 mgd within the SVSA. Using population estimates, the total projected wastewater generation through the year 2030 is 7.6 mgd.

Land use generation rates were then established for single-family residential (270 gpd/du), multi-family residential (200 gpd/du), commercial (500 gpd/ac), industrial (500 gpd/ac), and institutional types (500 gpd/ac). Additional details are located in Table 3.3 in the 2013 Master Plan. These factors were then used to develop wastewater generation estimates through build-out. Using this approach, a total of 7.66 mgd is estimated for the SVSA. Therefore, the County's capacity rights are sufficient through build-out since they are below current Metro capacity of 10.353 mgd.

Winter Gardens Service Area

The wastewater generated within the Winter Gardens sewer service area is collected by County-owned facilities that ultimately connect to Metro for treatment and disposal. The combined flows enter Metro through the El Cajon Interceptor. The County has apportioned 1.200 mgd of their 17.503 mgd of Metro capacity rights to the Winter Gardens sewer service area. The County has one flow meter in the Winter Gardens service area and there are nine interconnections with the City of El Cajon. The City of San Diego bills the County for wastewater

flows from the Winter Gardens service area based on readings from Metro meter WG-1 and estimated house counts at the El Cajon interconnections. Meter WG-1 has an average dry weather flow (August 2010) of 0.54 mgd and an average wet weather flow (January 2010) of 0.61 mgd.

Wastewater generation rates were then developed by population and land use, which were the basis for forecasting wastewater flows. The existing metered flows were compared with land use data and population estimates to develop unit wastewater generation rates. Unit generation rates were estimated using two sources for comparison purposes: 1) population estimates compiled by SANDAG (Series 11 –population forecast, Series 12 – existing population), and 2) the County's current land use data (Referral Map, May 2008). Based on the findings of the unit generation rate analysis by land use and population, recommended unit rates were established for use in forecasting future wastewater flows.

SANDAG data was utilized to estimate the per capita generation rates for residential and non-residential flows. Table 3.1 in the 2013 Master Plan summarizes the wastewater rates by population. Based on flow data and 2008 SANDAG data, it is estimated that the residential generation rate was 80 gpcd and the non-residential generation rate was 20 gpcd. This was based on a total wastewater generation of 1.9 mgd within the Winter Gardens service area. Using population estimates, the total projected wastewater generation through the year 2030 is 0.97 mgd.

Land use generation rates were then established for single-family residential (280 gpd/du), multi-family residential (210 gpd/du), commercial (500 gpd/ac), industrial (500 gpd/ac), and institutional types (500 gpd/ac). Additional details are located in Table 3.2 in the 2013 Master Plan. These factors were then used to develop wastewater generation estimates through build-out. Using this approach, a total of 1.66 mgd is estimated for the Winter Gardens service area.

Winter Gardens has a current Metro capacity of 1.200 mgd but only 1.0 mgd of capacity in the City of El Cajon sewer system, which is being used by existing flows. Based on the estimated wastewater flow projections, the current City of El Cajon and Metro capacity rights for the Winter Gardens service area are sufficient for existing conditions but the County should review their current agreement with the City of El Cajon and consider revised capacity within the City of El Cajon's sewer system. The County should continue to monitor flows into Metro over the next five to ten years to determine whether the projected phased populations are consistent with future flow projections.

East Otay Mesa Service Area

In the East Otay Mesa Master Plan, the wastewater generation rates were estimated using a land use based approach. The build-out wastewater generation was estimated for non-residential land uses by applying a generation rate per land use type to the net acreage, assumed as 80 percent of the gross acreage. The land uses included Light and Heavy Industrial (500 gpd/ac), Border Crossing Facility (580 gpd/ac), Mixed Industrial (1,000 gpd/ac), Business Park and Commercial (1,500 gpd/ac), and a Power Generating Plant (3,000 gpd/ac). It should be noted that the residential component of the district was assumed to be serviced via on-site septic systems because of its rural density.

9.2.2.3 System Capacity Analysis

The following provides a summary of the methodology used in each district to analyze system capacity.

2013 Master Plans

The 2013 Master Plans analyzed system capacity in the model based on the estimated PWWFs for the existing and build-out dry and wet weather conditions, in order to identify capacity deficiencies and develop CIPs. The existing and buildout model scenarios were run under the peak dry and wet weather conditions in the model and results were compared to threshold criteria to determine capacity deficiencies. In addition, spreadsheet tools were used when hydraulic models were not available.

The threshold criterion was the depth-to-diameter (d/D) ratio at the design flow (Design Q). This d/D ratio was calculated in the InfoWorks program as well as the spreadsheet tool for the existing and buildout dry and wet weather flow conditions and was used to identify pipes needing improvement. For the dry weather conditions, the County's criteria for existing sewers included a maximum allowable d/D ratio of 0.75 for pipe with diameters greater than 15 inches and d/D ratio of 0.50 for pipes with diameters 15 inches and less. For the wet weather conditions, the County's criteria for existing sewers included a maximum allowable d/D = 0.92 for a two-year storm for all pipe diameters. The County's criteria for new sewers under wet weather conditions, included a d/D ratio of 0.75 for pipes with diameters greater than 15 inches or a d/D ratio of 0.50 for pipeline less than or equal to 15 inches. Thus, pipes with d/D ratios greater than these values were identified as needing improvement.

East Otay Mesa Sewer Maintenance District Master Plan Update

The East Otay Mesa Sewer Maintenance District Master Plan sized proposed backbone infrastructure in the model based on the estimated PDWF under the build-out condition. This was used to develop a capital financing plan for development. The design criterion was the d/D ratio at the Design Q. This d/D ratio was calculated in the SewerCAD program for buildout dry weather flow condition and was used to size sufficient pipeline diameters. The County's criteria included a maximum allowable d/D of 0.75 for pipe with diameters greater than 15 inches and d/D ratio of 0.67 for pipe with diameters 15 inches and less.

9.2.3 Capacity Enhancement Measures

Based on the threshold criteria discussed above, a CIP for the replacement of sewer pipelines is each study area was developed. The pipelines that require replacement for insufficient capacity were identified.

9.2.4 Schedule of Improvements

The projects identified in the Master Plan for each study area address capacity limitations for dry weather flow conditions for both existing and build-out conditions. Projects are summarized and presented according to the number assigned to the model during its development. In addition, estimated costs were developed for each service area, which included both capacity and condition improvements prioritized by phase.

9.3 County's Continuing Capacity Assurance Plan Efforts

The County is on schedule to update several of the Master Plans over the next two (2) years to address potential changes in demands, population, and land uses. Additionally, the wastewater collection system capacity assessment should be updated for each Master Plan, if planned development or re-development plans change significantly, if there are changes in contracts with any of the service areas, or if other conditions arise that are expected to have significant capacity impacts on the system.

Chapter 10

PUBLIC EDUCATION AND OUTREACH

The primary objective of a Public Education/Outreach Program is to increase public awareness of sanitary sewer system issues, to promote a sense of stewardship for the County's system and facilitate the County's efforts towards the effective and efficient management, operation, and maintenance of the sanitary sewer system. This chapter of the SSMP discusses the County's efforts to educate and inform the public and affected agencies regarding the proper use of the County's sanitary sewer system.

10.1 Regulatory Requirements for Public Education and Outreach

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

10.2 Discussion of Public Education and Outreach

The County's Public Education and Outreach Program to communicate its efforts to comply with the WDRs and address the development and implementation of this SSMP will serve to educate, inform, and engage key stakeholders, such as agencies that may be affected by an SSO, businesses, developers, contractors, vendors, and plumbers whose business could be impacted by specific requirements or elements of this SSMP.

Through the County's MPRO (position currently vacant), the County should coordinate external communications between the County and the public regarding the implementation and on-going development of this SSMP and its various elements. The MPRO is responsible for preparing and providing pertinent information for news releases, articles, and the website. Additionally, the MPRO can work closely with the Board of Supervisors, County departments, news media, the public and affected agencies to assist in promoting an open and frequent exchange of information necessary for the systematic and effective implementation of the various SSMP elements.

The following includes a summary of the County's efforts to educate, inform and engage the public's support and participation in the proper utilization of the County's sanitary sewer system and comply with the WDR requirements.

10.2.1 County of San Diego Official Website

The County's current outreach efforts include maintaining a website (https://www.sandiegocounty.gov/) to inform the public about County activities. The County's website is an effective communication channel for providing alerts and news to the public. The main page of the website provides access to various County departments including the MPRO, and links to diverse information, important announcements, and agendas for County Council meetings, and other key information for County residents. The County can utilize the website to publish its SSMP to provide the public the opportunity to view and offer input to the County as

the SSMP elements are implemented. In addition, the County can utilize the website to notify the public of important upcoming activities related to sewer system management.

10.2.2 County of San Diego Sanitary Sewer Overflow Emergency Response Plan

The SSOERP includes a Public Advisory of Sewage Contamination Procedures which includes a description of the action that County staff must take to limit public access to surface waters and other areas that may have been impacted by an SSO as well as notify the public of potentially hazardous conditions. Examples of signs that may be posted to provide a warning of potential public health risk are included in Attachment H of the SSOERP. Additionally, pre- scripted notices are included in Attachment I of the SSOERP which may be modified to accurately reflect the conditions at the time of publication and/or airing.

Should additional notification of sewage contamination be deemed necessary, County staff is required to, in cooperation with the County's MPRO, provide further notices through the use of pre-scripted notices made available to the printed or electronic news media for immediate publication or airing, or by other measures, such as door hangers.

10.2.3 Public Meetings

Public meetings to discuss County related issues are held regularly in the North Chambers or Conference Rooms located at San Diego County Administration Center, 1600 Pacific Highway, San Diego, California 92101. The County encourages residents to attend Board of Supervisors meetings to become better informed about how the County works and various issues. The board meetings provide the residents and concerned citizens a forum to provide the board with input on particular programs through the Public Hearing process, and through the Citizen Participation portion of each Board of Supervisors meeting. During Citizen Participation, each person who wishes to address the Board of Supervisors on an item not on the agenda may do so. Copies of the Council Agenda are made readily available to the public from the County's website or the Clerk of the Board of Supervisor's Office. Certification of the completed SSMP is required by the Board of Supervisors during a public Board of Supervisors meeting.

Project specific meetings may also be convened with community leaders and other citizens to discuss the impacts, schedule and criteria of sewer related projects and efforts. These meetings give citizens a forum to learn about the County's activities, voice their concerns, and receive clarification on a variety of issues. Often, the project managers arrange these meetings.

10.3 Public Education and Outreach Media

A variety of means exist to educate and inform the public regarding impacts to the County's sanitary sewer system facilities. The following list identifies several forms of media available for the County to use to educate and inform the public:

- Press releases;
- Door hangers;
- Brochures distributed at County locations and kiosks;
- Announcements and notices placed on the County's web site;
- Specific events to educate the public on the effects of SSOs to the public and environment such as at an earth day fair, open house events, and other appropriate venues.
- Annual mailing to all rate payers.

Included in Appendix E are examples of educational campaigns, which includes a flyer advertising that the drain is not a dump for FOG, a door hanger presented in both English and Spanish that can be left with residents, and best kitchen practices for businesses. Additionally, an example of text that may be included on a postcard and mailed to residents soon after a FOG related SSO has occurred to alert people to the effort required to clear a blockage and to reinforce not to put FOG down the drain. Translation services may be required and anticipated during any educational campaign.

Educating the public to reduce FOG is an important task that should have a specific amount of time dedicated to its success. Investment up front in educating the public, will reduce the financial expenditure in responding to and mitigating FOG related SSOs as they will be effectively reduced. Staff from the DPW and other affected departments should work closely with the County's DEH to develop appropriate messages and with which media the messages should be disseminated.

Additionally, the County intends to communicate on a regular basis with interested parties on the implementation and performance of this SSMP. The Public Education and Outreach Program will allow interested parties to provide input as the SSMP and its elements are developed and implemented.

Chapter 11

MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

This chapter of the SSMP discusses the parameters the County will utilize to track and monitor the progress of implementing elements of the SSMP, the effectiveness of the SSMP, and how the County intends to update and revise the SSMP to keep it current.

11.1 Regulatory Requirements for Monitoring, Measurement, and Program Modifications

The WDRs require the County to:

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

11.2 Discussion of Monitoring, Measurement, and Program Modifications

To date, the County has effectively managed and maintained information pertaining to the wastewater infrastructure by means of manually recording preventive maintenance activities and documenting notifications received electronically and regarding potential and actual SSO occurrences. The County has tracked performance measures through the Cityworks, CMMS, and SmartCovers actual and historical reading logs and reports including, but not limited to, the length of pipe cleaned and inspected, the quantity, cause and location of stoppages, SSOs, and the scheduled maintenance of high frequency maintenance locations. The County will continue to monitor the performance measures it currently tracks.

To address the components listed in Section 11.1 and as required by the WDRs, the following subsections provide a summary of the County's procedures to properly monitor program progress and implement necessary modifications.

11.2.1 Maintain Information Pertaining to SSMP Activities

The County is working to identify the appropriate staff member to be responsible to continually monitor the SSMP provisions to confirm that the system is maintained in conformance with the document. As improvements or modifications are identified, the County will implement the necessary adjustments to the program at the earliest practical time.

11.2.2 Monitor and Measure SSMP Elements

As the SSMP elements are implemented and evolve, the County will modify the elements due to new technology, equipment, code changes, specific program enhancements, and the collection system's rehabilitation through implementation of the CIP. The County staff member responsible for monitoring the SSMP provisions should identify and recommend updates to this SSMP as part of the County's regular performance measurement assessments.

The following performance parameters may be utilized along with other typical industry and EPA performance indicators for the County's system:

- Pipe age.
- O&M cost/mile/year.
- O&M staff/100 miles.
- Percent of system each year.
- Total annual percent cleaned.
- System cleaning cycle frequency.
- FOG related activities.
- Percent CCTV per year.
- I&I monitoring.
- Planning goals status.

11.2.3 Assessment of Preventative Maintenance Program

The County developed the O&M Program that includes a summary of the County's current procedures and practices as they pertain to the O&M activities. On a regular basis, at least once every two (2) years, the County should evaluate the effectiveness of the O&M Program elements and staffing levels. Recommendations for appropriate adjustments and an implementation schedule should be developed. Implementation of any changes should be based on urgency of the need, coordination with other program elements, and management approvals.

11.2.4 Update Program Elements

The County must review this SSMP on a regular basis and update the document with any significant changes. The SSMP must be reviewed, updated, and re-certified at least once every five (5) years. The County's process should include distributing the SSMP to appropriate County staff for review and confirm the most current legal authority, response plans, organizational charts, equipment lists, and contact/notification information is included. Once the County makes operational, maintenance, management, and administrative changes, the County may consider distributing the SSMP to other agencies to perform a peer review of the document. Once recommendations are incorporated into the document, the SSMP will be ready for public dissemination and ultimately for recertification by the Board of Supervisors. The County is responsible for maintaining the SSMP program as required by the San Diego RWQCB and will make the SSMP accessible to the public.

11.2.5 Identify and Illustrate SSO Trends

The County currently maintains information pertaining to actual SSOs. The County also submits SSO information on the CIWQS website, which is accessible to the public. The County will continue to document SSO trends. Finally, the County is efficiently and effectively implementing the measures to properly document and report any SSOs as required by the WDRs.

11.3 SSMP Modifications

The County must update the SSMP periodically to maintain current information and to modify the programs as necessary to confirm program effectiveness and continual compliance with the WDRs. Information that will be routinely updated includes, but is not limited to, contact names and phone numbers for County staff responsible for implementation of specific SSMP programs, staff on stand-by rotational schedule for SSO response, and approved contractors and vendors.

As modifications to elements of this SSMP are deemed necessary, the County will implement them at the earliest practical time. However, changes will be officially made to this SSMP during the annual or bi-annual update to the document. A comprehensive SSMP update and recertification will occur every five (5) years or as necessary and will include any significant program changes.

Chapter 12

SSMP PROGRAM AUDITS

12.1 Regulatory Requirements for SSMP Program Audits

The WDRs require that the County conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two (2) years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the County's compliance with the SSMP requirements identified, including identification of any deficiencies in the SSMP and steps to correct them.

12.2 Discussion of SSMP Program Audits

The County must complete bi-annual audits of its SSMP. Any modifications identified while monitoring the implementation of this SSMP will be officially noted during the SSMP bi-annual audit to confirm this SSMP is up to date. The audit will be completed internally, and the County has the option to have the audit performed by an appropriate third party auditor or a neighboring agency. The audit may include, but not be limited to:

- Reviewing the progress made on the development of SSMP elements.
- Reviewing the status of the SSMP programs implemented.
- Identifying the success of various SSMP programs implemented.
- Identifying the improvements necessary to various SSMP programs.
- Describing system improvements within the two (2) -year audit period.
- Describing system improvements planned for the upcoming two (2) years.
- Reviewing data related to SSO occurrences.

Upon completion of the audit, the County must memorialize the process and results in a written document. The County must retain the audit report on file in compliance with the WDRs. A copy of the report must be submitted to the RWQCB and to the SWRCB.

Carollo performed an updated audit with recommendations, which is included in Appendix F.

Appendix A

COUNTY OF SAN DIEGO OPERATIONS AND MAINTENANCE PROGRAM

County of San Diego
Sewer System Management Plan

Appendix A
OPERATIONS AND MAINTENANCE PROGRAM

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Attachments

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Abbreviations

ASP	Asset Management Program
CCTV	closed circuit television
CIP	capital improvement program
CIP liners	cured-in-place liners
CIPP	cured-in-place pipe
CMMS	Computerized Maintenance Management System
County	County of San Diego
District	San Diego County Sanitation District
FOG	fats, oils, and grease
FRPMP	fiberglass reinforced polymer mortar pipe
FSEs	Food Service Establishments
GIS	Geographic Information System
HDPE	high density polyethylene
I/I	inflow and infiltration
MACP	Maintenance Hole and Assessment Certification Program
MH ID	Maintenance Hole identification
NASSCO	National Association of Sewer Service Companies
O&M	operations and maintenance
PACP	Pipeline Assessment and Certification Program
PVC	polyvinyl chloride
SOPs	Standard Operating Procedures
SSMP	Sewer System Management Plan
SSOs	sanitary sewer overflows
SSOERP	Sanitary Sewer Overflow Emergency Response Plan
WDRs	Waste Discharge Requirements
WWM	Wastewater Management

Chapter 1

INTRODUCTION

The County of San Diego (County) is responsible for the operations and maintenance (O&M) of an extensive wastewater collection system and is tasked with ensuring proper and efficient operation of the system. The County spans approximately 4,526 square miles and has approximately 3 million residents. Approximately three-quarters of the unincorporated population is served by private disposal systems rather than County Sanitation or Maintenance Districts, reflecting the rural nature of large portions of the county. The vast majority of those currently receiving public service are concentrated in two of the more urbanized districts including Spring Valley and Lakeside Sanitation Districts.

The County administers eight service areas that serve approximately 36,000 customers in the several unincorporated diverse and geographically separated communities. All eight County service areas were consolidated into a single agency referred to as the San Diego County Sanitation District (District) and the County Department of Public Works provides management, administrative, operational and various support personnel to confirm that the proper O&M of the wastewater collection system. Table 1.1 includes a summary of the County's Service Areas.

Table 1.1 San Diego County Sanitation District Service Areas

County of San Diego Service Areas	
Alpine	Campo
Lakeside	East Otay Mesa
Spring Valley	Winter Gardens
Julian	Pine Valley

Figure 1.1 depicts the location of the eight service areas within the County. In addition to the facilities contained within each service area, County staff also maintains several additional pipelines throughout the County that are not part of any specific area.

Collectively, the conveyance system includes approximately 432 miles of pipeline, 8,200 maintenance holes, and eight lift stations. Table 1.2 provides a summary of the approximate length of pipeline per service area while Table 1.3 provides a summary of the eight lift stations operated and maintained by County Wastewater Management (WWM) staff.

Harmony Grove has been transferred and is no longer a part of the County's service area.

Table 1.2 Approximate Length of Pipeline per County Service Area

County Service Area	Pipeline Length (feet)[1]	Pipeline Length (miles)
Alpine	111,848	21.2
Lakeside	542,043	102.7
Spring Valley	1,432,607	271.3
Pine Valley	2,726	0.5
Julian	14,996	2.8
Campo	34,883	6.6
East Otay Mesa	22,421	4.2
Winter Gardens	119,764	22.7
Total	**2,281,288**	**432**

Note:
(1) Based on County Geographical Information System (GIS) of San Diego GIS as of December 2017.

Table 1.3 County Maintained Lift Stations

Service Area	Lift Station	Address	City/State/Zip
Spring Valley	Jamacha	9903 Jamacha Boulevard	Spring Valley, CA 91978
	Ramona Avenue	411 Ramona Avenue	Spring Valley, CA 91978
	Vista Del Lago	9041 Camino Lago Vista	Spring Valley, CA 91978
	Rancho San Diego	11971 Singer Lane	Spring Valley, CA 91978
Alpine	Galloway	444 Arnold Way	Alpine, CA 92001
	Harbison Canyon	215 Bridle Court	Alpine, CA 92001
Lakeside	Moreno Avenue	10955 Moreno Avenue	Lakeside, CA 92040
	Woodcreek	15935 Spring Oak Road	El Cajon, CA 92021

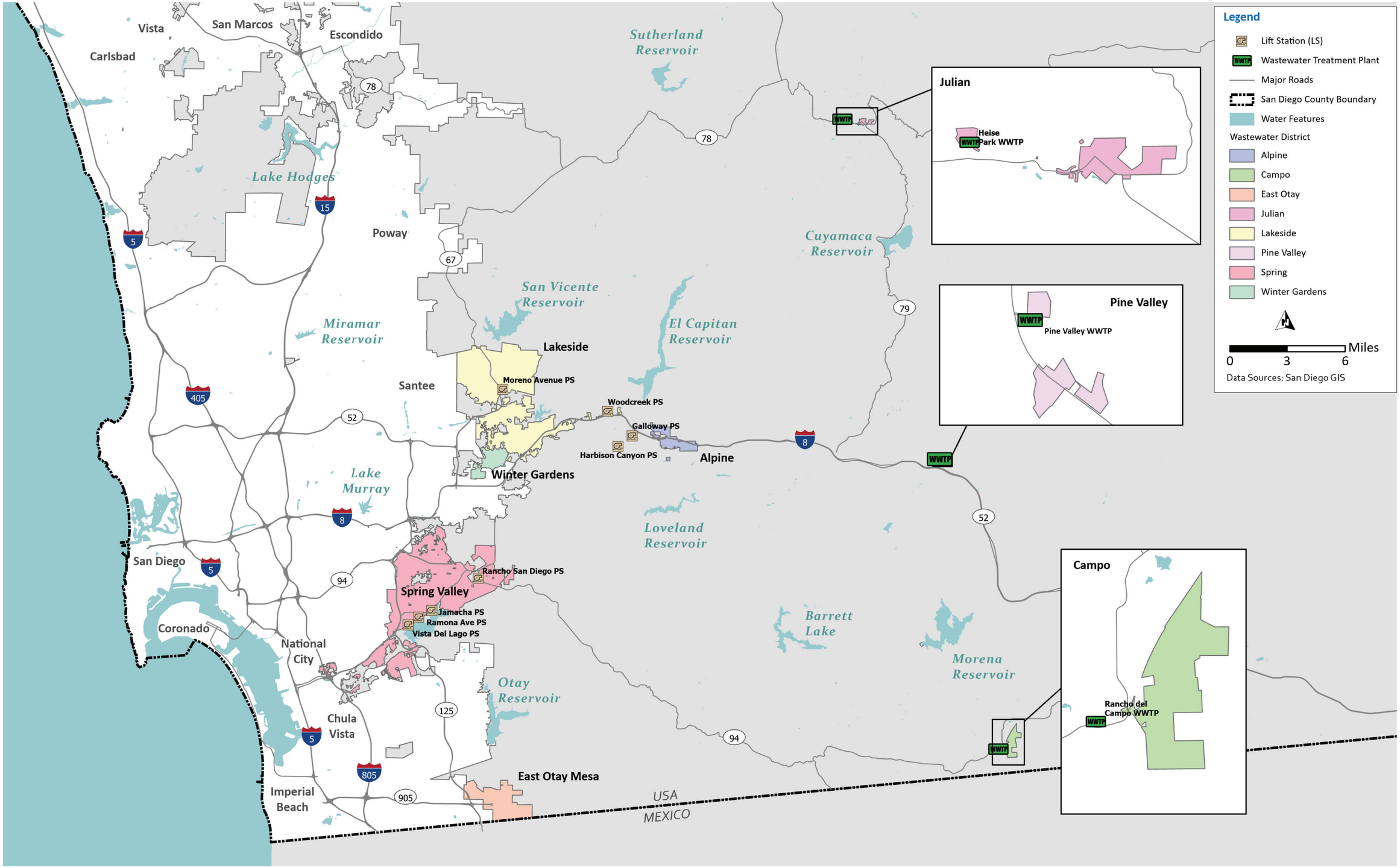

Figure 1.1 County of San Diego Sanitation District Service Areas

Wastewater treatment is provided by either the City of San Diego's Metropolitan Wastewater system or one of several locally based plants operated by the respective County service areas depending on the community. Table 1.4 provides a summary of the locally based plants operated by the County. Since the Waste Discharge Requirements (WDRs) pertaining to the Sewer System Management Plan (SSMP) include requirements for wastewater collection systems, specific O&M information pertaining to the County's wastewater treatment plants and the sewer lift stations is not included in this document.

Table 1.4 County Maintained Treatment Plants

Treatment Facility	Address	City/State/Zip
Rancho Del Campo WWTP	31035 Forrest Gate Road	Campo, CA 92006
Julian WWTP	2840 Highway 78	Julian, CA 92036
Pine Valley WWTP	Pine Valley County Park, Old Highway 80	Pine Valley, CA 91962

The County is dedicated to improving the condition and performance of its wastewater collection system and reducing the number of sanitary sewer overflows (SSOs). Development and implementation of a wastewater collection system O&M program serves to confirm that the wastewater collection system is routinely and properly maintained in a manner that minimizes failures and extends the longevity of the system.

This document summarizes the County's current procedures and practices as they pertain to the O&M activities and includes recommendations to augment the County's current activities to further facilitate compliance with the State WDRs. Specifically, the O&M Program contains comprehensive descriptions of the elements affecting the O&M of the County's wastewater collection system including, but not limited to, system inventory and mapping, the work order process, inspection and assessment of the system including objective standards, capital improvement program (CIP) project identification process, preventative maintenance procedures, repair and rehabilitation procedures, and staff training programs.

1.1 Purpose of an O&M Program

With the establishment and documentation of a comprehensive O&M program the specific details of the activities and procedures that personnel follow to implement the program are made available. A well planned, documented, and executed O&M program can provide the optimum level of maintenance activities for the least total maintenance cost. The following components are included in this O&M program:

- Inventory and Mapping of the Wastewater Collection System Assets.
- SmartCover System Monitoring System.
- Seasonal and Rain Event Triggered Vulnerability Asset Review.
- Preventative Maintenance Program.
- Sanitary Sewer Overflow Emergency Response Plan (SSOERP).
- Fats, Oils, and Grease (FOG) Reduction and Management Program.
- Wastewater System Inspection and Assessment Program.
- CIP Project Identification.

- Cityworks Computerized Maintenance Management System (CMMS).
- Equipment and Replacement Part Inventories.
- Training Program.

The following sections include a summary of the activities currently performed by the County's Department of Public Works' WWM staff and provide recommendations to supplement the County's current efforts.

Chapter 2

WASTEWATER COLLECTION SYSTEM INVENTORY AND MAPPING

A comprehensive inventory of the County's wastewater collection system assets documents the horizontal and vertical locations of sewer collection system facilities, as well as the attributes of various sewer system components. This information is used to develop a GIS database of the wastewater collection system assets which facilitates management of O&M activities and expedites data management and retrieval for reporting purposes.

The locations of most sewer mains and associated appurtenances within the County were originally documented using assessor parcel map books. The map books, which were originally prepared based on information obtained from as-built drawings, have been converted to GIS using ESRI's ArcGIS software. The conversion of records to GIS has primarily included digitizing location information from the County's map books and recording facility attributes including:

- Year of installation.
- Diameter.
- Slope.
- Material.
- Invert elevations.
- Maintenance hole rim elevations.
- Effective length of pipeline segments between maintenance holes.
- Flow direction.

The conversion of the graphic information to the computerized mapping system, population of the GIS database, assignment of identifying labels to all pipeline segments and maintenance holes will allow the County to facilitate the effective management of the system and implement an asset management program (ASP) for the wastewater collection system. To confirm that the accuracy of the information contained in the GIS and minimize the potential errors associated with the update of any graphic data converted into GIS, County staff continues to review and confirm the accuracy of the information. Involved in the review is staff with extensive knowledge and experience with the County's wastewater collection system.

Discrepancies between information contained on the County GIS system and field conditions have been manually documented on the GIS PDF. The PDF's containing comments are subsequently submitted to the County's GIS staff for updating of electronic files. With the conversion of the County's as built information to GIS, the County has developed a formal standard operating procedures (SOPs) for updating GIS information.

Additionally, the County has begun implementing an asset mapping tool to facilitate viewing wastewater facility related data. The County's intranet-based viewer is specific to the County's wastewater collection system and allows County staff to view newly revised data, associated as-built drawings and perform data queries.

2.1 System Inventory and Mapping Recommendations

The following are recommendations to facilitate the comprehensive documentation of facility attributes and efficient and effective management of the County's sewer facilities.

2.1.1 Gather Additional Attribute Data

In addition to the data captured for the wastewater collection system, including the unique identifiers for each asset, the County captures the following data:

- Coordinates of maintenance holes, clean outs, and dead ends.
- Service connections (approximate location is acceptable).
- Rehabilitation and repair data:
  - Acceptance date of work.
  - Rehabilitation material.
  - Effective nominal diameter of pipe.

Obtaining and incorporating additional system data will allow County staff to better manage and maintain the collection system and maintenance related information.

2.1.2 Implement Mapping and CMMS Software

The Preventive Maintenance Program utilizes Cityworks, a CMMS, to document scheduled and performed activities, such as, work orders.

In addition, the County's intranet-based viewer is specific to the County's wastewater collection system and allows County staff to view newly revised data, associated as-built drawings, and perform data queries. Implementing the asset mapping tool to interface with the County's GIS data and versatile CMMS system will assist staff in managing maintenance activities associated with its wastewater collection system assets, documenting operational and maintenance activities and field conditions, and managing capital assets and infrastructure to better plan and fund potential future capital improvement projects.

2.1.3 Develop and Implement a Routine Data Maintenance Procedure

Maintaining and updating data is a continuous process. Improvements by property owners and developers continuously change or add new sewer pipelines and connections that County staff and crews need to be aware of. Also, while working on the system, crews will identify discrepancies in the printed data that requires updating and/or revising. Staff has created an SOP for collecting this data, regularly entering new asset information, and correcting and/or revising discrepancies found in the data.

The SOP is as follows: Through closed circuit television (CCTV) information and completed CIP and Private development projects all changes are identified on a pdf; the changes are sent to LUEG GIS with a tracking form. The updates to the GIS system are verified through the acceptance of the tracking form. The tracking form is routed through various engineering groups and GIS personnel to confirm the accuracy of changes.

As the GIS data is updated, an identified staff member, competent to use the GIS system, has the responsibility of updating the GIS and for verifying the data for accuracy. A new hardcopy master map is produced to allow the next month's changes to be documented and tracked. Each hardcopy master map with documented discrepancies and/or required revisions should be marked as complete once the GIS data is updated and archived for a minimum of one year. Maps should be reproduced depending on the number of changes and updates. This will confirm that crews and other staff have current data and serve to alleviate potential problems in the field with maintenance and repair efforts.

Chapter 3

WASTEWATER COLLECTION SYSTEM PREVENTATIVE MAINTENANCE

The County's wastewater collection system, as many aging utilities serving more mature communities, has required frequent maintenance due to age, extended use, debris accumulation, and tree root intrusion. To minimize and prevent system blockages and preserve and extend the useful life of the wastewater collection system, the County's Preventive Maintenance Program has primarily included the routine cleaning of its wastewater collection system pipelines. This section discusses the cleaning program, and methods available to the County, and recommendations for cleaning efforts.

3.1 Cleaning Program

A component of a comprehensive O&M program includes performing routine cleaning services of the wastewater collection system. The primary purpose of cleaning the wastewater collection system is to remove the accumulation of foreign material from the sewer system. Cleaning should be performed in response to or in anticipation of one or more of the following conditions:

- Blockages (solid and/or semisolid obstructions resulting in cessation of flow).
- A reduction of hydraulic capacity due to sediment, roots, intrusions (connections or other foreign bodies), grease, encrustation and other foreign material restricting the capacity of a sewer, which may result in a surcharge or flooding.
- Pollution caused by either the premature operation of combined wastewater overflows due to downstream restrictions in hydraulic capacity or discharge of debris from overflows during storms.
- Odors caused by the retention of solids in the system for an extended period of time, which may result in septic conditions producing corrosive hydrogen sulfide gas.
- Sewer inspections that may include visual, CCTV, or manned entry inspections to improve visibility of the pipeline surface.
- Sewer rehabilitation efforts - the wastewater collection pipelines should be cleaned prior to implementing any sewer rehabilitation work.

Generally, an effective routine cleaning program requires determining the cleaning needs, establishing priorities and scheduled cleaning activities, acquiring the support of an appropriate number of crews and personnel, acquiring necessary equipment, establishing written standard cleaning procedures, preparation of standard forms, establishing performance measures, and a mechanism for including cleaning information in the CMMS.

The County's wastewater collection system generally requires cleaning to remove accumulated debris and sediment that has fallen out of suspension from the waste stream. All pipes should be cleaned in a methodical and systematic manner to confirm consistency in the cleaning efforts. Typically, cleaning is performed by inserting the cleaning equipment into the pipeline at the

downstream maintenance hole and pushing the equipment up to the upstream maintenance hole. The cleaning equipment is then pulled down from the upstream maintenance hole to the downstream maintenance hole, since the flow in the pipe can assist moving debris downstream.

3.1.1 Descriptions of Cleaning Methods Available

Common cleaning methods include jetting, mechanical rodding, bucketing (also referred to as winching or dragging), and manual or mechanical digging. The method employed is usually determined in advance and is typically contingent upon the pipe type and size and on the conditions expected in the pipe. Table 3.1 provides a summary of the most commonly used methods to clean a sewer system.

Table 3.1 Common Sewer Cleaning Methods

Technology	Uses and Applications
Mechanical	
Rodding	• Uses an engine and a drive unit with continuous rods or sectional rods. • Blades rotate and break up grease deposits, cut roots, and loosen debris. • Rodders also help thread the cables used for TV inspections and bucket machines. • Most effective in lines up to 12 inches in diameter.
Bucketing (Winching, Dragging)	• Cylindrical device, closed on one end with two opposing hinged jaws at other. • Jaws open, scrape off the material, and deposit it in the buckets. • Partially removes large deposits of silt, sand, gravel, and some types of solid waste.
Digging (includes manual digging)	• Involves excavating material by machine or hand and placing into buckets to remove material. • Optimal in large diameter sewers. • Requires confined space entries. • Techniques now used infrequently.
Hydraulic	
Balling	• A threaded rubber cleaning ball that spins and scrubs the pipe interior as flow increases in the sewer line. • Removes deposits of settled inorganic material and grease build-up. • Most effective in sewers ranging in size from 5 to 24 inches in diameter.
Jetting	• Directs high velocities (at approximately 2,000 psi) of water against pipe walls. • Removes debris and grease build-up, clears blockages, and cuts roots within small diameter pipes. • Efficient for routine cleaning of small diameter, low flow sewers. • Using jetter/vactor vehicles is considered a best practice.
Flushing	• Introduces a heavy flow of water into the line at a maintenance hole. • Removes floatables and some sand and silt. • Most effective when used in combination with other mechanical operations such as rodding or bucket machine cleaning.

Technology	Uses and Applications
Kites, Bags, and Poly Pigs	• Similar in function to the ball. • Rigid rims on bag and kite induce a scouring action. • Effective in removing accumulations of decayed debris and grease downstream.
Traps	• Collect sediments and large items at convenient locations. • Must be emptied on a regular basis as part of the maintenance program.

Notes:
(1) United States Environmental Protection Agency (Sept. 1999). Collection Systems O&M Fact Sheet - Sewer Cleaning and Inspection. (EPA 832-F-99-031).

Although the commonly used cleaning methods have proven effective in maintaining sewer systems, there are limitations to several of the cleaning methods used. Table 3.2 provides a summary of the limitations of several cleaning methods.

Table 3.2 Limitations of Cleaning Methods

Cleaning Method	Limitations
Mechanical	
Rodding	• Continuous rods are harder to retrieve and repair if broken and they are not useful in lines with a diameter greater than 12 inches because the rods have a tendency to coil and bend. This device also does not effectively remove sand or grit, but may loosen the material to be flushed out at a later time.
Bucketing (Winching, Dragging)	• This device has been known to damage sewers. The bucket machine cannot be used when the line is completely plugged because this prevents the cable from being threaded from one maintenance hole to the next. Set-up of this equipment is time-consuming.
Hydraulic	
Balling and Jetting	• In general, these methods are only successful when necessary water pressure or head is maintained without flooding basements or houses at low elevations. Jetting - The main limitation of this technique is that caution needs to be used in areas with basement fixtures and in steep-grade hill areas. Balling - Balling cannot be used effectively in pipes with bad offset joints or protruding service connections because the ball can become distorted.
Flushing	• This method is not very effective in removing heavy solids. Flushing achieves temporary movement of debris from one section to another in the system.
High Velocity Cleaner	• The efficiency and effectiveness of removing debris by this method decreases as the cross- sectional areas of the pipe increase. Backups into residences have been known to occur when this method has been used by inexperienced operators. Even experienced operators require extra time to clear pipes of roots and grease.
Kites, Bags, and Poly Pigs	• When using this method, use caution in locations with basement fixtures and steep-grade hill areas.

Note:
(1) United States Environmental Protection Agency (Sept. 1999). Collection Systems O&M Fact Sheet - Sewer Cleaning and Inspection. (EPA 832-F-99-031).

3.1.2 Mechanical Cleaning Efforts by County

The County's Collections Engineering and Operations staff conducts routine cleaning of the sanitary sewer system. Cleaning of the sewer mains is performed by five crews, each consisting of two staff members, at an approximate rate of 3,200 lineal feet per crew per day. The cleaning of the entire wastewater collection system of all pipes 18 inches and smaller, including Special Maintenance sites, is performed on a yearly basis using three jet-rodder and two combination vactor/jet-rodder vehicles. Sewer lines greater than 18 inches in diameter need to be inspected on a periodic basis to confirm flows are not being obstructed.

The County's cleaning efforts focus on one service area at a time in the direction of flow to convergence locations. Sewer maintenance crews work daily to eliminate potential pipe and maintenance hole blockages. Five crews are assigned to perform daily routine cleaning tasks. Additionally, crews clean Special Maintenance Sites on a quarterly basis. These locations include several of the County's pipelines with sags and areas identified as having excessive amounts of grease and sludge accumulation and root concentrations.

Cleaning efforts are assigned and documented daily through the Cityworks CMMS. Documented information pertaining to sewer main cleaning activities include lineal footage cleaned, pipe size, pipe length, type of debris removed, names of staff performing the cleaning, and any additional pertinent information. Progress may vary depending on the existing conditions, staffing available, and other assigned duties.

The County revised its documentation process. All rodding sheet information has been transferred to the Cityworks program and cleaning information is uploaded to both the Rodding Sheets and Cityworks. Rodding Sheets, used to document cleaning efforts, allow for the documentation and collection of more comprehensive information pertaining to the cleaning efforts. Additional data collected includes:

- Water loads used per basin.
- Length of pipe cleaned.
- Number of passes necessary for proper cleaning.
- Preliminary assessment of upstream and downstream maintenance holes.
- Accessibility issues.
- Type of debris removed (roots, grease, silt).
- Amount of debris removed (light, moderate, heavy).
- Identification of potential defects/deficiencies.

Since implementing the Cityworks program and revised rodding sheets, County staff has been able to identify additional areas requiring specific maintenance needs and is updating the list of Special Maintenance Sites as the maintenance efforts capture more comprehensive system conditions.

3.1.3 Root Removal Efforts by County

Root intrusion can damage sewers and cause sewer pipelines to restrict flow and/or plug. County sewer maintenance staff primarily uses the jet-rodder/vactor and/or continuous rodder vehicles in areas with high root concentrations and is currently implementing a root treatment and maintenance program where the frequency of root treatment is based on information captured during the televising of the system.

As necessary, the jet-rodder/vactor is used to clear roots from the wastewater collection system. Pipelines identified as locations with root intrusion problems are cleaned and routinely evaluated. Target sites are located in the older developed areas with large mature trees as well as locations identified via the CCTV inspection efforts. As locations are identified as requiring cleaning for root control, location information is recorded in the CCTV database, assessed, and evaluated for inclusion in the subsequent cycle of the Special Maintenance cleaning schedule.

The County implemented a program for assessing the need for incorporating chemical root treatment into its maintenance program. The need and frequency of the root treatment will be determined based on information captured during ongoing monitoring and televising of the system. The County has identified several specific areas of the system in which the program in is currently being implemented for further evaluation.

3.2 Preventative Maintenance Recommendations

The County's preventative maintenance program includes cleaning each pipe, 18 inches and smaller, at least once every year, and to clean the identified high frequency maintenance sites on a quarterly basis. This interval of cleaning has proven sufficient for adequate maintenance of the system. This report is formally documenting this effort.

To improve the cleaning efforts, the County has established cleaning metrics to measure progress and effectiveness of the program. All sewer mains 18-inches in diameter and smaller will be cleaned on an annual basis along with the special maintenance cleaning program. It is recommended that the County continue to clean the sewer system a complete service area at a time for easy identification and tracking. Further, work assignments should continue to be made on a regular basis, to confirm the completion of specific cleaning goals by crews. As well, this will allow the crews to adjust their progress based on the diameter of pipe being cleaned (larger diameter pipe takes longer to clean than smaller diameter pipe), emergencies as assigned, and unforeseen impediments, such as rain, traffic, and easement access, that impede their progress on any given day. Based on the assumptions that follow Table 3.3, five crews would be responsible for cleaning approximately 49,500 lineal feet of pipe per week. This will result in an average of approximately 2,475 lineal feet per day per crew, which is within industry standards. As crews complete their assignment, subsequent assignments should be issued, regardless if the work is completed in less than one week.

Table 3.3 Weekly Cleaning Footage Benchmark

Cleaning Target	Pipe Length to be Cleaned	
Weekly Cleaning Target	49,500 lineal feet	9.38 miles
Monthly Cleaning Target	198,000 lineal feet	37.5 miles
Quarterly Cleaning Target	594,000 lineal feet	112.5 miles

Assumptions for annual cleaning efforts include:

- Five crews of two persons each should be assigned to continuously clean the system.
- Each crew can average 39 weeks to complete the assigned weekly cleaning tasks; this allows for 13 weeks for vacations, holidays, (non) scheduled equipment maintenance, unforeseen crew assignments, and training.
- Each crew will work four days per week on any cleaning assignment.

- Crews are responsible to document and report anomalies (e.g. material, diameter, depth, length, etc.) in the Cityworks daily work orders for correction in the master GIS database.
- There is 2,069,760 lineal feet of 12-inches in diameter or smaller sewer in the system.
- There are approximately 101,539 lineal feet of Special Maintenance Sites cleaned on a quarterly basis.

To confirm the effectiveness of the cleaning activities, the County's CCTV inspection crew should consider randomly televising approximately 5,300 lineal feet of pipe that has been cleaned with in the past two weeks. The locations should be equally divided among the work performed by the crews performing the cleaning during the two-week period. This will result in checking approximately 5 percent of the pipe recently cleaned. The CCTV effort should occur on a quarterly basis. The inspection should identify what the cleaning crews have done well and what areas need improvement. This information should be regularly shared with the cleaning crews at tailgate meetings or status meetings, to allow them to improve their techniques using the cleaning equipment. It should be noted that debris can, and often, enters the pipeline after cleaning, and therefore the video inspection should not be used as evidence to document job performance. Rather, the information should be used as a training tool and to document possible trends of improper or illegal disposal of material in the wastewater collection system.

3.2.1 Accelerated Cleaning Program Plan

A cleaning interval should be established for Special Maintenance segments that include pipe segments with the potential to accumulate debris more quickly than other sections and those areas susceptible to blockages that can lead to an SSO. Examples of Special Maintenance sites include pipe segments with sags or shallow slopes, areas identified as having high concentrations of grease, sludge and root accumulations.

Currently the County cleans these sites on a quarterly basis. Establishing a cleaning schedule based on objective standards could reduce the frequency of scheduled routine cleaning occurring at particular locations and optimize the use of the County's crews. Prior to adopting changes in the accelerated cleaning program, the Special Maintenance Sites should be verified and documented in a database, with the locations, lengths, diameters, and current cleaning frequency intervals. Furthermore, the crews should continue to document the type and amount of debris removed from these segments. The information obtained should be recorded and documented as condition findings that include four standard Condition Findings: "clear," "light," "medium," and "heavy."

Table 3.4 includes a description for each potential condition finding. The condition finding for a pipe that is being cleaned on an appropriate cleaning frequency will return a "light" condition finding. A pipe consistently indicating a "clear" condition finding indicates that the pipe cleaning may be occurring too frequently. A pipe returning a "medium" or "heavy" condition finding is an indication that the cleaning frequency for the pipe may need to be increased. Situations that may result in false condition findings include pipelines with structural failure, vandalism, construction related blockages, etc.

Table 3.4 Guidelines for Condition Findings

Clear	Light	Medium	Heavy
No observable grease, roots, sludge, or debris	1.0 to 1.5 gallons of sludge, small chunks of grease, 20 to 30 minutes to clean a line, 1 to 2 passes to clear the water	2 to 3 gallons of sludge, moderate chunks of grease, 30 minutes to clean a line, 2 to 3 passes to clear the water	4 or more gallons of sludge, grease, clumps of roots; more than 30 minutes to clean a line; more than 4 passes to clear the water

Notes:
(1) A "line" is a pipe segment that averages 300 feet between two maintenance holes.

Throughout the year, the sewer maintenance staff, in consultation with the engineering staff, should evaluate the data and determine whether the interval between cleanings should be adjusted. To determine if the cleaning interval should be adjusted for a Special Maintenance site, staff should review the following items:

- The past four condition findings.
- CCTV inspection data collected within the last 12 months.
- Utilizing SmartCover to monitor flow trends where applicable.
- As-built data.

It is recommended that cleaning frequency intervals include:

- One month.
- Two months.
- Three months.
- Six months.
- Twelve months (annual maintenance interval).

Pipes should be cleaned on an interval of at least once every 12 months. However, for instances where cleaning may occur prior or subsequent to the scheduled cleaning date, the cleaning frequency will be considered in conformance if the cleaning occurred within an acceptable range of time. Table 3.5 provides a summary of a possible range of time which may be acceptable for the cleaning of specific facilities and is based on the initially established cleaning frequency.

Table 3.5 Cleaning Frequencies

Established Cleaning Frequency	Acceptable Range for Cleaning Frequencies
Monthly	1 week (before or after)
Every 2 Months	1 week (before or after)
Every 3 Months	2 weeks (before or after)
Every 6 Months	3 weeks (before or after)
Every 12 Months	4 weeks (before or after)

The following summarizes the metrics used by the County to keep or modify the established cleaning frequency for a give pipe segment:

- Decreasing a pipe's cleaning frequency: A pipe's cleaning frequency can be reduced to the next cleaning frequency interval if the condition finding for the pipe segment has been documented as "clear" at least three times consecutively, when cleaned according to its established target interval each time. Decreasing or increasing the pipe's cleaning frequency is based on the monitoring of the flow trends of the SmartCover. This can be done during the non-rainy season to eliminate the influence of I/I. For example, if a pipe on a one-month cleaning interval receives three "clear" findings, the cleaning interval can be adjusted to a cleaning interval of once every two months. If the segment then receives three "clear" findings while on a two-month cleaning interval, the cleaning interval can be adjusted to once every three months. Pipes cleaned before their target cleaning interval window and the acceptable range for cleaning frequencies, will not be considered for extension of cleaning frequencies. Pipes cleaned after their target cleaning interval and within the acceptable range for cleaning frequencies will still be considered for the extension of cleaning frequencies.
- Increasing a pipe's cleaning frequency: A pipe's cleaning frequency should be increased to the next cleaning frequency interval if the pipeline receives a "medium" or "heavy" condition finding. For example, if a pipeline on a six-month cleaning interval receives a "medium" finding, it will be placed on a cleaning frequency of every three months. Additionally, CCTV investigations that show substantial debris or conditional defects that may cause or result in an SSO should be further evaluated and the cleaning frequency adjusted to accommodate the necessary cleaning frequency for the pipe segment. Further, a maintenance-related SSO (i.e. one not caused by vandalism or related to construction) is justification for increasing the cleaning frequency of a pipe segment.
- Maintaining a pipe's cleaning frequency: A pipe's cleaning frequency will remain the same if the condition finding for the pipe segment is repeatedly documented as "light" or alternates condition findings of "clear" and "light.

Chapter 4

SANITARY SEWER OVERFLOW EMERGENCY RESPONSE PLAN

SSOs may occur due to blocked sewers, a restriction in the wastewater collection system, pipe failures, flows exceeding the capacity of the system, mechanical malfunctions, and other natural or man-made causes such as roots and debris pushed into sewer mains from private laterals. The County recognizes the importance of protecting the health and safety of the public as well as the environment by preventing sewer flows from reaching surface waters and waters of the United States. This requires implementation of procedures to minimize the impact of an SSO occurrence and comply with the requirements of state regulations.

In response to the potential occurrence of an SSO, the County prepared an SSOERP, which establishes the formal procedures for County staff to respond to, contain, correct, and clean up SSOs, and minimize the effects of SSOs on the environment while protecting the public's health and safety. The County's SSOERP serves to supplement and be consistent with existing emergency plans and SOPs currently implemented by the County. The overall plan facilitates coordination and mobilization of necessary equipment and personnel in an organized and efficient manner when responding to an SSO. The SSOERP also incorporates the Monitoring and Reporting Procedures mandated by the WDRs. The primary goal in establishing an official SSOERP is to confirm that County staff responds appropriately and efficiently to all known SSOs immediately.

Chapter 5

FATS, OILS, AND GREASE REDUCTION AND MANAGEMENT PROGRAM

Residual FOG is primarily a by-product from food preparation in residential buildings and, more commonly, Food Service Establishments (FSEs). Therefore, proper handling and disposal of waste containing excessive FOG quantities is important since it can accumulate in the wastewater collection system and eventually block collection pipes and sewer lines, resulting in backups and overflows on streets, properties, and potentially in private residences.

Sources of grease generated in FSEs are generally from bulk deep-frying operations and water/oil separator units usually associated with specific food preparation areas. In addition, FOG generated in the food service industry includes the grease generated in food service kitchens from the cleaning of equipment and utensils used in the preparation and serving of food.

Wastewater collection systems are neither designed nor equipped to handle the accumulation of FOG on the interior of the sewer collection system pipes as a result of improper discharges and therefore may result in SSOs. SSOs of wastewater into the stormwater collection system that ultimately reach our natural bodies of water could be greatly reduced by controlling the discharge of FOG into the wastewater collection system. SSOs are readily preventable by good management practices and proper maintenance at FSEs.

To determine the extent of the FOG entering the County's wastewater collection system, the County performed a characterization study titled "County of San Diego Fats, Oils, and Grease Characterization Study" in 2015. The study identified the sources and nature of the FOG generated within the County's system and served to compile and categorize information related to the collection system as it pertains to FOG. The results of the characterization study are documented in the County's FOG Characterization Study included in Appendix B.

Chapter 6

WASTEWATER COLLECTION SYSTEM INSPECTION AND ASSESSMENT

Routine inspection of wastewater collection system facilities provides a means to monitor the condition of the facilities and the effectiveness of the maintenance operations. Information obtained from routine inspections serves to:

- Identify existing or potential problems.
- Provide accurate information regarding any existing or potential problems.
- Isolate the location of any existing or potential problems.
- Provide information regarding the criticality of any existing or potential problems.
- Facilitate identification of the optimal method to rectify problems.

Regular and systematic inspection and assessment of wastewater collection system infrastructure provides a basis for identifying and scheduling capital improvements as well as identifying needed maintenance activities. The results of the overall assessment are used to identify and prioritize projects, determine the funding required to repair, rehabilitate, and replace an aging collection system, and to prioritize the allocation of funds. Recommendations for capital improvements will optimize the expenditure and efforts to operate a sewer collection system.

The County employs CCTV technology for the inspection of its wastewater pipelines. With the use of the County's two CCTV trucks, a two-man crew conducts inspections of the wastewater collection system on a regular basis. The CCTV inspections are generally performed subsequent to pipe cleaning and debris removal and of all new and rehabilitated pipelines in response to lateral backups to verify the condition of the public sewer main, to confirm contractor compliance with County design and construction standards. The County's CCTV truck is equipped with GraniteNet software developed by Cues. The inspection codes incorporated into the Granite Software are National Association of Sewer Service Companies (NASSCO) certified and comply with the Pipeline Assessment and Certification Program (PACP). The information obtained and recorded from the CCTV inspections is reviewed, recorded, and a preliminary assessment is made by the County CCTV crew. Defects are assigned a defect code and a severity rating according to the rating scale included with the GraniteNet software. Permanent records of the defects are made by capturing still images of the information on the TV screen and recording the information on DVDs. The County's CCTV inspection capability extends to pipes of various sizes up to 48 inches in diameter.

Inspections are performed systematically and generally on a daily basis by a two-person crew and typically occur subsequent to the cleaning of the pipelines. Daily progress is recorded by the staff members and submitted to the Sanitation Regional Supervisor and utilized for tracking and reporting purposes and as a follow up to private lateral issues to confirm the public sewer main is not the cause of the lateral backup. As the necessity to televise a particular location or portion of

the wastewater collection system arises, staff assignments are reorganized and resources are reallocated to accommodate the requirement. The County televises its sewer system one complete service area at a time. The CCTV maintenance crews televise approximately 10 percent (228,096 linear feet) of the wastewater collection system per year, achieving the County's current goal. The goal is to complete a CCTV condition assessment of the entire system every ten years.

The County is in the process of a robust two-year program of a complete CCTV assessment of the entire gravity main system. This assessment is scheduled to be completed by the spring of 2021.

6.1 Inspection Equipment Specifications

Inspection and condition assessment of wastewater facilities is typically completed using CCTV. All equipment inserted into a sewer line shall be of a type and design, which provides protection from hazards arising from the combustibility and flammability of vapors, liquids, gases, dusts, or fibers. Safety requirements for all equipment or devices which will be in the sewer lines shall comply with all existing Cal/OSHA requirements. A television camera, mounted on skids having either a track and wheel movement or rubber wheel movement that is controlled remotely, shall be used to capture the images. The cameras shall have a rotary head with rotational, pan and tilt movement in order to allow a full circumferential inspection and observe all portions of the pipeline. It shall have a high-resolution lens capable of spanning 360 degrees circumference and 270 degrees on a horizontal axis to televise pipelines. Optical focal distance shall be adjustable through a range of 1 inch to infinity. The camera source image capture shall provide an image with a minimum resolution of 320 x 240 pixels capture. The cameras shall be operative while submerged.

6.2 Inspection Criteria and Standards

CCTV cameras offer valuable insight to the internal structural condition of buried infrastructure. Video inspection of sewer pipelines and maintenance holes is used to locate and evaluate the existence and severity of defects that can contribute to potential overflows, and which may include missing pipe sections, broken pipe, root intrusion at misaligned joints or cracks, and potential sources of inflow and infiltration (I/I) entering into the system through cracks in pipes, maintenance holes or via illegal storm drain connections. This section provides recommendations for improvements to the County's inspection codes to provide more consistency and objectivity.

6.2.1 Pipeline Inspection

Uniform and consistent application of the observation codes, comments, and ratings is paramount in providing informative evaluation results. Utilization of standardized inspection observation codes by appropriately trained CCTV crew members serves to provide a consistent evaluation of the condition of the pipeline. Several of the County's sewer maintenance staff are PACP, Maintenance Hole and Assessment Certification Program (MACP) certified.

Included in Attachment A is NASSCO PACP Condition Grading System Code Matrix from the PACP Condition Grading System Guidelines with which the CCTV truck is equipped and to which severity grades are assigned. The severity grades range from 1 to 5 (with 5 being the most severe) and are assigned to the corresponding defect observation code to assist County staff in determining whether further assessment of the condition is necessary.

The preliminary condition assessment is performed by the CCTV operator and relies on the operator's preliminary assessment of the entire reach of pipe between two maintenance holes. The current process used by the County requires County staff to re-evaluate the CCTV data and images of a pipe segment. Therefore, the videos are reviewed several times: once during field inspections and then again to develop the best renewal recommendation and solution.

Defect observation codes should be utilized in conjunction with digital information to document the condition of the entire pipe segment. Due to the wide range of potential conditions that may be encountered during inspection of each individual facility, the observations developed and utilized should encompass a wide range of typical observations encountered with additional detailed descriptions to further refine the data in a format easy for querying.

6.2.2 Pipeline Inspection Frequency

Every pipe should be inspected to document the condition of the pipes and establish benchmark information that allows staff to identify trends and predict useful life. Segments that experience an SSO should be inspected within 24 hours after the spill or as soon as practical if longer. In addition, other segments may require more frequent inspection, such as pipes that are close to the end of their useful life or segments prone to problems. These segments should be documented and scheduled in the County's CMMS system (further discussed below).

To establish a benchmark for the system, inspection and documentation of the existing condition of the entire system is now stored in the County's GraniteNet system and will be integrated into the Asset Management System that is currently under development. This began in 2018 and will be completed in 2021.

6.2.3 Maintenance Hole Inspections

As an integral part of the wastewater collection system, access maintenance holes require the same degree of inspection and maintenance as the pipeline sewer network. Maintenance hole inspections are generally visual and include evaluating the condition of the maintenance hole cover, ring, cone, barrel, steps (if included), trough, and bench for any defective condition. Maintenance holes should be inspected on a routine basis to confirm that they are in adequate condition and are accessible. Older maintenance holes may require more frequent inspections to detect signs of possible I/I and confirm structural integrity. During the inspection of maintenance holes, the following information may be obtained and documented for assessment of sewer maintenance holes and future planning purposes:

- Exact location of the access maintenance hole (inaccessible, within an easement, buried, etc.).
- Diameter of the clear opening of the maintenance hole.
- Condition of frame and cover (include defects that allow inflow to enter).
- Access maintenance hole lid is located at proper grade or elevation.
- Whether cover is subject to ponding or surface runoff.
- Type of material and condition of the cone and walls.
- Condition of steps, cone and riser joints.
- Configuration, size, and type of the incoming and outgoing lines (including drops).
- Signs of leakage in the riser or damage to the frame's seal.
- Observed infiltration sources and the rate of infiltration.
- Indicate height of surcharge.

Maintenance hole inspections are conducted with the cleaning of the sewer main. All inspections are conducted through a work order created in Cityworks. County crews conduct visual inspections of the maintenance holes during regular cleaning efforts. The maintenance holes with detected defects are noted and the information is provided to the Regional Sanitation Supervisor for tracking and reporting purposes.

Currently, County crews conduct preliminary maintenance hole inspections concurrently with the pipeline cleaning efforts. The inspections serve to identify and prioritize the maintenance holes that may require a more thorough inspection. It is recommended that the County document maintenance hole inspections. The inspections should occur concurrently with pipeline cleaning and inspections. As such, approximately 10 percent of all maintenance holes would be identified and the condition documented each year.

In addition, it is recommended that the County consider implementing a weed and brush abatement program in areas and/or easements where accessibility to maintenance holes and other wastewater facilities is limited and/or impeded due to overgrown brush.

6.3 County Condition Assessment Procedures

As part of the assessment process, pipelines and/or maintenance holes identified as requiring repair, rehabilitation, or replacement must be prioritized. Videos and pictures captured during the CCTV inspections and containing noted defects are reviewed and assessed by the staff in the County's Major Maintenance Project Program. Pipeline segments and maintenance holes are scored to indicate the criticality of the asset condition. Attachment C includes the assessment sheet and the scoring currently used by the County to prioritize projects for the Major Maintenance Project Program. The County's Major Maintenance Project Program implements a scoring procedure based on certain criteria and specific defects. Points assigned range from 0 to 3, with 3 being the most severe. Generally, projects identified for the Major Maintenance Project Program are less than $35,000.

Table 6.1 provides a summary of the general criticality ranking associated with the severity of the condition of the asset as well as the recommended response time to complete the recommended action for Major Maintenance Projects.

A list of projects identified is maintained and routinely updated by County program staff. Projects include maintenance hole and pipeline repairs, rehabilitation and/or replacement. The list is also used to track the estimated cost and status of each project.

Table 6.1 Condition Criticality Ranking-Major Maintenance Projects

Score/ Points	Ranking	Design/Construction Schedule	Project Assessment	Assessment Description
15-13	5	Within 4 Months	CRITICAL	Recent SSO; Exceeded Capacity; Known Failure/Blockage Points; Maintenance Intensive
12-10	4	4-6 Months	HIGH PRIORITY	Severe Deterioration; SSO History: Potential Blockage/SSO; Maintenance Intensive
9-7	3	6-12 Months	SERIOUS	Severe Deterioration; Near Capacity; Maintenance Intensive

Score/ Points	Ranking	Design/Construction Schedule	Project Assessment	Assessment Description
6-4	2	12-24 Months	MAJOR	Visible Deterioration and Near Allowable Capacity
3-1	1	24 Months Plus	DISCRETIONARY	Functional; Minor Deterioration; Below Capacity

6.4 Recommended Assessment Criteria and Procedures

Data obtained from the CCTV inspection of the sewer system pipelines and maintenance holes provides essential information for evaluating the condition of the existing system and assessing the criticality of potential defects. As the information is obtained and recorded during the CCTV inspections, County staff should consider reviewing, evaluating, and identifying the defects according to established criteria and standards noted in Attachment D. Based on the assigned defect, the appropriate severity rating level should be determined. Attachment D provides an expanded list of recommended observation codes and descriptions, currently being used by other agencies, and which the County may consider implementing to document potential conditions encountered during the inspection of sewer pipe segments.

Each defect observation code, identified by a one, two, or three letter designation, is easy to memorize and represents most of the conditions that an operator may encounter. A severity level of A through E is provided for each applicable defect, and each contains a detailed description to assist the operator with objectively assigning the most appropriate observation defect code. For each type of defect encountered, a severity level should be assigned to provide comprehensive and detailed information for each pipe segment inspected. The severity rating assigned to the pipeline segment inspected should correspond to the description provided and based on the observation code noted. Urgent issues and conditions, often reflective of level E severity rating conditions, should be brought to the engineering staff's attention for immediate resolution. For the remainder of the data, staff can implement a routine process to evaluate the data on a quarterly basis, using the coding and point values to sort the problematic conditions for review and consideration.

The results of the assessment can be utilized to determine the most effective method of repair or rehabilitation to restore the facility to its most efficient state. A comprehensive evaluation of the defects noted and preliminary repairs and rehabilitation methods recommended should be performed to ascertain the condition of the portion of the wastewater collection system televised. Based on the comprehensive evaluation, projects can be identified and prioritize based on the impact to the overall wastewater collection system. Once the projects, identified via this inspection and assessment process, are prioritized, the potential project costs can be determined based on the recommended repair, rehabilitation, or replacement method. Using the priority and criticality ranking, the project can be included and scheduled into the County's Major Maintenance Project Program or CIP for proper prioritization and funding allocation.

6.4.1 Condition Criticality Criteria and Ranking

During the assessment process, each pipeline segment and maintenance hole should be ranked to indicate the criticality of the asset condition. The criteria listed in Table 6.2, Table 6.3, and Table 6.4 were referenced from the 2013 Master Plans developed by ATKINS, which are described in further detail in the 2020 SSMP and Appendix F. Table 6.2 provides a summary of

the general criticality ranking associated with the severity of the condition of the asset as well as the recommended response time to complete the recommended action for projects not part of the Major Maintenance Project Program. The assets may be ranked from 1 to 5. A criticality rating of 1 is assigned to an asset in good condition, with only maintenance work being required, and a criticality rating of 5 is assigned to an asset in the worst condition and requiring immediate attention.

Table 6.2 Condition Criticality Ranking

1	2	3	4	5
Good	Adequate	Moderate	Poor	Failing
Maintenance	5 + Years	3 to 5 Years	1 to 2 Years	Immediate

The criticality ranking is assigned based on the severity of the defect condition of each pipe segment and should be based on specific criteria for each type of defect observation. Table 6.3 includes descriptions of the severity levels (1 through 5) as summarized in Attachment D, for each type of defect observation and the corresponding condition criticality ranking for pipe segments. These descriptions are used to help staff reviewing inspection data to determine the severity of the condition or maintenance required.

With an assigned defect code and severity description assigned to a pipe segment, staff is able to make a preliminary recommendation for each pipeline segment. Table 6.4 includes a summary of typical preliminary recommendations available for each type of defect observation and severity ranking.

Similarly, for maintenance holes, it is recommended that staff use a uniform rating system to rank the severity of the maintenance hole defects and make preliminary recommendations. Table 6.5 shows the criteria to determine the severity for the various defect code observations made during maintenance hole inspections.

Applying these assessment standards, County staff can objectively determine the general condition of the inspected pipes and maintenance holes, primarily using the severity assigned to the asset according to the noted defect (Attachment D). Processing the initial review data results can assist in narrowing the focus to segments and maintenance holes that require immediate improvements. Detailed review and evaluation of the facilities based on the preliminary severity and criticality and the recommended improvements will refine the method of repair or rehabilitation as well as facilitate planning of the required improvements. Table 6.6 is a summary of criteria that may affect and reclassify the type of repair or rehabilitation method required.

At the completion of the assessment efforts, Major Maintenance and CIP projects and repairs can be identified and prioritized based on the observable conditions. This information can be used by staff to appropriately budget and schedule future work. The next section describes common repair, rehabilitation, and replacement methods available to the County.

Table 6.3 Pipeline Severity Assessment Criteria and Condition Criticality Ranking

Observation	Severity Criteria and Criticality Ranking				
	1	2	3	4	5
Cracks Circular Longitudinal Multiple	None	Very small hair line crack(s)	Hair line crack(s) <50% of ID in length	Cracks ≤1/8" wide or >50% of ID in length	Cracks >1/8" wide
Broken Pipe	None	Connecting cracks, no displacement	Connecting cracks, displacement ≤1/4"	Connecting cracks, displacement >1/4"	Collapsed pipe, impassable
Joints - Offset	Minimal	Up to 1/2 of the pipe thickness	1/2 to thickness of the pipe	Thickness of the pipe to 1 1/2 times	>1 1/2 times the thickness of the pipe
Joints – Separation	None	Gasket exposed	Bell exposed	Dirt exposed at top	Dirt exposed at invert
Roots	Minimal	10% to 35% Fine roots	35% to 60% Fine/medium roots	60% to 80% Medium roots	80% to 100% Tap root(s) visible
Grease	None	≤1/4" thick	1/4" to 1/2" thick	1/2" to 2" thick	>2" thick
Debris Accumulation	Minimal	Sporadic deposits (no rocks)	≤10% of ID (no rocks)	10% to 25% of ID and/or rocks	>25% of ID or impassable
Erosion (typical concrete pipe)	None	Rough surface	Exposed aggregate	Exposed rebar	Missing concrete
Corrosion (metal pipe only)	None	Minimal	Light tuberculation	Moderate tuberculation	Impassable, heavy tuberculation
Mineral Deposits	None	Minimal (possible infiltration)	≤10% ID thickness	>10% ID thickness	Impassable, heavy mineral deposits
Infiltration	None	Dripping	Seeping	Constant stream	Gushing water
Sag	None	Minimal (probably not perceptible)	≤25% of ID	25% to 75% of ID	>75% of ID
Flow Capacity	Minimal	2/5 or less full	2/5 to 1/2 full	1/2 to ¾ full	¾ to totally full

Table 6.4 Preliminary Pipeline Recommendation Criteria

Observation	Condition Criticality Ranking				
	1	2	3	4	5
Cracks Circular Longitudinal Multiple	No Action	No Action or Rehabilitate	No Action or Rehabilitate	Rehabilitate	Rehabilitate or Replace
Broken Pipe	No Action	No Action or Rehabilitate	Point Repair or Rehabilitate/ Replace	Point Repair or Replace	Immediate Point Repair
Joints - Offset	No Action	No Action or Rehabilitate	Point Repair and/or Rehabilitate	Point Repair and/or Rehabilitate/ Replace	Point Repair and/or Rehabilitate/Replace
Joints – Separation	No Action	Rehabilitate	Rehabilitate	Point Repair and/or Rehabilitate/ Replace	Rehabilitate or Replace
Roots	No Action	Clean and Rehabilitate	Clean and Rehabilitate	Clean and Rehabilitate	Clean and Rehabilitate/Replace
Grease	No Action	Clean	Clean	Clean	Clean
Debris Accumulation	No Action	Clean	Clean	Clean	Clean
Erosion (typical concrete pipe)	No Action	Rehabilitate	Rehabilitate or Replace	Rehabilitate or Replace	Replace
Corrosion (metal pipe only)	No Action	Ream and Rehabilitate	Ream and Rehabilitate	Replace	Replace
Mineral Deposits	No Action	No Action or Rehabilitate	Point Repair or Rehabilitate	Rehabilitate	Rehabilitate
Infiltration	No Action	No Action or Rehabilitate	Point Repair or Rehabilitate	Rehabilitate	Rehabilitate
Sag	No Action	No Action	Any Option	Replace	Replace
Flow Capacity	No Action	No Action	No Action	Evaluate Capacity	Evaluate Capacity

Table 6.5 Maintenance Hole Severity Assessment Criteria and Condition Criticality Ranking

Observation	Condition Criticality Ranking				
	1	2	3	4	5
Cover	Good condition	Slight corrosion	Moderate corrosion	Severe corrosion	Missing
Frame	Good condition	Slight offset	Offset <1"	Offset 1" to 3"	Missing or offset >3"
Grade Adjustments	Good condition	Hairline cracks	Cracks with gaps or some corrosion	Large gaps or spalling	In pieces and/or offset
Cone/Top	Good condition	Rough surface	Exposed aggregate and/or offset <1"	Exposed aggregate and/or offset 1" to 3"	Dirt visible and/or offset >3"
Wall/Barrel	Good condition	Rough surface and/or slight offset	Exposed aggregate and/or offset <1"	Exposed aggregate and/or offset 1" to 3"	Dirt visible and/or offset >3"
Bench	Good condition	Rough surface	Exposed aggregate	Exposed aggregate, ponding water	Missing concrete, ponding water
Trough	Good condition	Rough surface	Eroded edges	Deformed trough	No trough
Pipe Seal	Good condition	Concrete backfill visible	Gaps and shadows visible	Infiltration evident, roots incoming	Dirt visible
Infiltration	None	Dripping	Seeping	Constant stream	Gushing water
Lining (if applicable)	Good condition	Tiny bubbles in lining but no visible breaches in lining	Bubbles/separation from MH and visible breaches in lining	Evidence that lining is separating in sections >1 square foot	Lining is torn and/or missing

Table 6.6 Re-Classification Criteria

	Rules
1	If the line segments upstream and downstream of a segment are to be replaced, then the segment in between will be shifted to replacement.
2	If a larger line flows into a smaller line, then the smaller line will be replaced to a point of similar size pipe or larger pipe to normalize the pipe size. A specific application of hydraulic modeling will be required to keep the smaller line size. This rule is intended to prevent conditions where pipe sizes decrease going downstream.
3	If a line segment includes un-reinforced concrete pipe in combination with other materials, then the concrete pipe will be replaced.
4	If a pipe is more than 30 years old and requires more than two point repairs, it will be shifted to rehabilitation depending on hydraulic condition, slope and location.
5	If a segment is classified as point repair and rehabilitation, then the segment will be shifted to rehabilitation.
6	If a pipe is classified for rehabilitation or replacement, but a review of the video indicates that the defects are minor and there are no adjoining replacement projects, then the segment will be shifted to maintenance.
7	If a pipe is classified as point repair, but a review of the video indicates that the point defect is not likely to cause a spill, then the segment will be shifted to maintenance.
8	If a segment is classified as rehabilitation or point repair, and an adjoining segment is classified for replacement, then the segment will be shifted to replacement.
9	If a segment is classified as point repair, and an adjoining segment is classified as rehabilitation, then the segment will be shifted to rehabilitation.
10	If a segment is classified for maintenance or rehabilitation, and it has one major defect, it will be shifted to rehabilitation.
11	If a segment is classified as evaluate for rehabilitation or replacement, then the segment will be shifted to rehabilitation or replacement after review of the video and other data.
12	If a segment is classified as point repair, and review of the video indicates the pipe is in poor condition, then the segment will be shifted to replacement or rehabilitation depending on location, slope and hydraulic information.
13	If a pipe is in a high traffic area or an environmentally sensitive area, rehabilitation may be preferable to open- trench replacement.
14	The recommendation of the CCTV operator was considered during the manual review, but it did not automatically override the initial classification.
15	A Planning Report or Pre-Design Report will take precedence over the CCTV Inspection reports. The CCTV inspection report is intended to further support the Planning or Pre-Design Reports.

Chapter 7

REPAIR, REHABILITATION, AND REPLACEMENT OPTIONS

Wastewater collection system repair, rehabilitation, and replacement is necessary to maintain adequate service and restore and maintain the structural integrity of the collection system and to provide adequate hydraulic capacity, including the reduction of I/I. The purpose of developing and implementing a repair and rehabilitation program is to cost-effectively maintain system performance, extend the service life, and provide adequate capacity in the County's wastewater collection system infrastructure. Specifically, a well-developed program should serve to:

- Improve the performance and reliability of the system.
- Reduce ongoing maintenance costs.
- Reduce groundwater infiltration and stormwater inflow.
- Provide adequate capacity to reduce incidents of overflow.
- Maintain the value and extend the service life of this publicly owned asset.
- Comply with current and anticipated future public health and environmental regulations.

This section describes the County's current repair efforts, describes the various repair, rehabilitation, and replacement methods available, and outlines criteria to help identify which method would be the most appropriate and cost effective for specific conditions.

7.1 Current County Repair Procedures

The County's District Engineering Section is responsible for performing various types of wastewater facility repairs and rehabilitation improvements. Repair and rehabilitation work performed by crews may include point repairs at cracks, joints, and service interfaces, repairing collapsing or broken sewer pipe, removing obstructions in the sewers that hinder cleaning operations, maintenance hole rehabilitation, video inspection and other related work. District engineering staff is able to implement mitigation efforts and perform repairs for pipelines of various sizes to restore wastewater collection sewer lines. The types of repairs performed by County staff vary according to the location, depth, and utilities located in the vicinity of the necessary repair. As required, the County retains outside services for repair work that must be completed quickly, is excessively deep, and/or that is located in areas with extensive utilities.

7.2 CIP Improvement Options

Several factors determine the priority of projects identified during the assessment process, although the condition of the pipe is usually the primary factor. Additional factors used to determine priority may include goals to reduce SSOs, reducing I/I in pipes located below the water table, or reducing maintenance efforts by improving pipe conditions. Other considerations include coordinating surface and utility improvements with the other agencies that may be impacted by the necessary improvements.

Also, the available methods to repair and rehabilitate a segment or maintenance hole, in lieu of actual replacement, factor into the decision. Certain methods can be implemented quickly and with little impact to the community and at a fraction of the cost of replacing a facility. However, the ability to maintain rehabilitated facilities, along with the estimated benefits, must be considered. As a reminder, the selection of a method based on the general rules is not a substitute for the experience and knowledge of the staff and engineers performing the assessment. The unique situation and condition of each segment must be considered when finalizing recommendations. As such, not every recommendation will rigidly adhere to the methods and rules below.

7.2.1 Determining the Best Improvement Method

Sewer collection systems can be rehabilitated without construction of new replacement or relief sewers. In many cases, the sewer problem may have isolated or point defects that can easily be repaired. Replacement of a portion on an existing system can be very disruptive to a community, and alternative construction techniques, such as lining, can significantly reduce the impacts and provide a cost effective option to replacement. Of course, there are cases where due to the age of the sewer and the extent of defects, there may be no alternative but to replace the sewer line.

There are several alternatives to consider for the rehabilitation of sewer infrastructure. Depending on the severity of the defects identified by the inspection and assessment process, rehabilitation alternatives include point repairs, lining and other no-dig alternatives.

A typical approach to selecting appropriate rehabilitation alternatives is described in the following sections and is summarized in Table 7.1.

Table 7.1 Sewer Pipeline Improvement Alternatives

Description of Defect	Recommended Method
Roots, broken or cracked pipe, misaligned or open joint, and/or grade break at 1 or 2 locations along a pipe segment	Point repair (if total pipeline length is >300 feet); Replacement (if total pipeline length is <300 feet)
Roots only, more than 2 locations	Lining, Chemical Herbicide or Repetitive Cleaning
Multiple cracks only – minor to medium	Lining
Roots most joints with multiple cracks, no offsets	Lining
Roots at most joints with major offsets, breaks, major cracks or major grade breaks and all other conditions not noted	Replacement
Severe defects requiring replacement in difficult to access locations or areas of high traffic congestion	Pipe bursting, bore and jack, directional drilling or micro tunneling

7.3 Infrastructure within Easements

Sewer mains located in easements are a concern due to inadequate access available for maintenance of these facilities and to replace with traditional dig and replace methods. Sewer mains in easements with limited or no access for maintenance or emergency repair work often result in higher repair costs due to using specialty access equipment, hand labor, and mitigation of unplanned environmental impacts. An option is using carrier pipes or casings in the

easements, so that sewer mains can be replaced from outside the constrained easement areas. Private pumping is also an option. In most cases, the topography of the area will dictate the alignment of the new gravity sewer system. As such, relocating easement sewers may not be cost effective.

Realignment of sewers is often costly since the associated expenses include realignment and construction of new facilities, as well as abandoning the old facilities. If the annual cost of maintaining an aging sewer pipeline located within an easement, plus the benefits to the community and environment, outweigh the capital expense to relocate, it may be prudent to relocate easement sewers. However, if operations staff can adequately access the sewer, and the facility is in good condition or can be easily improved, the sewer does not need relocating. To properly evaluate the feasibility of realigning pipelines, with limited or no access, into the public streets and out of private property, the County should conduct re-direction of flow studies on a case-by-case basis to consider alternatives and recommend accessibility improvements.

7.4 Pipeline Renewal and Replacement Options

The following sections describe common sewer improvement methods available for pipelines and maintenance holes, and include advantages and disadvantages of each method.

7.4.1 Pipe Point Repairs

Where defects are documented at one or two locations between maintenance holes via the video inspection and assessment process, point repairs may be recommended. However, for pipe segments less than 300 feet in length, with defects noted in two locations, implementation of point repairs may affect the integrity of the remaining pipe. Therefore, the replacement of the entire pipe segment is recommended. Point repairs are cost effective alternatives to full pipe replacement if remaining portions of the pipe are in good condition as noted from video inspections. The following methods are common point repair options available to correct localized deficiencies in pipes.

7.4.1.1 Grouting Sleeve System

The grouting sleeve system is a trenchless, mechanical, spot repair technology designed for the permanent repair of straight, short sections of damaged sewers. The grouting sleeve has been installed in pipes with full flow; however, high velocity flows may result in reduced amounts of grout, which will increase the chance of infiltration and exfiltration. Most repairs can be carried out in approximately 30 minutes.

The core element uses a stainless steel grouting sleeve with a maximum thickness of ¾ inch, and in lengths of 1, 2, and 3 foot long segments. The annular space between the stainless steel and the host pipe is filled with grout. Various grouts are available for different pipe conditions. Curing commences 20 minutes after the grout is exposed to water. The result is a cured-in- place pipe (CIPP) repair with a protective stainless steel cover. The grouting sleeve is designed to retain its structural strength for a minimum of 100 years and carries a manufacturer 10-year limited warranty. The average product life predicted by manufacturers is 225 years.

7.4.1.2 CIPP Sleeve and Lining

A CIPP sleeve involves inverting an 8-ft long resin-impregnated fabric tube into a clean, existing pipeline, then curing it in place with hot water or steam. It is a seamless, joint less, pipe-within-a-pipe capable of rehabilitating pipes as large as 96 inches in diameter. CIPP can

provide a system with independent structural integrity that does not rely on the host pipe for strength. CIPP can significantly reduce infiltration and exfiltration and acts as a root barrier. CIPP is a structural product with a 100-year design life.

Spiral wound pipe involves inserting a continuous strip of reinforced plastic into an existing pipe, in a manner that causes the edges to interlock and form a watertight seal. Spiral-wound pipe, can be installed in a live sewer in pipes ranging from 6 to 30 inches in diameter. This lining method can provide a strong system that does not rely on the host pipe for strength.

CIPP lining involves inverting a resin impregnated fabric tube into a clean, existing pipeline, then curing it in place with hot water or steam. Fold-and-form lining requires pulling a fabric tube, saturated with a resin and folded into a U-shape, into a clean, existing pipe, then expanding the tube to the shape of the pipe with pressurized water before curing with heated water or steam. Both of these methods require the flow to be plugged or diverted during the process.

Application of the CIPP product requires a permit from Air Pollution Control District due to the levels of volatile organic compounds contained in the product.

7.4.1.3 Robotic Sewer Pipe Repair (Grinding and Epoxy Coating)

Robotic repair systems for gravity pipelines use grinding and filler robots. The former removes encrustation and intrusions and mills out cracks to provide a good surface for adherence by the repair materials. High pressure air, steam, or water cleaning, with or without approved cleaning agents, is used to clean the inside of the existing pipe wall. Cleaning includes the removal of all fine residues in the prepared area produced by grinding. The filler robot inserts an epoxy mortar into the slot formed by the grinder and trowels off the excess material for a smooth finish. Repair robots are equipped with CCTV cameras to confirm adequate visibility of the work area. Robots are positioned in the pipe and all work functions are executed remotely by the operator.

7.4.1.4 Open Trench

Excavation for open trench repair is the traditional dig and repair method. A spot repair is a good option when the problem area is easily accessible, confined to one spot, and the remainder of the pipe is in good condition. Open cut excavations involve digging a trench to expose the defected pipe segment and allows for the replacement of segments of pipe up to about 8 feet long. Open trench repairs are usually associated with large disruptions to the area surrounding the project and can take longer to complete than trenchless options.

7.4.2 Pipe Lining

Pipeline lining offers a trenchless method to rehabilitate deteriorating sewer mains. Since no open trench is required during the lining application, there is minimal disruption to residents and business owners during construction. Lining of sewer mains is recommended for pipes with rooting problems and/or cracks with no major offset joints. Lining is not recommended for offset joints identified from data over 10 years old since the severity of offsets has likely increased over time. Additional inspection and possible trenchless point repairs, such as grinding, may be required before lining can proceed, or replacement is deemed the best alternative.

Where breaks, major offsets, or bends are noted in the video inspections, lining is not recommended because the lining material tends to constrict, fold, or collapse where these defects occur. In choosing an appropriate repair method, there may be cases where it may be cost effective to consider combining point repairs with lining.

7.4.3 Pipe Replacement

Replacements of pipe segments are recommended where multiple occurrences of breaks, cracks, misaligned joints, grade breaks, and moderate to excessive roots are identified in the video inspections. Replacement is also the preferred alternative when upsizing the pipe diameter to accommodate increased flows, and for relatively flat segments. Where pipe replacement is recommended, replacement of both maintenance holes at each end of the pipe is also recommended. The following sections describe methods available for replacing pipelines.

7.4.3.1 Open Trench

Open trench excavation is a traditional dig and repair method. It involves extensive digging and trenching to replace large sections and is associated with large disruptions to the immediate area surrounding the project and can take longer to complete when compared to trenchless options. Pipeline replacement using open trench methods requires long stretches for efficient pipe laying, which causes extreme disruption to the community.

7.4.3.2 Pipe Bursting

Pipe bursting offers a solution to replacing defective pipe that has access at its end points but not between, such as pipe that crosses a freeway or major intersection. The alignment must be straight with very minor or no sags and adequate slope. Access pits are required at the ends of the pipe segment being burst. If any service connections must be reinstated, access pits are required at these locations as well. The size of the pipe can generally be increased to the next standard pipe diameter above the existing diameter, and possibly two standard pipe sizes depending on the existing soil conditions and adjacent utilities. The material used for the replacement pipe includes high density polyethylene (HDPE) pipe or joint-fused polyvinyl chloride (PVC) pipe. This method may be more costly than traditional dig and replace, but it is generally faster and less disruptive to the community, thereby resulting in intangible benefits.

7.4.3.3 Jack and Bore

Jack and Bore for installation of pipe includes a multi-stage process consisting of constructing a temporary horizontal jacking platform and a starting alignment track in an entrance pit at a desired elevation. The pipe is jacked by manual control along the starting alignment track with simultaneous excavation of the soil being accomplished by a rotating cutting head in the leading edge of the annular space in the pipe. The ground up soil (spoil) is transported back to the entrance pit by helical wound auger flights rotating inside the pipe. Jack and Bore typically provides limited tracking and steering as well as limited support to the excavation face. Consequently, Jack and Bore is not suited for gravity lines with shallow slopes or in sand or other loose fill materials.

7.4.3.4 Directional Drilling

The use of directional drilling is used primarily of the installation of pipe under crossings. In addition to crossings under rivers and waterways, directional drilling can be used for the installation of pipes under highways, railroads, airport runways, shore approaches, islands, areas congested with buildings, pipeline corridors and future water channels. This type of pipe installation requires a large staging area and workspace for the multiple operations involved in the installation process.

7.4.3.5 Micro-Tunneling

Micro tunneling is conducted similar to Jack and Bore with the exception that it is a remotely controlled, guided pipe jacking process that provides continuous support to the excavation face. The guidance system usually consists of a laser mounted in the tunneling drive shaft which communicates a reference line to a target mounted inside the microtunneling machine's articulated steering head. The microtunneling process provides the ability to control the excavation face stability by applying mechanical or fluid pressure to counterbalance the earth and hydrostatic pressures. This process avoids the need to have long stretches of open trench for pipe laying, which causes extreme disruption to the community.

7.5 Maintenance Hole Renewal and Replacement

Maintenance hole rehabilitation varies greatly due to the various components of a maintenance hole. Several maintenance hole rehabilitation options are summarized in the subsections below. This includes recommendations from the County's Sewer Maintenance Hole Assessment Study (Carollo, 2018), which were performed in Alpine, Lakeside, and Spring Valley. Based on the rehabilitation methods implemented, confined space entry permits may be required.

7.5.1.1 Concrete Liners – Poured-in-Place

A poured-in-place seamless concrete maintenance hole liner extends from the bench to the frame. Prior to installation, the maintenance hole should be cleaned to remove loose material and debris. Existing steps that might interfere with the erection of forms should be removed. Infiltration that may adversely affect placement of the concrete should be eliminated or reduced to an acceptable level. After steel forms are positioned in the maintenance hole, concrete is poured into the forms. When the concrete has sufficiently cured, the forms are disassembled and removed. A PVC or HDPE liner is fitted to the exterior of the steel forms during erection within the maintenance hole and when the forms are removed, joints in the liner are welded and tested. This method results in a loss of three to six inches of maintenance hole diameter.

7.5.1.2 Liners – Cured-in-Place

Cured-in-place liners (CIP liners) for maintenance hole chimneys are made of stretchable, "one size fits most," coated polyester and are vacuum impregnated with a silicate resin. Prior to curing, the maintenance hole chimney should be cleaned with a minimum of 5,000 psi pressure, grinder, or sand blasting. Large voids must be filled with hydraulic cement and interfering steps must be removed. Then, the liner is inserted and impregnated under controlled conditions. Resins may be heat or steam cured. Resins that cure under ambient temperature and pressure are available. CIP liners have a high level of chemical resistance, eliminate I/I, and structurally enhance the maintenance hole chimney. A two person crew often installs these liners. The liner is typically backed by a ten-year, non-prorated, material and labor warranty from the manufacturer and the installer.

7.5.1.3 Cementitious Coatings and Grouts – Sprayed, Pumped, and Troweled

Cementitious coatings and grouts are centrifugally applied to the maintenance hole walls. To prepare the surface, cover the maintenance hole base to prevent washed debris from entering the sewer line. Then, wash the interior surface with at least a 3,500 psi water blast. Pressures sufficient to etch the existing surface will improve adhesion. Plug active leaks with adequate plugging material and fill voids and overhangs with patching material prior to application of mortar. The synthetic mortar is cast from a robotic applicator positioned in the center of the

maintenance hole. A dense, uniform layer is compacted in place at any thickness from 0.5 inch to 2.0 inches depending upon the degree of deterioration and the depth of the maintenance hole. Multiple passes can be made until the specified thickness is attained. Cementitious coatings are typically a fast setting, ready-to-use, cement- based concrete and masonry patching compound formulated specifically for underwater use. When properly mixed and applied, they can develop a very high strength bond, but they are still prone to chemical corrosion. A quick-setting hydraulic cement compound can be used to stop running water or seepage leaks in masonry or concrete.

7.5.1.4 Polymer Coatings and Grouts – Sprayed, Pumped, Troweled

The following summarizes the different options for polymer coatings and grout:

- Polyurethane Coating: A Polyurethane coating is characterized by a multi-layered polyresin liner system, consisting of a moisture barrier (modified polymer), a surfacer (polyurethane/polymeric blend foam), and a final corrosion barrier (modified polymer). Before system application, the surface is prepared by hydro blasting to remove all corrosion from the structure. Any cracks and holes that leak are sealed with a chemical or hydraulic sealant. Severe cracks are repaired using a urethane based chemical sealant. Repairs to exposed rebar, defective pipe penetrations or inverts, etc. are done utilizing non-shrink grout or an approved alternative method.
- Epoxy Coating: A structural epoxy maintenance hole liner system provides a stand-alone, self- supporting structure when applied with a thickness of at least 0.25-inch. The system will protect new concrete from hydrogen sulfide attack, seal out infiltration, enhance the flow, and reduce buildup in the structure when applied with a thickness of at least 0.10 inch. Prior to application, damaged concrete and contaminants must be removed. Surfaces should be cleaned and abraded with low-pressure water cleaning until the pH does not exceed 8.5. Detergent water cleaning and hot water blasting may be used to remove oils and grease from the concrete. Active water infiltration should be stopped by using a hydroactive urethane grout that is compatible and suitable for topcoating with the epoxy maintenance hole liner system. The two-part epoxy system is formulated with special additives and modifiers to enhance water and chemical resistance and to increase internal strength. This epoxy system allows for a long open time before topcoating is applied, cures at low temperature and high humidity, and provides water and chemical resistance with ambient cure. Epoxy coating tends to be between 25 and 40 percent more costly than polyurethane coating; however, its product life usually lasts between 10 to 20 years.

7.5.1.5 Mechanical Seals and Inserts

PVC inserts and mechanical seals are installed between entry castings, precast concrete cones, and flat top sections for a corrosion resistant and watertight connection. The connector is flexible so that freeze/thaw and heat expansion cycles do not compromise the watertight integrity. It provides relatively easy installation and does not require special tools or special preparation of the existing maintenance hole surface. In addition, its design allows for future grade adjustment (up to 14 inches) without added parts. The connector is available for maintenance hole openings of 24-inch, 27-inch, and 30-inch diameters.

7.5.1.6 Slipline Maintenance Hole Insert

Sliplining using a maintenance hole insert is a viable rehabilitation method that has a long history of successful applications. These insertion liners can be fiberglass reinforced polymer mortar pipe (FRPMP) or Armorock polymer concrete maintenance hole inserts. These liners are impervious to corrosion and have successful applications for maintenance hole liner inserts and complete replacement products. This application does require the removal of the cone section for installation. The cone is removed prior to installing the maintenance hole insert since the insert has a diameter greater than the maintenance hole cover. The cone will be replaced in kind after the insert installation.

Chapter 8

CIP DEVELOPMENT

A properly planned short and long range CIP for the wastewater collection system allows the County to plan, design, and construct sewer infrastructure projects in a planned and organized manner that best serves its customers.

Projects included in the Major Maintenance Program primarily originate based on the assessment of the CCTV inspections conducted by County staff while CIP projects are identified based on capacity modeling results and other necessary projects identified during the update of the County master plans. Therefore, integrating the results of the inspection and assessment efforts with those of the capacity modeling, the County is able to proactively and comprehensively implement a long-range planning effort.

Prioritizing projects relies on several factors, including:

- Severity and extent of the conditional defects.
- Hydraulic capacity needs and projections.
- Estimated remaining useful life of the facilities.
- Maintenance records (condition findings) and SSO occurrences.
- Identified, major new developments.

Close coordination with the Major Maintenance Project Program is also essential to avoid planning, scheduling, and budgeting of the same projects in both programs. Additionally, projects in each program may be coordinated and/or combined and result in an overall cost savings.

Using this data, the County updated several of its master plans and developed a rolling 10-year CIP list of projects, which identifies projected costs and dates for start and end of construction. The CIP, Major Maintenance Project Program, and wastewater maintenance staff should review the list at least every two years to coordinate and include newly identified projects, revise the priorities, and update estimated costs based on new information. This will assure that the necessary projects will be completed timely and efficiently, thereby reducing the potential occurrence of an SSO.

Chapter 9

COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM

The County uses Cityworks, a CMMS that provides a method for agencies to track equipment, maintain an inventory of its assets, detail timing and method in which work orders will be performed to maintain the assets, and accumulate all associated costs for labor, materials and equipment. The ability to track activities such as scheduled and performed work, and workforce productivity allows County staff to determine the resources necessary for routine preventive maintenance activities as well as additional activities necessary to confirm proper O&M of the County's wastewater collection system.

Cityworks, a versatile CMMS, in conjunction with GraniteNet, a GIS-based tool, for maintaining specific wastewater collection system data may be utilized and customized to manage specific activities and resources associated with the County's collection system including, but not limited to the following:

- Tracking and monitoring ongoing O&M activities.
- Ensuring proper coordination between wastewater collection system maintenance work and other activities.
- Establishing a more efficient and systematic approach planned maintenance activities that enables a more efficient use of staff resources.
- Affecting inventory control enabling better spare parts forecasting to eliminate shortages and minimize existing inventory.
- Tracking and monitoring work orders for specific system activities.
- Eliminating paperwork and manual tracking activities, thus enabling staff to become more productive.

9.1 Activity Scheduling and Tracking

The scheduling and performance of maintenance and cleaning activities is currently performed by staff within the District Operations Section. Daily work orders are assigned to schedules that electronically delineate the type and location of work to be performed. Work is assigned and performed and work orders summarizing daily progress are generated by maintenance crews and submitted to the Regional Sanitation Supervisor electronically to approve and to track progress and status of maintenance activities pertaining to wastewater collection facilities. Daily work orders that are submitted daily are saved in Cityworks for future access and reference.

9.2 Maintenance Data Management

The County developed Cityworks work schedules for the County's wastewater maintenance staff based on various timelines and activities. Cityworks work orders are used to document maintenance related activities and include a list based on various timelines and activities of the specific pipelines and the respective lengths within a sewer service area scheduled to be cleaned.

Currently, the CCTV data storage and management process includes transferring the recorded data onto a master frame storage device for future reference as needed.

The County is currently implementing measures that will facilitate transferring of data, centralize maintenance records, and organizing and managing the County's infrastructure related data to provide access to information pertaining to a particular system element (such as technical data, related work orders, photographs, and videos). Additionally, County staff is working towards establishing a formal, maintenance management system to track work orders and provide automated inventory management. The program will facilitate storage of inventory data and CCTV inspection data, and allow the automatic downloads of data from the CCTV inspection equipment to GIS to facilitate performing condition assessment with information captured with the CCTV equipment. The County intends to use the integrated software to determine whether incorporation of the systems will facilitate management of the County's facilities.

9.3 Implementation of CMMS components

As part of its business process review, the County implemented Cityworks to evaluate several versatile CMMS software that will allow the County to properly and efficiently organize, plan, and schedule the appropriate resources for routine preventive maintenance activities, coordinate and prioritize urgent and/or unique maintenance activities, and confirm uniformity and consistency in processing and tracking facility related information. The software should track system maintenance and/or repair activities and provide statistics on completed, ongoing and outstanding efforts.

Implementing a versatile CMMS will fully support the management, operation, and maintenance efforts by the WWM Division for the wastewater collection system. Ultimately, the proper management of wastewater facility maintenance and asset data will allow County staff to:

- Understand the condition of the physical assets including replacement costs, life-cycle analysis, and current and future funding needs.
- Understand the implications of deferred capital as it relates to measured conditions and strategic goals.
- Develop a basis for funding needs and allocations.
- Produce consistent reports designed to deliver accurate planning data in presentable form.
- Approve and implement capital planning activities based on set priorities that are in line with County's strategic goals.

Additional benefits of implementing a comprehensive and versatile CMMS facilitates tracking and data management of specific type of work performed and the resources necessary to support and confirm the proper operation of the County's wastewater facilities including, but not limited to:

- Preventive Maintenance efforts (track progress and dates).
- CCTV efforts (tracked by service area).
- Special Maintenance locations by segment with cleaning interval.
- Repairs (to track materials, duration, etc.).
- GIS updates.
- Chemical root treatment (specific locations and dates).
- Maintenance hole spraying (maintenance hole identification (MH ID) and dates).

By documenting the progress of the activities listed above, the County will establish a benchmark from which future work orders can be issued. For instance, entering the chemical root treatment locations and dates for treatment, staff can efficiently monitor the progress and effectiveness of the program. Plus, the information can trigger alerts to schedule the next round of chemical root treatment, to avoid missing a cycle or the funding of the upcoming year's activities.

Thus far, the County has implemented the following CMMS programs:

- Cityworks – Web GIS-centric enterprise asset management system to manage, track, analyze and score infrastructure assets.
- GraniteNet – Software solution for managing the condition of assets, scheduling inspections and reviewing the condition of assets as well as control the process of inspecting and analyzing infrastructure.
- Smartcovers – Web-based smart technology that provides real-time remote sewer overflow monitoring via a reliable satellite communications system.

An ASP is currently being developed by the County. Once fully developed the ASP will integrate the assessment of the entire sewer system through CUES and GIS into a Risk Prioritization Tool that will take into account other factors besides the pipe condition. These factors could be accessibility, environment, consequence of failure, risk of failure. The benefit of the AMP will be to prioritize the most vulnerable sewer lines and create a CIP program and budget. The budget can be forecasted to 5 year or 10 year to assist in funding needs.

Chapter 10

EQUIPMENT AND REPLACEMENT PART INVENTORIES

The District Engineering Section maintains an inventory of vehicles and replacement parts. The inventory of vehicles and equipment available for performing the daily routine O&M of the County's wastewater collection system includes the type and quantity of the equipment. In addition to the equipment listed in Table 10.1, Attachment E includes a summary of the vehicles and general equipment available to Wastewater Division maintenance staff. The list is included in the County's current Emergency Response Plan.

Table 10.1 District Engineering Vehicle and Equipment List

Unit Type	Quantity
Traffic Control Equipment	
Trailer Mounted Arrow Board	1
Traffic Cones	100
Traffic Control Signs	-
Generators	
Large Trailer Mounted Generators	2
Portable Honda Generators	3
Pipe	
Replacement Pipe	Ordered as Needed
Replacement Fittings	Ordered as Needed
Maintenance Hole	
Precast Concrete Components	Ordered as Needed
Frames, Rings, and Covers	Ordered as Needed

As necessary, the Sanitation Regional Supervisor may purchase equipment from approved vendors using an assigned Purchase Card or "P-Card."

The vehicles and replacement parts are made readily accessible to maintenance staff. The replacement parts maintained in the Spring Valley Operations Yard are for the specific types of repairs the District Engineering maintenance staff performs. For implementation of repairs that extend beyond the County's internal resource capabilities, the County retains the services of professional contractors.

Routine assessment of the resources will confirm that the County's maintenance staff is adequately prepared to perform necessary system repairs. The inventory should include adequate sizes and types of critical repair and replacement parts. The County should also develop and maintain a resource list of contractors and vendors who stock the specific types of supplies used by the County and that are available for emergency and short notice deliveries.

Chapter 11

TRAINING PROGRAM

Training programs are developed to confirm that personnel are well-trained to implement all applicable and necessary components of County established programs and successfully achieve established strategic goals. Typically, training programs specify and include the curriculum required prior to permitting an employee to undertake specific work assignments or tasks. Prior to performing any work on County facilities, County District Engineering staff is trained on the existence and the provisions of the wastewater O&M policies, procedures, safety policies, and the equipment used. Additionally, District Engineering staff is encouraged to participate in Sewer Collection System Maintenance classes, sessions provided by various vendors, and obtain Wastewater Treatment Certification through California Water Environment Association (CWEA). Additionally, training programs may include, but are not limited to:

- Training on 11 Safety Related Director Letters of Instruction.
- Trenching/Shoring.
- Silica.
- Confined Space.
- First Aid/CPR.
- Heat Illness Prevention.
- Traffic Control and Flagger.
- Chain Saw.
- Forklift.
- Omnibus Transportation Act.
- Backhoe Operator.
- Fire Extinguisher.
- Stormwater Pollution Prevention.
- Chlorine Safety.
- Fall Protection.
- PACP/NASSCO Certification.

Training for operation of County equipment includes primarily "on-the-job" training in conjunction with bi-weekly "tailgate" meetings to discuss safety issues.

The County's instructional program for initial and refresher training should incorporate curriculum that includes information specific to the level of knowledge commensurate with duties and the overall functions of the facilities included in the County's infrastructure. A training program specifically for the management and operation of the County's wastewater collection system should include, but not be limited to, the following information:

- Purpose and procedures for proper implementation of the Inspection and Assessment Program including related activities, equipment, and inspection and assessment criteria.
- Procedures for tracking all training activities.
- Proper O&M of equipment utilized for performing job related duties.

- Repair and rehabilitation program and available resources.
- Importance of communication between all affected County staff including, but not limited to, staff within Collection Engineering & Operations, District Administration, and CIP Sections.
- Importance of following all safety policies and procedures.
- Procedures for tracking and documenting all job-related information.
- Procedures and specific tasks related to effective and efficient execution of SSO Emergency Response Plan.
- Preventative Maintenance Program and related activities

All appropriate staff should be required to participate in regularly scheduled training sessions to assist staff in awareness of their responsibilities and executing their duties. These training sessions should be organized to include the latest County policies and procedures as well as other relative materials. Training sessions should incorporate hands-on field demonstrations to insure the preparedness of all personnel to all anticipated situations. Field demonstrations will be performed to test equipment, response time, training effectiveness, resources, and manpower capabilities.

Additional instructional material should include the County's approved SSMP and the SSOERP. This will serve as a mode of instructing staff on the SSMP, SSO response, and all the required documentation. Training and event participation must be documented and maintained by either the District Engineering staff or the Risk Management Division. As necessary and determined by appropriate managerial staff, training programs may also include supplemental technical training required to efficiently and safely perform specific job-related duties. Currently, all District engineering staff is required to obtain a Class A driver's license. Although not required for all staff, the County encourages its wastewater maintenance staff to obtain various certifications including, but not limited to, the Plant Maintenance certification and the Department of Health Services Water Distribution certification. Currently, maintenance staff is in the process of becoming NASSCO or PACP certified to perform CCTV inspection and assessment. Additional certification requirements may be imposed in the future if deemed necessary by governing authorities.

Attachment A

NASSCO PACP CONDITION GRADING SYSTEM CODE MATRIX

NASSCO PACP Condition Grading System
Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
Structural	Crack (C)	Circumferential (C)		CC	1	
		Longitudinal (L)		CL	2	
		Multiple (M)		CM	3	
		Hinge (CH2)		CH2	4	
		Hinge (CH3)		CH3	5	
		Hinge (CH4)		CH4	5	
		Spiral (S)		CS	2	
Structural	Fracture (F)	Circumferential (C)		FC	2	
		Longitudinal (L)		FL	3	
		Multiple (M)		FM	4	
		Hinge (H2)		FH2	4	
		Hinge (H3)		FH3	5	
		Hinge (H4)		FH4	5	
		Spiral (S)		FS	3	
Structural	Pipe Failures (Silent)	Broken (B)		B	1 clock pos - 3, 2 clock pos - 4, >=3 clock pos - 5	
		Broken (B)	Soil Visible (SV)	BSV	5	
		Broken (B)	Void Visible (V V)	BVV	5	
		Hole (H)		H	1 clock pos - 3, 2 clock pos - 4, >= 3 clock pos - 5	
		Hole (H)	Soil Visible (SV)	HSV	5	
		Hole (H)	Void Visible (V V)	HVV	5	
Structural	Collapse (X)	Pipe (P)		XP	5	
		Brick (B)		XB	5	
Structural	Deformed (D)	(Pipe)		D	<=10% - 4,>10% - 5	
		(Brick)	Horizontally (H)	DH	5	
		(Brick)	Vertically (V)	DV	5	
Structural	Joint (J)	Offset (displaced) (O)	Med (M)	JOM	1	
			Large (L)	JOL	2	
		Separated (open) (S)	Med (M)	JSM	1	
			Large (L)	JSL	2	
		Angular (A)	Med (M)	JAM	1	
			Large (L)	JAL	2	
Structural	Surface Damage Chemical (S)	Roughness Increased (RI)	C	SRIC	1	
		Surface Spalling (SS)	C	SSSC	2	
		Aggregate Visible (AV)	C	SAVC	3	
		Aggregate Projecting (AP)	C	SAPC	3	
		Aggregate Missing (AM)	C	SAMC	4	

NASSCO PACP Condition Grading System
Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
		Reinforcement Visible (RV)	C	SRVC	5	
		Reinforcement Projecting (RP)	C	SRPC	3	
		Reinforcement Corroded (RC)	C	SRCC	5	
		Missing Wall (MW)	C	SMWC	5	
		Other (Z)	C	SZC		
Structural	Surface Damage Mechanical (M)	Roughness Increased (RI)	M	SRIM	1	
		Surface Spalling (SS)	M	SSSM	2	
		Aggregate Visible (AV)	M	SAVM	3	
		Aggregate Projecting (AP)	M	SAPM	3	
		Aggregate Missing (AM)	M	SAMM	4	
		Reinforcement Visible (RV)	M	SRVM	5	
		Reinforcement Projecting (RP)	M	SRPM	3	
		Reinforcement Corroded (RC)	M	SRCM	5	
		Missing Wall (MW)	M	SMWM	5	
		Other (Z)	M	SZM	N/A	
Structural	Surface Damage Not Evident (Z)	Roughness Increased (RI)	Z	SRIZ	1	
		Surface Spalling (SS)	Z	SSSZ	2	
		Aggregate Visible (AV)	Z	SAVZ	3	
		Aggregate Projecting (AP)	Z	SAPZ	3	
		Aggregate Missing (AM)	Z	SAMZ	4	
		Reinforcement Visible (RV)	Z	SRVZ	5	
		Reinforcement Projecting (RP)	Z	SRPZ	3	
		Reinforcement Corroded (RC)	Z	SRCZ	5	
		Missing Wall (MW)	Z	SMWZ	5	
		Other (Z)	Z	SZZ	N/A	
Structural	Surface Damage (Metal Pipes)	Corrosion (CP)		SCP	3	
Structural	Lining Features (LF)	Detached (D)		LFD	3	
		Defective End (DE)		LFDE	3	
		Blistered (B)		LFB	3	
		Service Cut Shifted (CS)		LFCS	3	
		Abandoned Connection (AC)		LFAC		
		Overcut Service (OC)		LFOC	3	
		Undercut Service (UC)		LFUC	3	
		Buckled (BK)		LFBK	3	
		Annular Space (AS)		LFAS	3	
		Bulges (BU)		LFBU	3	
		Discoloration (DC)		LFDC	3	
		Delamination (DL)		LFDL	3	
		Pinholes (PH)		LFPH	3	
		Resin Slug (RS)		LFRS	3	
		Wrinkled (W)		LFW	3	
		Other (Z)		LFZ	N/A	
Structural	Weld Failure (WF)	Circumfrential (C)		WFC	2	
		Longitudinal (L)		WFL	2	

NASSCO PACP Condition Grading System
Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
		Multiple (M)		WFM	3	
		Spiral (S)		WFS	2	
Structural	Point Repair (RP)	Localized Pipeliner (L)		RPL		
		Localized Pipeliner (L)	Defective (D)	RPLD	4	
		Patch Repair (P)		RPP		
		Patch Repair (P)	Defective (D)	RPPD	4	
		Pipe Replaced (R)		RPR		
		Pipe Replaced (R)	Defective (D)	RPRD	4	
		Other (Z)		RPZ		
		Other (Z)	Defective (D)	RPZD		
Structural	Brickwork (Silent)	Displaced (DB)		DB	3	
		Missing (MB)		MB	4	
		Dropped Invert (DI)		DI	5	
		Missing Mortar	Small	MMS	2	
			Medium	MMM	3	
			Large	MML	3	
O&M	Deposits (D)	Deposits Attached (DA)	Encrustation (E)	DAE		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Grease (G)	DAGS		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Ragging (R)	DAR		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Other (Z)	DAZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Deposits Settled (DS)	Hard/Compacted (C)	DSC		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Fine silt/sand (F)	DSF		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Gravel (G)	DSGV		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Other (Z)	DSZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Deposits Ingress (DN)	Fine silt/sand (F)	DNF		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Gravel (GV)	DNGV		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5

NASSCO PACP Condition Grading System
Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
			Other (Z)	DNZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
O&M	Roots (R)	Fine (F)	Barrel (B)	RFB		2
			Lateral (L)	RFL		1
			Connecfion (C)	RFC		1
	Roots (R) at a Joint		N/A	RFJ	in software with a J	1
		Tap (T)	Barrel (B)	RTB		3
			Lateral (L)	RTL		2
			Connecfion (C)	RTC		2
	Roots (R) at a Joint		N/A	RTJ		2
		Medium (M)	Barrel (B)	RMB		4
			Lateral (L)	RML		3
			Connecfion (C)	RMC		3
	Roots (R) at a Joint		N/A	RMJ		3
		Ball (B)	Barrel (B)	RBB		5
			Lateral (L)	RBL		4
			Connecfion (C)	RBC		4
	Roots (R) at a Joint		N/A	RBJ		4
O&M	Infiltration (I)	Weeper (W)		IW		2
		Dripper (D)		ID		3
		Runner (R)		IR		4
		Gusher (G)		IG		5
		Stain (S)		IS		
O&M	Obstacles/Obstructions (OB)	Brick or Masonry (B)		OBB		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Pipe Material in Invert (M)		OBM		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Object Intruding Thru Wall (I)		OBI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Object Wedged in Joint (J)		OBJ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Object Thru Connection (C)		OBC		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		External Pipe or Cable In Sewer (P)		OBP		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Built Into Structure (S)		OBS		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5

NASSCO PACP Condition Grading System
Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
		Construction Debris (N)		OBN		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Rocks (R)		OBR		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Other Objects (Z)		OBZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
O&M	Vermin (V)	Rat (R)		VR		2
		Cockroach (C)		VC		1
		Other (Z)		VZ		1
O&M	Grout Test and Seal (G)	Grout Test Pass (GTP)				
			Joint (J)	GTPJ		
			Lateral (L)	GTPL		
		Grout Test Fail (GTF)				
			Joint (J)	GTFJ		
			Lateral (L)	GTFL		
		Grout Test Unable to Test (GTU)				
			Joint (J)	GTUJ		
			Lateral (L)	GTUL		
		Grout at a Location (not a joint) (GRT)		GRT		
Construction Features	Tap (T)	Factory Made (F)		TF		
			Capped (C)	TFC		
			Abandoned (B)	TFB		
			Defective (D)	TFD		2
			Intruding (I)	TFI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Activity (A)	TFA		
		Break-In/Hammer (B)		TB		
			Capped (C)	TBC		2
			Abandoned (B)	TBB		
			Defective (D)	TBD		3
			Intruding (I)	TBI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Activity (A)	TBA		
		Saddle (S)		TS		
			Capped (C)	TSC		
			Abandoned (B)	TSB		

NASSCO PACP Condition Grading System
Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
			Defective (D)	TSD		2
			Intruding (I)	TSI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Rehabilitated (R)	Activity (A)	TSA		
				TR		
			Defective (D)	TRD		2
			Intruding (I)	TRI		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
Construction Features	Intruding Seal Material (IS)			IS		
		Sealing Ring (SR)		ISSR		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Hanging (H)	ISSRH		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
			Broken (B)	ISSRB		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Loose, Poorly Fitting (SRL)		ISSRL		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Grout (GT)		ISGT		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
		Other (Z)		ISZ		<=10% - 2, <=20% - 3, <=30% - 4, >30% - 5
Construction Features	Line (L)	Left (L)		LL		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Left/Up (LU)		LLU		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Left/Down (LD)		LLD		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Right (R)		LR		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4

NASSCO PACP Condition Grading System
Code Matrix

Family	Group	Descriptor	Modifier	Code	Structural Grade	O&M Grade
		Right/Up (RU)		LRU		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Right/Down (RD)		LRD		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Up (U)		LU		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
		Down (D)		LD		<=10 Deg - 1, <=20 Deg 2, >20 Deg - 4
Construction	Access Points (A)					
		Cleanout (CO)		ACO		
			Mainline (M)	ACOM		
			Property (P)	ACOP		
			House (H)	ACOH		
		Discharge Point (DP)		ADP		
		Junction Box (JB)		AJB		
		Meter (M)		AM		
		Manhole (MH)		AMH		
		Other Special Chamber (OC)		AOC		
		Tee Connection (TC)		ATC		
		WW Access Device (WA)		AWA		
		Wet Well (WW)		AWW		
		Catch Basin (CB)		ACB		
		End of Pipe (EP)		AEP		
Other	Miscellaneous (M)	Camera Underwater (CU)		MCU		4
		Dimension/Diam/Shape Change (SC)		MSC		
		General Observation (GO)		MGO		
		General Photograph (GP)		MGP		
		Material Change (MC)		MMC		
		Lining Change (LC)		MLC		
		Pipe Joint Length Change (JL)		MJL		
		Survey Abandoned (SA)		MSA		
		Water Level (WL)		MWL		
			Sag (S)	MWLS	<=30% - 2, <=50% - 3, >50% - 4	
		Water Mark (WM)		MWM		>=50% 4, >=75% 5
		Dye Test (Y)		MY		
			Visible (V)	MYV		5
			Not Visible (N)	MYN		3

Attachment B

COUNTY OF SAN DIEGO MAINTENANCE HOLE INSPECTION LOG

MANHOLE INSPECTION LOG

03719

SEGMENT ID: Bk.____ Page_____ Length____ Letter____ SAN DIST___ STREET _____ Inspection Date _____

Pipe Size_____ Pipe Material____ Crew Name _____ Class _____

Pipe Slope_____ M.H. Depth_____

Photograph M.H. Condition ☐

Prepared by _____

Topo Map # _____

Type Sewer:
- Collector ☐
- Trunk ☐
- Interceptor ☐

I. Manhole Initial Inspection

A-Location
1 Roadway ☐
2 Gutter ☐
3 Stream Bed ☐
4 Flood Channel ☐
5 Flooded St. ☐
6 Other ____ ☐

B-Manhole Cover
1 Serviceable ☐
2 Damaged ☐
3 Displaced ☐
4 Missing ☐
5 Loose ☐
6 Sealed ☐

C-Ring & Frame
1 Serviceable ☐
2 Loose ☐
3 Displaced ☐
4 Missing Grout ☐
5 Needs Raising ☐
6 Needs Lowering ☐

D-Type MH
1 Normal ☐
2 Eccentric ☐

E-Size MH cover
1 — 2 foot ☐
2 — 3 foot ☐

F-Manhole size
1 — 4 foot ☐
2 — 5 foot ☐

II. Structural Inspection

A-Rungs
1 Serviceable ☐
2 Unsafe ☐
3 Missing ☐
4 Corroded ☐

B-Cone
1 Serviceable ☐
2 Broken ☐
3 Sulfided ☐
4 Misaligned ☐
5 Leaking/Bad Joints ☐

C-Risers
1 Serviceable ☐
2 Broken ☐
3 Sulfided ☐
4 Misaligned ☐
5 Leaking/Bad Joints ☐

D-Shelf
1 Serviceable ☐
2 Broken ☐
3 Dirty ☐
4 Sulfided ☐
5 Bad Base Joint ☐

E-Trough
1 Serviceable ☐
2 Obstructed ☐
3 Sulfided ☐
4 Bad Pipe Joint ☐
5 Silt ☐
6 Poor Struct.Cond. ☐

III. Hydraulic Inspection

A-Inflow Indications
1 Debris on Sides/ Rungs ☐
2 " " " Shelf ☐

B-Surcharge Indication
1 Grease/Debris on Shelf ☐
2 " " Sides/Rungs ☐

C-Clarity of Flow
1 Turbid Sewage Appearance ☐
2 Clear Water Appearance ☐

D-Flow
1 Steady ☐
2 Pulsing ☐
3 Turbulent ☐
4 Surcharging ☐
5 Sluggish ☐

E-Flow Depth Compared to adjacent manholes
1 Same ☐
2 Lower ☐
3 Higher ☐

F-Flow Depth ____inches
Time ____AM/PM

Observation Summary _____

Remarks _____

Recommendations _____

Attachment C

COUNTY OF SAN DIEGO SEWER SYSTEM ASSESSMENT SHEET FOR MAJOR MAINTENANCE PROJECTS

Sewer System - WWM Problem Assessment Sheet

No.	CRITERIA / SCORING	3 POINTS	2 POINTS	1 POINT	0 POINTS
1	Condition of facility/system	System totally blocked, broken/shattered segments leaking into ground and surroundings, ineffective, undermined support	System partially blocked, cracked, misaligned, and with visibly advanced deterioration	Partial blockage, sporadic deterioration, rough and worn surfaces, source of potential future leaks	Overall smooth surfaces, in visibly good and acceptable condition
2	Age of component, system and/or faciliity	40 years or more	30 to 40 years	15 to 30 years	Less than 15 years
3	Pipe flow ratio (peak dry weather)	d/D = 90% + (all size diameter pipes)	d/D = 75% + (18" diameter and larger) d/D = 50% + (15" diameter and smaller)	d/D = 74% to 50% (18" diameter and larger) d/D = 49% to 40% (15" diameter and smaller)	d/D = less than 50% (18" diameter and larger) d/D = less than 40% (15" diameter and smaller)
4	Previous SSOs	Large scale SSO attributable to existing deficiency	Minor and/or potential SSO attributable to existing deficiency	Potential SSO based on history of previous occurrence/pipe blockage	No SSO history or potential
5	Proximity to watercourse	Within watercourse and/or crosses watercourse	Adjacent to watercourse	Within one mile of watercourse	Over one mile from watercourse
6	Blockage or Damage	Severe Roots Severe Offsets Severe Cracks Severe Breakage Severe Infiltration	Substantial Roots Substantial Offsets Substantial Cracks Substantial Breakage Substantial Infiltration	Minor Roots Minor Offsets Minor Cracks Minor Breakage Minor Infiltration	Minor Roots Minor Offsets No Cracks No Breakage No Infiltration

Attachment D

RECOMMENDED OBSERVATION CODES

Recommended Observation Codes

RECOMMENDED OBSERVATION CODES FOR COUNTY OF SAN DIEGO

Code	Severity	Observation	Maintenance Points	Structural Points	Definitions	Standard Comments	Joints
ST	A	Start Inspection	0	0	Use at the start of all inspections	"Re-Inspection after cleaning", Note if depth of flow is 1/3 pipe or more, note if pipe material from maintenance hole is different from line	
FH	A	Finish Inspection	0	0	Use at the end of all inspections	Note the cause for ending the observation if you are not in the maintenance hole, e.g. "camera blocked", "Overlap Point", "Clean Out", or "Dead End". If you are ending a reinspection use "End Re-Inspection".	
MH	A	Manhole	0	0	Upstream/Downstream maintenance hole	Maintenance hole number	
MB	A	Manhole Description	0	0	Buried / paved over maintenance holes shown on plans, maintenance holes not on plan	MH # & Note if it is buried or paved over; Note if it is an inside, outside or direct drop	
SA	A	Inspection Suspended	75	100	Impassable blockage, note apparent cause	Precede Observation with a General Observation Noting the apparent cause, e.g. by roots	
CUB	A	Camera Underwater Begin	50	50	Whenever the camera lens is partially or fully submerged, obstructing the view	Note if apparent pipe sag begins	
CUE	A	Camera Underwater End	50	50	Whenever the camera lens is returned to a normal state	Note if apparent pipe sag ends	
DND	A	Dead End	0	0	Used when camera reaches a dead end main	Note if "Plug" & condition	
CO	A	Cleanout	0	0	Use when the camera reaches a cleanout	Call out Clean out number	
MC	A	Material Change	0	0	Any change of pipe material	"Transition to (new pipe material)"	
DC	A	Diameter Change	0	50	Any change of pipe size	"Transition to (new pipe size & material)"	
SR	A	Spot Repair	0	50	Existing repair	"Spot Repair at (footage)"	
LL	A	Bend in Pipe Left	0	50	Any bend in pipe to the left		
LR	A	Bend in Pipe Right	0	50	Any bend in pipe to the right		
LD	A	Bend in Pipe Down	0	50	Any bend in pipe down		
LU	A	Bend in Pipe Up	0	50	Any bend in pipe up		
GE	A	Gasket Exposed	0	50	Gasket visible		
RS	A	Restricted Channel	0	0	Use when the camera is unable to access a channel		
X	A	Collapsed Pipe	0	700	Use if a section of the pipe wall has fallen in and the structural integrity of pipe has been compromised.	Note the approximate size and give a description. Note footage.	
V	A	Vermin	0	0	Any animal, rodent, or insect infestation inside the pipe/maintenance hole	Type of rodent / vermin/ bug	

Code	Severity	Observation	Maintenance Points	Structural Points	Definitions	Standard Comments	Joints
GO	A	General Observation	0	0	General observation	If no opposite direction inspection done for an incomplete inspection, note the reason why. Note defects in service connections.	
R	B	Roots, Light	25	0	Fine roots, root fingers following the wall of the pipe covering not more than 10% of the pipe wall	Note if roots are coming from a crack, hole, joint or around a lateral. Note approximate location (e.g. 12 o'clock)	
	C	Roots, Moderate	75	50	Fine to medium roots covering 10 to 20% of the pipe wall		
	D	Roots, Heavy	150	50	Fine to heavy roots blocking 20% to 50% of pipe - a carpet of roots following the walls of the pipe		
	E	Roots, Critical	200	50	Medium to heavy roots; tap roots visible; more than 50% of pipe blocked by roots; impassable		
I	B	Infiltration, Light	0	50	Seeping	Note location of crack (e.g. 12 o'clock)	
	C	Infiltration, Moderate	0	75	Dripping		
	D	Infiltration, Heavy	0	150	Constant stream		
	E	Infiltration, Critical	0	200	Gushing water		
E	B	Mineral Deposits, Light	0	50	Minimal (Possible indication of Infiltration)		
	C	Mineral Deposits, Moderate	0	75	Less than 10% of ID thick		
	D	Mineral Deposits, Heavy	0	150	Greater than 10% of ID thick		
	E	Mineral Deposits, Critical	0	250	Impassable, heavy mineral deposits		
CC	B	Circular Crack, Small	0	75	Very small hairline crack(s)	Note if they are spiral cracks. Note location of crack (Top/bottom of pipe from 12 to 6 o'clock)	Cracks at joints are within 4" of joint
	C	Circular Crack, Moderate	0	100	Hairline less than 50% of circumference		
	D	Circular Crack, Large	0	175	Less than 1/8" open, or hairline greater than 50% of circumference		
	E	Circular Crack, Critical	0	250	1/8" or greater, open		
CL	B	Crack -Longitudinal, Small	0	50	Very small hairline crack(s)	If the crack extends past one section of pipe, note the end footage, e.g. to 105'. For continuing cracks, note every 3 pipe lengths with a "continuing" note. Note location of crack (5 o'clock)	Cracks at joints are within 4" of joint
	C	Crack -Longitudinal, Moderate	0	100	Hairline less than 1 section of pipe		
	D	Crack -Longitudinal, Large	0	175	Less ≤ 1/8" wide or hairline > 50% of ID in length		
	E	Crack -Longitudinal, Critical	0	250	1/8" or greater, open		

Code	Severity	Observation	Maintenance Points	Structural Points	Definitions	Standard Comments	Joints
CM	B	Cracks -Multiple, Small	0	75	Very small hairline crack(s)	Note location of crack (top or bottom of pipe)	Cracks at joints are within 4" of joint
	C	Cracks -Multiple, Moderate	0	150	Hairline cracks in multiple directions, less than 1 section of pipe		
	D	Cracks -Multiple, Large	0	200	Less than 1/8" open, or hairline greater than 1 section of pipe, in multiple directions		
	E	Cracks -Multiple, Critical	0	300	Cracks in multiple directions, 1/8" or greater, open		
B	B	Broken Pipe, Small	0	200	Connecting cracks, no displacement	Note appearance of break and approximate location of pipe (5 o'clock)	Within 4" of joint, crescent crack with no displacement, or displaced / gone less than 1 hr, within bell, no dirt
	C	Broken Pipe, Moderate	0	250	Connecting cracks, some displacement (less than 1/4")		Within 4" of joint, crescent crack with displacement 1 - 3 hrs, or displaced / gone 1- 2hrs, within bell, no dirt
	D	Broken Pipe, Large	0	300	Connecting cracks, displacement greater than 1/4"		Within 4" of joint, crescent crack with displacement >3hrs, or displaced / gone >2hrs, within bell, no dirt showing
	E	Broken Pipe, Critical	0	500	Collapse pipe, impassable		
H	B	Hole in Pipe, Small	0	250	15" pipe or less: <1" dia. of hole >15" pipe: <2" dia. of hole*	* If a hole is below the waterline it moves up to the next severity - Note the approximate size of the hole, e.g. 1.5", Note if there is an apparent void. Note approximate location in pipe (top/bottom or 12 o'clock)	
	C	Hole in Pipe, Moderate	0	300	15" pipe or less: 1" to 3" dia., pipe is sound, no void >15" pipe: 2" to 4" dia., pipe is sound, no void		
	D	Hole in Pipe, Large	0	400	15" pipe or less: 1" to 3" dia., void visible >15" pipe: 2" to 4" dia., void visible		
	E	Hole in Pipe, Critical	0	500	Holes are bigger than severity 4; potential for collapse		
DE	B	Debris, Light	50	0	Sporadic deposits (no rocks)	Note the type of debris, e.g. silt, sand, rocks, sludge, etc. For continuing debris, enter observation every 25'	
	C	Debris, Moderate	75	0	10% of ID or less, rough debris (no rocks)		
	D	Debris, Heavy	150	0	10-25% of ID, rough debris		
	E	Debris, Critical	200	0	Greater than 25% of ID or impassable, rough debris and/or rocks		
DEG	B	Debris -Grease, Light	50	0	Less than 1/4" thick	Note percentage of pipe (similar to roots), for continuing grease, enter observation every 25'	
	C	Debris -Grease, Moderate	75	0	Slight indication 1/4"-1/2"		
	D	Debris -Grease, Heavy	150	0	1/2" to 2" thick		
	E	Debris -Grease, Critical	225	0	Greater than 2" thick		

Code	Severity	Observation	Maintenance Points	Structural Points	Definitions	Standard Comments	Joints
LC	B	Lining Defect, Light	0	50	Wrinkles, bubbles, dimples	Note the defect	
	C	Lining Defect, Moderate	0	100	Tear, up to 25% flow restriction		
	D	Lining Defect, Heavy	0	250	Greater than 25% flow restriction		
	E	Lining Defect, Critical	0	300	Missing liner		
SS	B	Erosion of CP, Light	0	100	Rough walls	Use only with concrete pipe	
	C	Erosion of CP, Moderate	0	200	Exposed aggregate		
	D	Erosion of CP, Heavy	0	300	Exposed rebar		
	E	Erosion of CP, Critical	0	500	Missing concrete		
CO	B	Corrosion of CI, Light	0	100	Minimal	Use only with Metal Pipe	
	C	Corrosion of CI, Moderate	0	200	Heavy tuberculation		
	D	Corrosion of CI, Heavy	0	300	Moderate tuberculation		
	E	Corrosion of CI, Critical	0	500	Impassable; excessive tuberculation		
SJ	B	Separated Joint, Light	0	50	Gasket visible		
	C	Separated Joint, Moderate	0	100	Bell visible		
	D	Separated Joint, Heavy	0	200	Dirt visible at top		
	E	Separated Joint, Critical	0	400	Dirt visible at invert		
DJ	B	Displaced Joint, Light	0	50	Pipe offset up to 1/2 the pipe thickness		
	C	Displaced Joint, Moderate	0	100	Pipe offset from 1/2 to the full pipe thickness		
	D	Displaced Joint, Heavy	0	200	Pipe offset from full to 1 1/2 times thickness of pipe		
	E	Displaced Joint, Critical	0	300	Pipe offset greater than 1 1/2 times thickness of pipe		
CN	A	Service Connection	0	0	All factory lateral 'Y' or 'T' service connections		
CB	A	Break in Connection	0	50	All laterals connected into a hole broken or cut into the main	Note if it is "broken in" rather than cut	

Code	Severity	Observation	Maintenance Points	Structural Points	Definitions	Standard Comments	Joints
CXC	B	Connection w/ Small defect	0	50	Light roots and/or hairline cracks	Use after CN or CB - Note the defect	Use for lateral defects, not pipe defects
	C	Connection w/ Moderate defect	25	100	Medium roots and/or medium cracks		
	D	Connection w/ Large defect	50	150	Heavy roots and/or open cracks		
	E	Connection w/ Critical defect	75	200	roots impassable and/or dirt visible		
CNI	B	Intruding Lateral, Small	0	75	Less than 1"	Use after CN or CB - Note how far it intrudes	
	C	Intruding Lateral, Moderate	0	150	1"to 2"		
	D	Intruding Lateral, Heavy	0	250	Greater than 2"		
	E	Intruding Lateral, Critical	0	300	Lateral is impassable		
CR	B	Roots in Lateral, Light	20	0	Small Roots in / from lateral		
	C	Roots in Lateral, Moderate	50	0	Medium roots in / from lateral		
	D	Roots in Lateral, Heavy	75	50	Heavy roots in / from lateral		
	E	Roots in Lateral, Critical	150	50	Lateral full of roots		
CP	A	Plugged Connection	0	0	Lateral not in use	"Plugged" "Full of Rocks", etc.	

Attachment E

WASTEWATER EQUIPMENT LIST

South/North Facilities Operations – Vehicle Inventory

Vehicle ID Number	Description
D82745	Operators Pickup
D82973	Supervisors Pickup
D80578	Operator Pickup
D82746	Operator Pickup
D82928	Operator Pickup
D82876	Operator Pickup
D83049	Operator Pickup
D82880	Operator Pickup
D82929	Operator Pickup
D82992	Operator Pickup
D82979	Operator Pickup
D82869	Operator Pickup
D82869	Electricians Van
D82910	Portable Generator
D82912	Portable Generator
D82911	Portable Generator
D82913	Portable Generator
D82877	8-inch Portable Pump
D82865	4-inch Portable Pump
D82864	4-inch Portable Pump
D83075	2019 CAT 289D LOADER

Spring Valley Operation – Vehicle Inventory

Vehicle ID Number	Description
D82667	Supervisor Pickup
D83038	Supervisor Pickup
D83045	Utility Pickup
D82849	Utility Pickup
D82726	Flatbed
D82754	CCTV Van
D82927	CCTV Van
D82622	Lane Truck
D83069	Jet Rodder
D83058	Jet Rodder
D82924	Vactor
D82779	Vactor
D82852	Vactor
D82740	Hook Truck
D82702	Dump Bed
D82725	Hook Truck
D80069	Dump Bed
D82787	Hook Truck
D82786	Continuous Rodder
D82733	Water Tank
D82991	Backhoe
D82760	Skid Steer
D82839	Mini-X
D82302	Zieman Trailer
D82303	Zieman Trailer
D82775	Trail King Trailer, Long
D82794	Trail King Trailer, Long
D82806	Response Trailer
D82763	Easement Machine
D83074	Light Tower

SPRING VALLEY SANITATION DISTRICT/WW COLLECTIONS DIVISION

11937 Campo Rd
Spring Valley, CA 91978
Main # 619-660-2007/FAX 619-670-1576
MS S156

CCTV TRUCK 1	**619-241-1017**
CCTV TRUCK 2	**619-541-1449**
STANDBY OPERATOR (AFTER HOURS)	**619-823-8212**

WW COLLECTION STAFF	OFFICE NUMBER	CELL NUMBER
Alex Lopez, Sr. EO	**619-660-2007**	**619-643-8742**
Alfonso Vargas, EO	619-660-2007	
Allen Williams, Sr. EO	**619-660-2007**	**619-507-2861**
Bertram Cordova, EO	619-660-2007	
Carlos Gallardo, EO	619-660-2007	
Gaston Vidal Jr., EO	619-660-2007	
Gary Harris, Sanitation Supervisor	***619-660-2007***	***619-496-7110***
George Irons, EO	619-660-2007	
Johnny Medina, EO	619-660-2007	
Lamont Barnes, EO	619-660-2007	
Manuel Lafarga, EO	619-660-2007	
Marco Burciaga, EO	619-660-2007	
Michael Arakawa, EO	619-660-2007	
Michael Leos, EO	619-660-2007	
Michael Patterson, EO	619-660-2007	
Michael Sherman, EO	619-660-2007	
Misael Sanchez Diaz, EO	619-660-2007	
Rick Mendoza Jr., Sr.EO	**619-660-2007**	
Scott Tally, Sanitation Supervisor	***619-660-2007***	***619-538-2150***
Steve Williamson, EO	619-660-2007	

SPRING VALLEY SANITATION DISTRICT/WW FACILITIES DIVISION
11937 Campo Rd
Spring Valley, CA 91978
MAIN # 619-660-2008/FAX 619-670-1576
MS 156

Spring Valley Operation Treatment **619-660-2008**
Julian Wastewater Treatment Plant **760-756-0273**

WW PLANT OPERATORS	OFFICE NUMBER	CELL NUMBER
Brandon Asoro, Wastewater Plant Operator III	619-660-2008	619-226-9419
Christine Lavoie, Wastewater Plant Op II		619-823-8478
Del Bunselmeier, Wastewater Plant Operator III	619-660-2008	858-204-1607
Gary Henry, Wastewater Plant Operator II	619-660-2008	619-538-1347
Greg Haywood, Electrician	619-660-2008	858-204-1590
James Dohrer, North County WW Facilities Supervisor MS N187		***858-204-1648***
Keith Kelly, Wastewater Plant Operator III	619-660-2008	619-851-4202/ 619-994-6831
Lance Gayer, South County WW Facilities Supervisor	***619-660-2008***	***858-248-5237***
Matthew Earnhart, WW Plant Operator Trainee	619-660-2008	619-985-7539
Randy Rush, Wastewater Plant Operator II		858-472-0167

Appendix B

COUNTY OF SAN DIEGO FOG CHARACTERIZATION STUDY

County of San Diego
Sewer System Management Plan

Appendix B
FOG LOCATIONS AND SPECIAL MAINTENANCE SITES

FINAL | August 2020

Contents

Attachments

Tables

Abbreviations

2015 FOG Study	2015 Fats, Oils, Grease Characterization Study
County	County of San Diego
FOG	Fats, Oils, Grease
FSE	Food Service Establishment
ft	feet
GIS	Geographical Information System
JWPCF	Julian Water Pollution Control Facility
RWQCB	Regional Water Quality Control Board
SanGIS	San Diego Geographic Information Source
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow

Chapter 1

INTRODUCTION

In March 2015, the County of San Diego (County) conducted a Fats, Oils, Grease Characterization Study (2015 FOG study) as part of the 2015 Sewer System Management Plan (SSMP). The 2015 FOG study is presented in Attachment E. Based on findings from the 2015 FOG study, the County found that the major cause of sanitary sewer overflows (SSOs) in the County collection systems was root intrusion and not FOG related. In addition, the FOG related SSOs were found to be associated with residential discharges. Since Food Service Establishments (FSEs) were not found to be significant contributors to the County's SSOs, a FOG study was not completed as part of this 2020 SSMP. However, some additional information has become available related to FOG in the County since the 2015 FOG Study was developed. This document summarizes their updates.

Chapter 2

SPECIAL MAINTENANCE SITES

County staff provided updates to the 2015 FOG study tables regarding special maintenance sites. The updated tables are presented in this chapter, while the updated list of Special Maintenance Sites for Alpine, Lakeside, Spring Valley, and Winter Gardens is listed in Attachment B.

A summary of the number of Special Maintenance Sites by service area is listed in Table 2.1.

Table 2.1 Summary of Condition at Special Maintenance Sites

Service Areas	Special Maintenance Sites Conditions					Total Special Maintenance Sites
	Grease Sites	Roots Sites	Sludge Sites	Sludge/ Roots Sites	Sludge/ Grease Sites	
Alpine	5	3	17	-	-	25
Lakeside	17	12	44	-	-	73
Spring Valley	60	88	137	4	5	294
Winter Gardens	-	2	30	-	-	32
Total Sites	**82**	**105**	**228**	**4**	**5**	**424**

As shown in Table 2.1, there are 424 Special Maintenance Sites. Approximately 6 percent of the Special Maintenance Sites are in the Alpine Service Area, 17 percent of the sites are in the Lakeside Service Area, 69 percent are in the Spring Valley Service Area, and 8 percent are in the Winter Gardens Service Area. As in 2015, there are no Special Maintenance Sites identified within Julian, Pine Valley, Campo, or East Otay Mesa.

A summary of the updated total length of Special Maintenance Sites pipe within each service area is listed in Table 2.2.

Table 2.2 Special Maintenance Sites Pipe Lengths

Service Area	Length of Special Maintenance Sites Pipe	
	Feet	Miles
Alpine	6,233	1.2
Lakeside	17,175	3.3
Spring Valley	69,748	13.2
Winter Gardens	8,383	1.6
Total	**100,539**	**19.2**

As shown in Table 2.2, County wastewater maintenance crews are currently responsible for the quarterly cleaning of approximately 100,539 feet (19 miles) of Special Maintenance Sites pipe.

A summary of the total length of pipe cleaned due to excessive FOG within each service area is listed in Table 2.3.

Table 2.3 Special Maintenance Sites – FOG Related

Service Area	Special Maintenance Sites		Percent FOG Related
	Length of Pipe Segments Maintained for FOG (ft)	Total Length of Special Maintenance Site Pipe (ft)	
Alpine	1,201	6,233	19%
Lakeside	4,308	17,175	25%
Spring Valley	15,885	69,748	23%
Winter Gardens	0	8,383	0%
Total	**21,394**	**100,593**	**21%**

The Special Maintenance Sites within the Winter Gardens Service Area include only sludge and root accumulation. Consistent with the 2015 FOG study, there are no Special Maintenance Sites due to FOG conditions within the Winter Gardens Service Area.

A summary of the Special Maintenance Sites related to FOG concentrations and the rating assigned during the most recent cleaning of pipe segments is listed in Table 2.4.

Table 2.4 Summary of Ratings for FOG Related Special Maintenance Sites

Service Area	FOG Condition Ratings			Total Sites
	G1	G2	G3	
Alpine	0	5	0	5
Lakeside	2	15	0	17
Spring Valley	13	40	13	66
Total	**15**	**60**	**13**	**88**

Notes:
(1) Rating Key: 1 through 3 (3 being worst, near blockage)

As shown in Table 2.4, the majority (68 percent) of the sites are rated a severity level of 2. Severity level 1 and 3 comprise of 17 percent and 15 percent of the total FOG related Special Maintenance Sites, respectively.

Chapter 3

REPORTED SSOs

The 2015 FOG study included a summary of historical records obtained from the San Diego Regional Water Quality Control Board (RWQCB) website to determine the approximate location of the SSO reported by the County between January 2007 and January 2010. Updated information obtained for January 2010 through December 2019 is presented in Attachment C.

Chapter 4

MAPPING

The 2015 FOG study included a list of the FSEs that are included in the maps. To update the maps, the FSEs were determined using the Business Sites shapefile obtained from San Diego Geographic Information Source (SanGIS). The following business types were included to identify the FSEs presented:

- Bakery
- Bakery – Baker
- Bakery/Confectioners
- Café
- Candy Stores
- Caterer
- Café – Fast Food
- Dairy Product Stores
- Foods
- Food Brokers
- Frozen Food Locker
- Frosty Stand
- Miscellaneous Food Store
- Winery

Using these business types, the updated list of FSEs is included in Attachment A.

The 2015 FOG study included three exhibits illustrating the approximate location of the identified FSEs, Special Maintenance Sites, and locations of the SSOs within the Alpine, Spring Valley, Lakeside, and Winter Gardens Service Areas. Updated maps based on available information discussed above and in Chapters 2 and 3 are included in Attachment D.

Chapter 5

RESULTS

The updated data indicates that, consistent with the findings of the 2015 FOG Study, the majority of the SSOs are not FOG related, and that any FOG related SSOs are still generally not associated with FSEs.

5.1 Alpine Service Area

The location of the FSEs, Special Maintenance Sites, and SSOs (2010-2019) within the Alpine Service Area are depicted on Figure 1 in Attachment D. As shown, the majority of the FSEs are located along Alpine Boulevard and Tavern Road. While two of the Special Maintenance Sites are located in the vicinity of FSEs, the SSOs do not appear to have occurred along pipelines designated as Special Maintenance Sites.

According to the available data, there have been four SSO occurrences in the vicinity of the Alpine Service Area. As shown on Figure 1 in Attachment D, one of the SSOs is a result of grease, while the remaining three are attributed to debris. The one overflow caused by grease does not appear to be located near an FSE and appears to be in a residential area. As discussed in the 2015 FOG study, the Special Maintenance Sites located in residential areas may be primarily due to the discharge of FOG into the wastewater collection system by residents or due to other facility conditions (e.g., pipe sags or minimal slopes). Further evaluation is recommended to determine whether the sites are located downstream of FSEs or if deficiencies in pipelines exist.

5.2 Spring Valley Service Area

The location of the FSEs, Special Maintenance Sites, and SSOs (2010-2019) within the Spring Valley Service Area are depicted on Figure 2 in Attachment D. As shown, the FSEs are throughout the service area with clusters concentrated along Campo Road, Jamacha Boulevard, Jamacha Road, Bonita Road, and Paradise Valley Road.

The Special Maintenance Sites are located throughout the Spring Valley Service Area with several located in the vicinity of FSEs and areas that appear to be residential. As discussed in the 2015 FOG study, the Special Maintenance Sites located in residential areas may be primarily due to the discharge of FOG into the wastewater collection system by residents or due to other facility conditions (e.g., pipe sags or minimal slopes). Further evaluation is recommended to determine whether the sites are located downstream of FSEs or if deficiencies in pipelines exist.

According to available data, there have been 59 public and 9 private SSO occurrences in the vicinity of the Spring Valley Service Area. As shown on Figure 2 in Attachment D, the SSOs do not appear to have occurred along pipelines designated as Special Maintenance Sites. These SSOs are summarized in Table 5.1 by the various causes.

Table 5.1 Summary of SSO Causes (Spring Valley Service Area)

Condition	Public SSOs	Private SSOs
Debris	10	2
Defect	1	1
Grease	2	1
Other	9	4(1)
Roots	35	1
Vandalism	2	0
Total	**59**	**9**

Notes:
(1) Includes unknown causes based on available information.
(2) Table includes data from January 2010 to December 2019.

As listed in Table 5.1, two of the public SSOs and one of the private lateral SSOs are a result of grease, while the remaining are attributed to other causes, such as debris, defects, roots, and others. The SSOs caused by grease does appear to be located in the vicinity of FSEs. Further evaluation is recommended to determine whether the sites are located downstream of FSEs or if deficiencies in pipelines exist.

5.3 Lakeside Service Area

The location of the FSEs, Special Maintenance Sites, and SSOs (2010-2019) within the Lakeside Service Area are depicted on Figure 3 in Attachment D. As shown, the majority of the FSEs are located along Woodside Avenue and Maine Avenue. The majority of the Special Maintenance Sites are located along Woodside Avenue as are a large quantity of FSEs. As shown on Figure 2 in Attachment D, the SSOs do not appear to have occurred along pipelines designated as Special Maintenance Sites.

Several Special Maintenance Sites are located in residential areas where the FOG condition appears to be primarily due to the discharge of FOG into the wastewater collection system by residents or due to other specific facility conditions (e.g., pipe sags or minimal slopes). Further research should be conducted to determine whether these sites are located downstream of FSEs or if deficiencies in pipelines exist.

According to available data, there have been 10 public and 1 private SSO occurrences in the Lakeside Service Area. The one private lateral spill was reported with limited information with an unknown cause. The SSOs within the vicinity of the Lakeside Service Area are summarized in Table 5.2 below by the various causes.

Table 5.2 Summary of SSO Causes (Lakeside Service Area)

Condition	Public SSOs	Private SSOs
Debris	2	0
Defect	0	0
Grease	1	0
Other	3	1(1)
Roots	3	0
Vandalism	1	0
Total	**10**	**1**

Notes:
(1) Includes unknown causes based on available information.

As listed in Table 5.2, one of the overflows was the result of grease, while the remaining are attributed to other causes, such as debris, defects, roots, and others. Since the majority of the SSO causes are due to roots and other causes, further evaluation to address these issues is recommended.

5.4 Winter Gardens Service Area

The location of the FSEs, Special Maintenance Sites, and SSOs (2010-2019) within the Winter Gardens Service Area are also depicted on Figure 3 in Attachment D. As shown, the majority of the FSEs are located along Winter Gardens Boulevard and there are no Special Maintenance Sites within the Winter Gardens Service Area.

According to available data, there have been three public SSO occurrences within the Winter Garden Service Area. One SSO was caused by a sewer main failure, while the other two SSOs were caused by roots. Since the majority of the SSO causes are due to roots and other causes, further evaluation to address these issues is recommended.

5.5 Julian Service Area

One private SSO was reported in the Julian Service Area in 2019 and was caused by the plumber. Since this private SSO was not FOG related, it is not illustrated on a figure.

Chapter 6

CONCLUSION

The County's effort for addressing FOG related issues has been its preventive maintenance program and the routine cleaning of its Special Maintenance Sites. Between the years 2010 and 2019, 4 public SSOs and 1 private SSO have been reported as a result of excessive FOG in the wastewater collection system. In more recent years (between the years 2015 and 2019), no SSOs reported resulted from excessive FOG. The majority of the SSO occurrences between 2010 and 2019 have been primarily due to root intrusion and other causes, such as pipe failures and rain events. Overall, the data indicates that the SSOs are not associated with FOG from FSEs. Further evaluation is recommended in the Spring Valley Service Area to determine if the SSO sites are located downstream of FSEs or if deficiencies in pipelines exist. Most FOG related issues appear to be due to residential discharge of FOG into the system.

Attachment A

FOOD SERVICE ESTABLISHMENTS

FOOD SERVICE ESTABLISHMENTS

Business Name	Business Address	City	State	District
AHI SUSHI&GRILL	1347 TAVERN RD	ALPINE	CA	ALPINE
AL PANCHOS RESTAURANT	2139 ALPINE BLVD	ALPINE	CA	ALPINE
ALPINE BREWING COMPANY	2351 ALPINE BLVD	ALPINE	CA	ALPINE
ALPINE BREWING COMPANY	1347 TAVERN RD	ALPINE	CA	ALPINE
ALPINE INN	2225 ALPINE BLVD	ALPINE	CA	ALPINE
ALPINE TACO SHOP INC	1903 ALPINE BLVD	ALPINE	CA	ALPINE
ALPINE TAVERN&GRILL	2502 ALPINE BLVD	ALPINE	CA	ALPINE
BURGERS&SHAKES	2754 ALPINE BLVD	ALPINE	CA	ALPINE
CAFFE ADESSO	1140 TAVERN RD	ALPINE	CA	ALPINE
CARLS JR #1100629	1263 TAVERN RD	ALPINE	CA	ALPINE
COBBLESTONE COTTAGE TEA	1945 ALPINE BLVD	ALPINE	CA	ALPINE
CROCE VINCENZO	1347 TAVERN RD	ALPINE	CA	ALPINE
DICKEYS BARBECUE PIT	2165 ARNOLD WAY	ALPINE	CA	ALPINE
DONATOS ITALIAN RESTAURANT	2654 ALPINE BLVD	ALPINE	CA	ALPINE
GREEK VILLAGE GRILL LLC	1730 ALPINE BLVD	ALPINE	CA	ALPINE
HOUSE INC	1730 ALPINE BLVD	ALPINE	CA	ALPINE
JANETS MONTANA CAFE LLC	2506 ALPINE BLVD	ALPINE	CA	ALPINE
LA CARRETA 1980 LLC	1347 TAVERN RD	ALPINE	CA	ALPINE
LITTLE CAESARS	1730 ALPINE BLVD	ALPINE	CA	ALPINE
MANANAS MEXICAN FOOD	1730 ALPINE BLVD	ALPINE	CA	ALPINE
MCDONALDS	2959 ALPINE BLVD	ALPINE	CA	ALPINE
PANDA MACHI	1730 ALPINE BLVD	ALPINE	CA	ALPINE
PIZZA HUT #029361	2710 ALPINE BLVD	ALPINE	CA	ALPINE
RUIZ ENRIQUE	2335 ALPINE BLVD	ALPINE	CA	ALPINE
SALSA MEXICAN FOOD	2710 ALPINE BLVD	ALPINE	CA	ALPINE
STARBUCKS COFFEE #10260	2963 ALPINE BLVD	ALPINE	CA	ALPINE
STEPHS DONUT HOLE	1730 ALPINE BLVD	ALPINE	CA	ALPINE
SUBWAY SANDWICHES	2963 ALPINE BLVD	ALPINE	CA	ALPINE
SUPER FOODS LOUNGE	1347 TAVERN RD	ALPINE	CA	ALPINE
VINNYS PIZZERIA	2754 ALPINE BLVD	ALPINE	CA	ALPINE
CAFE B	1247 SHERIDAN RD	CAMPO	CA	CAMPO
CAMPO STORE	31080 HWY 94 RD	CAMPO	CA	CAMPO
ALTA CAFE	665 ALTA RD	SAN DIEGO	CA	EAST OTAY MESA
HOUSE DAVID	480 ALTA RD	SAN DIEGO	CA	EAST OTAY MESA
TRINITY SERVICES GROUP INC	441 ALTA RD	SAN DIEGO	CA	EAST OTAY MESA
APPLE ALLEY BAKERY	2122 MAIN ST	JULIAN	CA	JULIAN
BLUE DOOR WINERY	2608 B ST	JULIAN	CA	JULIAN
BUFFALO BILLS	2603 B ST	JULIAN	CA	JULIAN
CALIFORNIA MOUNTAIN BAKERY	2907 WASHINGTON ST	JULIAN	CA	JULIAN
CANDIED APPLE PASTRY CO	2128 4TH ST	JULIAN	CA	JULIAN
CARMENS HEROES	2018 MAIN ST	JULIAN	CA	JULIAN
GRANNYS KITCHEN	1921 MAIN ST	JULIAN	CA	JULIAN
JULIAN BREWERY&BBQ INC	2315 MAIN ST	JULIAN	CA	JULIAN
JULIAN CAFE	2112 MAIN ST	JULIAN	CA	JULIAN
JULIAN CIDER MILL	2103 MAIN ST	JULIAN	CA	JULIAN
JULIAN GRILLE	2224 MAIN ST	JULIAN	CA	JULIAN
JULIAN PIE COMPANY	2229 MAIN ST	JULIAN	CA	JULIAN
JULIAN PIE COMPANY LLC	2225 MAIN ST	JULIAN	CA	JULIAN
JULIAN TEA&COTTAGE ARTS	2124 3RD ST	JULIAN	CA	JULIAN
JULIANTLA CHOCOLATE	2608 B ST	JULIAN	CA	JULIAN
MINERS DINER	2134 MAIN ST	JULIAN	CA	JULIAN
MOMS PIE HOUSE	2119 MAIN ST	JULIAN	CA	JULIAN
PONCHO VILLAS	2907 WASHINGTON ST	JULIAN	CA	JULIAN
ROMANOS CATERING	2030 3RD ST	JULIAN	CA	JULIAN
ROMANOS RESTAURANT	2718 B ST	JULIAN	CA	JULIAN
RONGBRANCH CAFE	2722 WASHINGTON ST	JULIAN	CA	JULIAN
STUART MELANI	2000 MAIN ST	JULIAN	CA	JULIAN
WINE TASTING ROOM	2000 MAIN ST	JULIAN	CA	JULIAN
WITCH CREEK WINERY	2000 MAIN ST	JULIAN	CA	JULIAN
BURGER KING #13489	14136 OLDE HIGHWAY 80	EL CAJON	CA	LAKESIDE
DENNYS RESTAURANT #7096	13584 CAMINO CANADA	EL CAJON	CA	LAKESIDE

FOOD SERVICE ESTABLISHMENTS

Business Name	Business Address	City	State	District
DIEGOS DONUT CORNER	8575 LOS COCHES RD	EL CAJON	CA	LAKESIDE
FINE LINE FOODS	14402 BOND CT	EL CAJON	CA	LAKESIDE
GRAND OLE BBQ	15505 OLDE HIGHWAY 80	EL CAJON	CA	LAKESIDE
JACK IN THE BOX #3033	14039 HIGHWAY 8 BUSINESS	EL CAJON	CA	LAKESIDE
KAFFEE MEISTER INC	13277 HIGHWAY 8 BUSINESS	EL CAJON	CA	LAKESIDE
LA POSTA DE ACAPULCOS	8575 LOS COCHES RD	EL CAJON	CA	LAKESIDE
MARECHIAROS EAST ITALIAN	14120 OLDE HIGHWAY 80	EL CAJON	CA	LAKESIDE
MARY ETTAS CAFE	14809 OLDE HIGHWAY 80	EL CAJON	CA	LAKESIDE
MCDONALDS #16724	13574 CAMINO CANADA	EL CAJON	CA	LAKESIDE
PANDA EXPRESS #2863	13465 CAMINO CANADA	EL CAJON	CA	LAKESIDE
PRODUCE AVAILABLE INC	14424 BOND CT	EL CAJON	CA	LAKESIDE
RENEGADE COUNTRY	14335 OLDE HIGHWAY 80	EL CAJON	CA	LAKESIDE
ROSARITOS MEXICAN FOOD #6	14490 OLDE HIGHWAY 80	EL CAJON	CA	LAKESIDE
SUBWAY #4583	13465 CAMINO CANADA	EL CAJON	CA	LAKESIDE
TACO BELL #25491/18315	13418 CAMINO CANADA	EL CAJON	CA	LAKESIDE
ALBERTS MEXICAN FOOD #2	13334 HIGHWAY 8 BUSINESS	LAKESIDE	CA	LAKESIDE
ARBYS #5172	12136 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
BOLL WEEVIL	9741 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
BURGER KING #4655	10130 MAINE AVE	LAKESIDE	CA	LAKESIDE
CAFE 67	12381 MAPLEVIEW ST	LAKESIDE	CA	LAKESIDE
CAKE BATTER BATTER	9664 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
CALIFORNIA ICE CREAM	9666 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
COUNTRY DONUTS	12169 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
DIEGO DESSERTS INC	11106 MORENO AVE	LAKESIDE	CA	LAKESIDE
DOMINOS #7717	10135 MAINE AVE	LAKESIDE	CA	LAKESIDE
EAST COUNTY BAIT&TACKLE	10137 MAINE AVE	LAKESIDE	CA	LAKESIDE
GAETANOS	13524 HIGHWAY 8 BUSINESS	LAKESIDE	CA	LAKESIDE
GIANT BAMBINOS PIZZA	9534 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
GIANT PIZZA KING	9742 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
GREEK CHICKEN	9536 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
HOMESTYLE HAWAIIAN	9927 MAINE AVE	LAKESIDE	CA	LAKESIDE
JACK IN THE BOX #58	12155 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
JAVIERS SOMBRERO EXPRESS	12250 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
JULIES JUNQUE	12512 LAKESHORE DR	LAKESIDE	CA	LAKESIDE
KFC #191019	12061 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
LA LOMITA MEXICAN GRILL	12115 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
LA PALAPA MEXICAN	12169 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
LAKE LINDO GRILL	12128 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
LAKESIDE DISCOUNT MARKET	9838 CHANNEL RD	LAKESIDE	CA	LAKESIDE
LENGS CHINESE FOOD	9610 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
LITTLE CAESARS PIZZA	12405 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
LOS RANCHERITOS MEXICAN FOOD	10205 LAKE JENNINGS PARK RD	LAKESIDE	CA	LAKESIDE
MARYS DONUTS	10101 MAINE AVE	LAKESIDE	CA	LAKESIDE
MCDONALDS RESTAURANT	9614 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
MILAS LAKESIDE CAFE INC	12212 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
NEW YORK GIANT PIZZA INC	9610 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
OTTAVIOS ITALIAN	12440 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
PIZZA HUT #027224	12336 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
RESTAURANT	12169 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
ROBERTOS TACO SHOP	12401 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
ROSARITOS	9562 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
ROSTAMIJAM MOHAMMAD H	12260 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
SARAIS TACO SHOP MEXICAN	10143 MAINE AVE	LAKESIDE	CA	LAKESIDE
SOMBRERO MEXICAN FOOD	12346 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
STARBUCKS COFFEE #15511	9760 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
SUBWAY #3820	9562 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
TACO BELL #25482/1496	12265 WOODSIDE AVE	LAKESIDE	CA	LAKESIDE
WATER STOP THE	9534 WINTER GARDENS BLVD	LAKESIDE	CA	LAKESIDE
WOW DONUTS	10205 LAKE JENNINGS RD	LAKESIDE	CA	LAKESIDE
YOGURT BARN THE	9840 CHANNEL RD	LAKESIDE	CA	LAKESIDE
CALVINS	28841 OLD HIGHWAY 80	PINE VALLEY	CA	PINE VALLEY

FOOD SERVICE ESTABLISHMENTS

Business Name	Business Address	City	State	District
FROSTY BURGER	28823 OLD HIGHWAY 80	PINE VALLEY	CA	PINE VALLEY
MAJORS COFFEE SHOP	28870 OLDE HIGHWAY 80	PINE VALLEY	CA	PINE VALLEY
PINE VALLEY JAVA&	28870 OLD HIGHWAY 80	PINE VALLEY	CA	PINE VALLEY
BONITA FARMERS MARKET	5080 BONITA RD	BONITA	CA	SPRING VALLEY
EIJSERMANS HARRY	5080 BONITA RD	BONITA	CA	SPRING VALLEY
GRACIELAS TACO SHOP	5047 CENTRAL AVE	BONITA	CA	SPRING VALLEY
KFC #191015	5080 BONITA RD	BONITA	CA	SPRING VALLEY
LA FINCA DE ADOBE INC	5202 BONITA RD	BONITA	CA	SPRING VALLEY
MURRIETAS RESTAURANT	5170 BONITA RD	BONITA	CA	SPRING VALLEY
NIGHT CLUB INC	5080 BONITA RD	BONITA	CA	SPRING VALLEY
ROBINWOOD CAFE&DELI	5120 ROBINWOOD RD	BONITA	CA	SPRING VALLEY
STARBUCKS COFFEE #6839	5030 BONITA RD	BONITA	CA	SPRING VALLEY
GIANT PIZZA KING	5035 CENTRAL AVE	CHULA VISTA	CA	SPRING VALLEY
(INSIDE TARGET)	2911 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
APPLEBEES	2508 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
BROKEN YOLK CAFE	2963 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
BURGER KING #5645	2992 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
CARLS JR #1100418	2935 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
COLDSTONE CREAMERY #20074	2963 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
DAIRY QUEEN	2656 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
DENNYS RESTAURANT #7375	2642 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
DICKEYS BBQ PIT	2959 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
DOLCI CAFE ITALIANO	2650 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
EAST INC	2990 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
HILBERTOS MEXICAN FOOD	2648 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
HOO1 INC	2955 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
JAMBA JUICE #740	12098 FURY LN	EL CAJON	CA	SPRING VALLEY
JERSEY MIKES SUBS	2514 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
KFC #191010	2949 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
LITTLE CAESARS PIZZA	2920 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
LUNA GRILL	2963 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
MANDARIN CHEF CHINESE	2654 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
MCDONALDS	2646 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
MEMOS BAGEL CAFE	2650 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
MIDDLE EAST INC	2990 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
NICKY ROTTENS INC	3773 WILLOW GLEN DR	EL CAJON	CA	SPRING VALLEY
PANCHOS MEXICAN FOOD	2990 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
PANDA EXPRESS #1967	12098 FURY LN	EL CAJON	CA	SPRING VALLEY
PICK UP STIX #747	2504 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
PISTACHIOS DELIGHTS MIDEAST	2990 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
PIZZA HUT EXPRESS	2911 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
PRESS BOX SPORTS LOUNGE	2990 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
ROCHESTER ROSANABELL	11555 VIA RANCHO SAN DIEGO	EL CAJON	CA	SPRING VALLEY
ROUND TABLE PIZZA	2650 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
RUBIOS FRESH MEXICAN GRILL	2959 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
SAHARA EXPRESS	2654 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
SHEESHA LOUNGE	2990 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
STARBUCKS COFFEE #5226	2512 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
STARBUCKS COFFEE #8906	2986 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
SUBWAY #4508	2650 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
TABU SUSHI BAR&GRILL	2986 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
TACO BELL #25488/15507	2506 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
TASTE OF ITALY	2512 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
TGI FRIDAYS #1920	2991 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
VANITEA CAFE	2654 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
YI SUSHI	2650 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
YOYOS FROZEN YOGURT	2650 JAMACHA RD	EL CAJON	CA	SPRING VALLEY
BEIJING EXPRESS CHINESE	8741 BROADWAY	LA MESA	CA	SPRING VALLEY
IHOP #825	8747 BROADWAY	LA MESA	CA	SPRING VALLEY
INTERNATIONAL HOUSE OF	8747 BROADWAY	LA MESA	CA	SPRING VALLEY
NANCYS TACO SHOP	8731 BROADWAY	LA MESA	CA	SPRING VALLEY

FOOD SERVICE ESTABLISHMENTS

Business Name	Business Address	City	State	District
SKYLINE CAFE/BOOK STORE	11330 CAMPO RD	LA MESA	CA	SPRING VALLEY
WENDYS #17	8749 BROADWAY	LA MESA	CA	SPRING VALLEY
WENDYS #40330	8749 CAMPO RD	LA MESA	CA	SPRING VALLEY
DENNYS #2357	1904 SWEETWATER RD	NATIONAL CITY	CA	SPRING VALLEY
FROZEN PLUS	2468 VAN NESS AVE	NATIONAL CITY	CA	SPRING VALLEY
PRODUCE CITY	2762 RIDGEWAY DR	NATIONAL CITY	CA	SPRING VALLEY
TAQUIZA LOS CHUCHYS	2626 GRANGER AVE	NATIONAL CITY	CA	SPRING VALLEY
TAQUIZAS LOS CHUCHYS	2548 GRANGER AVE	NATIONAL CITY	CA	SPRING VALLEY
TORTILLERIA LA ESTRELLITA	2762 RIDGEWAY DR	NATIONAL CITY	CA	SPRING VALLEY
31 BASKIN-ROBBINS #3086	3509 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
BAGATELLE FRENCH BAKERY	9738 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
BAI YOUNG HWA&MYUNG HUN	1069 ELKELTON BLVD	SPRING VALLEY	CA	SPRING VALLEY
BANKHEAD MISSISSIPPI STYLE	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
BELINDAS FAMILIA	9505 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
BUTLERS COFFEE HOUSE	9631 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
CARLS JR #1100118	3722 KENORA DR	SPRING VALLEY	CA	SPRING VALLEY
CHEF CHINA	9726 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
CORTES ARTURO M	9410 APPLE ST	SPRING VALLEY	CA	SPRING VALLEY
COTIJA TACO SHOP	9664 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
DON JILBERTOS TACO SHOP	9569 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
DULCEMENEO FRUTAS	1045 ELKELTON BLVD	SPRING VALLEY	CA	SPRING VALLEY
EDGE MEDITERRANEAN	10010 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
EL KORA RESTAURANT	8415 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
EL KORA RESTAURANT	8415 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
EL PUERTO TACO SHOP	2836 BANCROFT DR	SPRING VALLEY	CA	SPRING VALLEY
EPIC BEVERAGE GROUP LLC	2733 VIA ORANGE WAY	SPRING VALLEY	CA	SPRING VALLEY
ESPANA LIQUOR	9548 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
EXTRAORDINARY FRUITS	3509 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
FERNANDOS PIZZA	2778 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
FRUITY LOCO	507 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
FRUTAS FRESCAS ASHTLAN	9511 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
FRUTI TACOS	8614 TROY ST	SPRING VALLEY	CA	SPRING VALLEY
GAETANOS	10025 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
GIANT PIZZA KING NO 13	1029 ELKELTON BLVD	SPRING VALLEY	CA	SPRING VALLEY
GIBALDI THOMAS	9935 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
GODFATHERS PIZZA	685 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
GRACIELAS MEXICAN FOOD	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
GREAT SIGNS CENTER	9971 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
GRECIAN CAFE INC	9676 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
GREGORIA	10761 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
HAY TAING	8415 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
JACK IN THE BOX #65	3525 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
JACK IN THE BOX #65	10255 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
JACK IN THE BOX #73	1047 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
JAMACHA PRODUCE MARKET	10761 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
JAY BEES SALES/KENNELS	9124 OLIVE DR	SPRING VALLEY	CA	SPRING VALLEY
KABABAYAN BAKERY LLC	8423 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
KFC/TACO BELL #191027	8330 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
LA POSTA DE ACAPULCO #3	9914 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
LEOCYNNS LUMPIA INC	8360 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
LIBERTY CALL DISTILLING LLC	2739 VIA ORANGE WAY	SPRING VALLEY	CA	SPRING VALLEY
LIBERTY CALL DISTILLING LLC	2733 VIA ORANGE WAY	SPRING VALLEY	CA	SPRING VALLEY
LINLEES CHINESE CUISINE	501 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
LINLEES CHINESE CUISINE	503 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
LITTLE CAESARS	539 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
LITTLE CAESARS PIZZA	9768 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
LONG ISLAND MIKES PIZZA	9821 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
LUCYS BAKERY	1045 ELKELTON BLVD	SPRING VALLEY	CA	SPRING VALLEY
M&S FOODS INC	9142 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
MARLENS TACO SHOP	8921 JAMACHA RD	SPRING VALLEY	CA	SPRING VALLEY
MCDONALDS #3403	8730 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY

FOOD SERVICE ESTABLISHMENTS

Business Name	Business Address	City	State	District
MISS DONUTS&COFFEE	9729 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
NIAS DESSERT BAR	9527 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
PALOMINOS NO 5	2615 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
PANDA HOUSE	9330 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
PHO MINH&GRILL	2615 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
PHO OLALA	9735 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
PHO&GRILL INTERNATIONAL	9610 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
PIZZA HUT #027212	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
PIZZA HUT #031292	9805 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
RAFAS MEXICAN FOOD	566 PARAISO AVE	SPRING VALLEY	CA	SPRING VALLEY
RALLYS HAMBURGERS #103	8667 JAMACHA RD	SPRING VALLEY	CA	SPRING VALLEY
RAMBERTOS TACO SHOP	1039 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
RANAS MEXICO CITY CUISINE	9683 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
RDJ DISTRIBUTION	2733 VIA ORANGE WAY	SPRING VALLEY	CA	SPRING VALLEY
RESTAURANT INC	8910 TROY ST	SPRING VALLEY	CA	SPRING VALLEY
ROUND TABLE PIZZA	9676 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
SAN DIEGO DISTILLERY INC	2766 VIA ORANGE WAY	SPRING VALLEY	CA	SPRING VALLEY
SANTANAS MEXICAN GRILL INC	9824 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
SARAHS BAKERY	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
SARITAS TACO SHOP	9906 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
SBA AL HAMDANI SWEETS	3515 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
SEE 6392300000	9916 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
SKY CAFE AND LOUNGE	3515 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
SKY CAFE&LOUNGE	3515 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
SMART&FINAL STORE #725	933 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
SOL PRODUCE	10761 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
SOMBRERO MEXICAN FOOD	691 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
SPRING VALLEY PRODUCE	9510 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
SPRING VALLEY WATER	9348 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
STARBUCKS COFFEE #6793	9809 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
STARBUCKS COFFEE #9350	8626 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
SUBWAY #12321	9805 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
SUBWAY #2837	689 SWEETWATER RD	SPRING VALLEY	CA	SPRING VALLEY
SUBWAY #28654	2615 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
SUNRISE DELI NY STYLE	9945 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
TACO SHOP	3546 BANCROFT DR	SPRING VALLEY	CA	SPRING VALLEY
TAMALES Y PANADERIA	9467 JAMACHA BLVD	SPRING VALLEY	CA	SPRING VALLEY
TAMBAYAN FILIPINO BBQ	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
TAQUERIA LA IMPERIAL	1015 GRAND AVE	SPRING VALLEY	CA	SPRING VALLEY
TASTY CHINA EXPRESS	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	SPRING VALLEY
TROY FOOD MART	8620 TROY ST	SPRING VALLEY	CA	SPRING VALLEY
VALLY FARM BBQ	9050 CAMPO RD	SPRING VALLEY	CA	SPRING VALLEY
WIENERSCHNITZEL	3523 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
ZAD MEDETERENIAN CUISINE	3515 SWEETWATER SPRINGS BLVD	SPRING VALLEY	CA	SPRING VALLEY
ADRIJANAS PIZZERIA&DELI	8049 WINTER GARDENS BLVD	EL CAJON	CA	WINTER GARDENS
BUCKBOARD CATERING&EVENTS	975 GREENFIELD DR	EL CAJON	CA	WINTER GARDENS
HAINAN CHINESE RESTAURANT	1771 N 2ND ST	EL CAJON	CA	WINTER GARDENS
PIZZA HUT #027201	1762 N 2ND ST	EL CAJON	CA	WINTER GARDENS
ROSES DONUTS	1760 N 2ND ST	EL CAJON	CA	WINTER GARDENS
WINGS MIX	8215 WINTER GARDENS BLVD	LAKESIDE	CA	WINTER GARDENS

Attachment B

EXISTING SPECIAL MAINTENANCE SITES

Table 1 Special Maintenance Sites for Alpine Service Area

Facility ID	Address	Condition & Rating
AL0309	1347 TAVERN RD	S2
AL0489	1460 MARSHALL RD	S2
AL0042	1661 ALPINE BLVD	S2
AL0300	1666 ALPINE BLVD	G2
AL0299	1666 ALPINE BLVD	G2
AL0045	1752 ALPINE BLVD	S2
AL0420	1901 ALPINE BLVD	S2
AL0346-M	1912 ARNOLD WAY	G2
AL0348	1950 ARNOLD WAY	G2
AL0383	2055 ARNOLD WAY	S2
AL0052	2103 ALPINE BLVD	S2
AL0452	2153 ARNOLD WAY	R1
AL0463	2156 ALPINE BLVD	R1
AL0486	2223 ALPINE BLVD	G2
AL0457	2232 ALPINE BLVD	R1
AL0490	2337 MARSHALL WAY	S2
AL0491	2366 MARSHALL WAY	S2
AL0481	2400 ALPINE BLVD	S1
AL0480	2418 ALPINE BLVD	S1
AL0479	2424 ALPINE BLVD	S2
AL0057	2205 ALPINE BLVD	S2
AL0044	1752 ALPINE BLVD	S1
AL0152	8818 HARBISON CYN RD	S2
AL0419	1907 ALPINE BLVD	S2
AL0151-M	8818 HARBISON CYN RD	S2

Notes:
(1) CONDITION KEY: R=Light Roots, T=Tap (Heavy) Roots, G=Grease, S=Sludge, including grit
RATING KEY: 1 through 3, 3 being worst (near blockage).

Table 2 Special Maintenance Sites for Lakeside Service Area

Facility ID	Address	Condition & Rating
LS1978	12824 LAKESHORE DR	S1
LS2005	13034 BEECHTREE ST	S1
LS1309	9268 WESTHILL RD	S1
LS1573	9413 WINTER GARDENS BLVD	S1
LS1587	9145 WINTER GARDENS BLVD	S2
LS1588	9117 WINTER GARDENS BLVD	S2
LS1595	9110 WINTER GARDENS BLVD	S2
LS2319	12713 CASTLE COURT DR	R1
LS2006	13051 BEECHTREE ST	S1
LS2007	13129 BEECHTREE ST	S1
LS1339	11675 WESTHILL VISTA	R1
LS1342	9154 HILLMAN WAY	R2
LS1360	9205 EMERALD GROVE AVE	S1
LS2318	12713 CASTLE COURT DR	R2
LS1312	9212 WESTHILL RD	R1
LS0642	13893 PINKARD WAY	G1
LS1260	11733 WATERHILL RD	R2
LS1300	9417 MARILLA DR	S1
LS1337	9310 MARILLA DR	R1
LS1973	12741 LAUREL ST	S1
LS1974	12905 BEECHTREE ST	S1
LS0641	13789 HIGHWAY 80	G1
LS1575	9409 SAGUARO RD	S1
LS1683	12311 GAY RIO DR	S1
LS1778	8735 WINTER GARDENS BLVD	T3
LS1977	12905 BEECHTREE ST	S1
LS1535	9604 NECTARINE DR	S1
LS1501	12106 WOODSIDE AVE	G2
LS1505	12150 WOODSIDE AVE	G2
LS1341	11675 WESTHILL VISTA	S1
LS1343	9154 HILLMAN WAY	S1
LS1344	9154 HILLMAN WAY	S1
LS1502	12136 WOODSIDE AVE	G2
LS1333	9365 CHRISTINA LN	S1
LS2379	9202 LOS COCHES RD	G2
LS0848	14517 MIGUEL LN	S1
LS0849	14517 MIGUEL LN	S1
LS1972	12905 MAPLEVIEW ST	S2
LS1506	12202 WOODSIDE AVE	G2

Facility ID	Address	Condition & Rating
LS1507	12244 WOODSIDE AVE	G2
LS0486	8502 ROSADA WAY	T3
LS2391	CALLE LUCIA ESMT.	S2
LS2392	CALLE LUCIA ESMT.	S2
LS1589	9120 WINTER GARDENS BLVD	S2
LS1980	13034 BEECHTREE ST	S1
LS1274	9316 WESTHILL RD	S1
LS1979	13030 BEECHTREE ST	S1
LS1574	9402 WINTER GARDENS BLVD	S1
LS1499	12087 WOODSIDE AVE	G2
LS1971	12741 LAUREL ST	S2
LS2101	9618 PETITE LN	S1
LS1503	12150 WOODSIDE AVE	G2
LS1504	12150 WOODSIDE AVE	G2
LS2076	13502 APPALOOSA DR	S1
LS2077	13527 APPALOOSA DR	S1
LS2368	9272 LOS COCHES RD	G2
LS1467	9735 RIVERVIEW AVE	S1
LS0737	9378 TELKAIF ST	G2
LS1308	9268 WESTHILL RD	S1
LS1633	12060 LOS AMIGOS WAY	R3
LS1303	9364 WESTHILL RD	S1
LS2390	LOS COCHES RD ESMT.	S2
LS2323	12811 CASTLE COURT DR	R1
LS1975	12905 BEECHTREE ST	S1
LS1976	10018 TAMIL RD	S1
LS0727	9323 TELKAIF ST	G2
LS0726	14219 JENNINGS VISTA DR	G2
LS0728	9346 TELKAIF ST	G2
LS0729	9366 TELKAIF ST	G2
LS1989	13034 BEECHTREE ST	S1
LS1777-M	8732 WINTER GARDENS BLVD	S1
LS1306-M	9268 WESTHILL RD	T3
LS2394-M	9096 CALLE LUCIA	S1

Notes:
(1) CONDITION KEY: R=Light Roots, T=Tap (Heavy) Roots, G=Grease, S=Sludge, including grit.
RATING KEY: 1 through 3, 3 being worst (near blockage).

Table 3 Special Maintenance Sites for Spring Valley Service Area

Facility ID	Address	Condition & Rating
SV4730	8771 CAMPO RD	S1
SV3007	9846 CAMPO RD	G2
SV3206	10234 CENTINELLA DR	S2
SV3212	10340 RANCHO RD	S1
SV3213	10330 RANCHO RD	R1
SV4340	9227 HILLSIDE DR	R2
SV2687	9052 LAMAR ST	G3
SV2153	9236 HARNESS ST	S1
SV3014	9966 San Juan St	S1
SV3015	4004 CORTEZ WAY	S1
SV5669	1126 SAN MIGUEL AVE	S1
SV2620	2650 BANCROFT DR	G2
SV6579	3230 SWEETWATER SPRINGS BLVD	S1
SV6580	10153 CANYONRIDGE PL	S1
SV5231	CENTRAL AVE AND FAIRWAY DR	G3
SV1946	934 BRUCKER AVE	S1
SV4234	8825 LAMAR ST	R1
SV3002	3111 S BONITA ST	R1
SV7490	10311 DON PICO RD	R1
SV7491	3401 SCENIC TER	R1
SV7492	10290 LOMA RANCHO DR	R1
SV3541	9846 CAMPO RD	G2
SV6578	3230 SWEETWATER SPRINGS BLVD	R1
SV7444	3421 YBARRA RD	S1
SV7437	3344 CALAVO DR	R1
SV7372	10520 DON PICO RD	S1
SV4323	3960 HELIX ST	S1
SV4733	4024 KENWOOD DR	S1
SV5293	8956 JAMACHA BLVD	S1
SV3235	4306 VISTA WAY	G3
SV6743	9834 COSTA LAGO ST	G2
SV6788	9744 HURON ST	G2
SV6789	9810 COSTA LAGO ST	G2
SV6558	10106 CLIFFSIDE PL	R1
SV6490	Austin Dr and Cliffside Ave	S1
SV5463	506 KEMPTON ST	S1
SV5567	9396 JAMACHA RD	G3

Facility ID	Address	Condition & Rating
SV2611	8902 VALENCIA ST	G2
SV2557	2537 CENTRAL AVE	S1
SV2635	2836 BANCROFT DR	S1
SV6493	10130 AUSTIN DR	R1
SV2612	8947 VALENCIA ST	G2
SV2613	2650 BANCROFT DR	G2
SV2617	2540 BANCROFT DR	G3
SV2560	2446 CENTRAL WAYSIDE	S1
SV7125	3654 S CORDOBA AVE	S2, G1
SV5718	9653 BIRCH ST	R3
SV5719	1235 PORTOLA AVE	R3
SV2633	2650 BANCROFT DR	G2
SV5247	3349 CENTRAL AVE	R1
SV5248	3402 SADDLE DR	R1
SV2985	3503 GLEN DR	R1
SV2986	3451 GLEN DR	R1
SV2987	3442 GLEN DR	R1
SV2998	3224 S. Bonita St	R1
SV3125	10099 SIERRA MADRE RD	S1
SV5242	CENTRAL AVE AND FAIRWAY DR	G3
SV5573	9410 APPLE ST	G3
SV2301	1633 TARLETON ST	G1
SV2302	1657 TARLETON ST	S1, G1
SV6525	2548 LEDGEVIEW PL	R1
SV4116	8660 JAMACHA RD	G1
SV3124	10042 CASA DE ORO BLVD	S1
SV7128	10002 BUENA VISTA DR	S1
SV2154	9248 HARNESS ST	S1
SV3013	9966 SAN JUAN ST	R1
SV2659	2905 BANCROFT DR	S1
SV2636	2836 BANCROFT DR	S1
SV2561	2515 SWEETWATER RD	S2, R2
SV7425	10510 DON PICO RD	S1
SV6352	10785 EUREKA RD	S1
SV2978	DOLORES ST AND S. BONITA ST	G2, S1
SV2975	3711 S BONITA ST	G2
SV3459	10146 CASA DE ORO BLVD	R2
SV3237	4306 VISTA WAY	G3,V

Facility ID	Address	Condition & Rating
SV2610	2698 VALENCIA CYN	S2
SV3001	3135 S BONITA ST	R1
SV5429	533 KEMPTON ST	G2
SV4729	8771 CAMPO RD	S1
SV3547	9800 SAN JUAN ST	S2
SV7293	10359 MADRID WAY	R2
SV3460	10109 SIERRA MADRE RD	R2
SV3090	4206 N CORDOBA AVE	R1
SV4321	4033 HELIX ST	G2
SV4731	4034 KENWOOD DR	S1
SV4732	4034 KENWOOD DR	S1
SV6494	10106 CLIFFSIDE PL	R1
SV1708	8914 DELROSE AVE	G2
SV4611	3414 TROPHY DR	S1
SV4612	3423 TROPHY DR	S1
SV4613	3440 TROPHY DR	S1
SV3579	4156 N BONITA ST	S1
SV5067	3560 FAIRWAY DR	G2
SV7321	10559 CAMPO RD	G1, S2
SV3463	10129 SIERRA MADRE RD	R2
SV2644	2917 APRICOT LN	R1
SV2360	8601 HARNESS ST	S1
SV6559	10106 CLIFFSIDE PL	R1
SV2562	2515 SWEETWATER RD	S2, R2
SV2179	8811 JAMACHA RD	G2
SV2180	8847 JAMACHA RD	G2
SV6160	2111 LA MESA CT	S1
SV3091	4236 N CORDOBA AVE	R1
SV1928	SAFFORD AVE AND ORVILLE ST	S2
SV1951	1020 GILLESPIE DR	S1
SV1952	1034 LELAND ST	S1
SV2222	SAFFORD AVE AND ORVILLE ST	S2
SV4193	8645 TYLER ST	S2
SV2006	9059 HARNESS ST	S1
SV7477	10226 DON PICO RD	T3
SV7478	10302 DON PICO RD	S1
SV7479	10330 DON PICO RD	T3
SV3789	9710 CAMPO RD	R3

Facility ID	Address	Condition & Rating
SV4594	3220 CENTRAL AVE	G3
SV1927	687 SWEETWATER RD	S2
SV6527	2545 LEDGEVIEW PL	R1, G1, S2
SV1751	558 BROADVIEW ST	S1
SV2303	1633 TARLETON ST	G1
SV2296	1553 FOLKESTONE ST	G2
SV7480	10350 DON PICO RD	T3
SV7489	10302 DON PICO RD	R1
SV2319	1633 TARLETON ST	G2
SV3029	10028 ESTRELLA DR	R1
SV3030	10040 ESTRELLA DR	R1
SV6138	9804 AUSTIN DR	G2
SV7476	10203 DEL RIO RD	T3
SV1956	969 GILLISPIE DR	R1
SV1957	950 LELAND ST	R1
SV4238	8917 LAMAR ST	S1
SV2541	9048 AVOCADO ST	S1
SV5670	1210 SAN MIGUEL AVE	S1
SV5430	506 KEMPTON ST	S2, G2
SV2645	2923 APRICOT LN	S1
SV6574	10128 CLIFFSIDE PL	R1
SV2516	2206 CENTRAL AVE	G1
SV2351	8601 HARNESS ST	G2
SV6583	3149 HIGHLANDS BLVD	S1
SV2814	3345 HELIX ST	S1
SV3790	9714 CAMPO RD	R3
SV2930	3327 KENORA DR	S1
SV1958	1034 LELAND ST	G2
SV1953	1009 GILLISPIE DR	S1
SV6610	10073 CANYONTOP ST	R1
SV6611	10065 CANYONVIEW CT	R1
SV3066	10041 MOZELLE LN	S1
SV3057	10028 ESTRELLA DR	R1
SV3058	10028 ESTRELLA DR	S1
SV3059	4202 LOVETT LN	R1
SV2997	3260 S BONITA ST	R1
SV2688	9128 LAMAR ST	S1
SV3134	10135 TOLEDO RD	R3

Facility ID	Address	Condition & Rating
SV2352	8601 HARNESS ST	G1
SV6754	9687 ST GEORGE ST	S1
SV6745	9744 HURON ST	G2
SV2181	8847 JAMACHA RD	G2
SV5563	832 GRAND AVE	T3
SV2929	9606 VIA KENORA	R1
SV1707	924 ELKELTON BLVD	G2
SV1467	463 RIDGEWAY CT	S1
SV2198	1504 HELIX ST	R3
SV2178	1014 BRUCKER AVE	S1
SV6755	9657 ST GEORGE ST	S1
SV5454	9368 SAN CARLOS ST	G2
SV1954	1000 GILLESPIE DR	S2
SV2643	9111 ROSEDALE DR	S1
SV2176	934 BRUCKER AVE	G2
SV2350	8601 HARNESS ST	G2
SV2361	8601 HARNESS ST	S1
SV4196	8645 TYLER ST	S1
SV5082	3227 FAIRWAY DR	S2
SV5081	3215 FAIRWAY DR	S3
SV3374	4963 VISTA ARROYO	R1
SV6629	2705 VIA ORANGE WAY	S2
SV3905	4434 HIDEAWAY PL	R3
SV3906	9813 EDGAR PL	R3
SV2815	3403 HELIX ST	S1
SV2817	3423 HELIX ST	S1
SV3817	4133 CONRAD DR	R3
SV3562	9940 SIERRA MADRE RD	S1
SV5435	461 FELICITA AVE	G2
SV6613	10019 CANYONVIEW CT	R3
SV4685	3420 PAR DR	S1
SV4614.01	3423 TROPHY DR	S1
SV4240	8917 LAMAR ST	S2
SV6601	10083 CANYONSIDE CT	S1
SV6609	10081 CANYONVIEW CT	S1
SV4555	9318 KAHLUA CT	R2
SV4556	4062 S TROPICO DR	R2
SV4192	8645 TYLER ST	S1

Facility ID	Address	Condition & Rating
SV1878	ELKELTON PL	S1
SV3490	10278 RAMONA DR	S1
SV5671	1210 SAN MIGUEL AVE	S1
SV6298	10555 MOORPARK ST	S1
SV5650	911 BANOCK ST	S1
SV6634	10411 MOORPARK ST	G2
SV6632	10411 MOORPARK ST	S2
SV1955	969 GILLISPIE DR	S2
SV5066	3544 FAIRWAY DR	G2
SV1455	572 QUARRY VIEW WAY	S1
SV1351	5718 SWEETWATER RD	S1
SV1352	5718 SWEETWATER RD	S1
SV6808	529 MITRA CT	S1
SV2540	2399 BANCROFT DR	S1
SV2932	9641 VIA KENORA	S1
SV3136	10135 TOLEDO RD	R2
SV4482	4226 HIGHLAND GLEN WAY	R2
SV4552	9310 KAHLUA WAY	T2
SV4194	8645 TYLER ST	S2
SV4542	9347 KAHLUA WAY	S1
SV6790	529 MITRA CT	G2
SV6791	529 MITRA CT	G2
SV3935	10030 GRANDVIEW DR	S2
SV3936	10064 GRANDVIEW DR	S2
SV3952	10030 GRANDVIEW DR	G2
SV3963	4706 ANGELS PT	R3
SV2583	2669 RAE DR	S1
SV4481	4225 HIGHLAND GLEN WAY	R2
SV2300	1607 FOLKESTONE ST	G1
SV2297	1607 FOLKESTONE ST	G1
SV6392	2810 VIA ORANGE WAY	S1
SV2033	1842 HELIX PL	S1
SV2007	9075 HARNESS ST	S1
SV2150	9185 HARNESS ST	S1
SV2151	9210 HARNESS ST	S1
SV3910	4442 HIDEAWAY PL	R3
SV4605	3400 FAIRWAY DR	S1
SV6748	728 GALOPAGO ST	S1

Facility ID	Address	Condition & Rating
SV2641	9082 ROSEDALE DR	S1
SV4700	3666 FAIRWAY DR	G2
SV0866	5802 SAN MIGUEL RD	S1
SV0868	5942 SAN MIGUEL RD	S1
SV0410	3240 BONITA RD	S1
SV0036	2875 LINCOLN CT	S1
SV0037	2847 LINCOLN CT	S1
SV0788	5723 SUNNY VIEW DR	S2
SV0789	5735 SUNNY VIEW DR	S2
SV0179	2716 FENTON PL	S1
SV0151	2353 RIDGEWAY DR	S1
SV0867	5942 SAN MIGUEL RD	S1
SV0484	3810 PALM DR	G3
SV0485	3886 PALM DR	S2
SV0357	2851 ALTA DR	G3
SV0150	2319 RIDGEWAY DR	R1
SV0400	3941 AVENIDA PALO VERDE DR	G2,V
SV0401	3941 AVENIDA PALO VERDE DR	S2
SV1201	3135 BRIARWOOD RD	S2
SV1202	3041 BRIARWOOD RD	R1
SV1203	2944 VIA DEL CABALLO BLANCO	R1
SV0035	Grove St	S1
SV0174	2618 FENTON PL	R3
SV0793	3620 WILD OATS LN	R1
SV1309	5646 PRAY ST	S1
SV0787	3217 LOMA DEL SOL DR	S1
SV0356	2860 ALTA DR	S1, R1
SV1069	3510 TENNIS COURT LN	S2
SV1070	3501 ORCHARD HILL RD	G2
SV0783	3210 LOMA DEL SOL DR	R1
SV1250	2971 PLAZA LEONARDO	S2
SV0792	5764 SUNNY VIEW DR	S1
SV5041	8697 SHANNONBROOK CT	R3
SV3216-M	10309 CHALLENGE BLVD	R1
SV4237-M	8825 LAMAR ST	R1
SV5182-M	3599 BIRDIE DR	S1
SV6582-M	3230 SWEETWATER SPRINGS BLVD	R1
SV2564-M	2515 SWEETWATER RD	R1

Facility ID	Address	Condition & Rating
SV4249-M	8813 LAMAR ST	G1
SV5230-M	3232 CENTRAL AVE	G3
SV2723-M	9223 LAMAR ST	S1
SV6600-M	3149 HIGHLANDS BLVD	R1
SV3252-M	4320 CRESTVIEW DR	S1
SV4607-M	3381 PAR DR	S1
SV5433-M	503 KEMPTON ST	S1
SV6009-M	10269 GREENLEAF RD	R2
SV4554-M	9318 KAHLUA CT	R2
SV4558-M	4062 S TROPICO DR	R2
SV3453-M	10133 CLIFFWOOD DR	R1
SV3365-M	10210 VIVERA DR	R1
SV4246-M	8825 LAMAR ST	G1
SV1355-M	5732 SWEETWATER RD	S1
SV3986-M	9908 HEAVENLY WAY	T3
SV4684-M	3381 PAR DR	S1
SV6608-M	10083 CANYONSIDE CT	S1
SV3145-M	10250 TOLEDO RD	S1
SV0243-M	2700 WILMA ST	R1
SV1350-M	5694 SWEETWATER RD	S1
SV6631-M	10411 MOORPARK ST	S2
SV6324-M	10540 PINE GROVE ST	S1
SV2201-M	1561 HELIX ST	R3
SV3831-M	4157 CONRAD DR	R3
SV0176-M	2618 FENTON PL	R3
SV1301-M	5540 SWEETWATER RD	R2
SV0806-M	3620 WILD OATS LN	G3
SV0791-M	5755 SUNNY VIEW DR	S1
SV5429.01-M	553 KEMPTON ST	G2

Notes:
(1) CONDITION KEY: R=Light Roots, T=Tap (Heavy) Roots, G=Grease, S=Sludge, including grit.
RATING KEY: 1 through 3, 3 being worst (near blockage).

Table 4 Special Maintenance Sites for Winter Gardens Service Area

Facility ID	Address	Condition & Rating
WG0571	1249 DENVER LN	S2
WG0574	992 GREENFIELD DR	S2
WG0581	991 GREENFIELD DR	S2
WG0592	1038 GREENFIELD DR	S2
WG0643	1220 GREENFIELD DR	S1
WG0434	1453 PEPPER DR	S1
WG0418	1315 E PEPPER DR	S1
WG0083	1791 N 2ND ST	S1
WG0320	12543 SUNGLOW DR	S1
WG0321	8317 SUNVIEW DR	S1
WG0637	1120 Greenfield Dr	S2
WG0642	1201 GREENFIELD DR	S2
WG0229	12076 SHORT ST	S1
WG0644	1220 GREENFIELD DR	S2
WG0645	1250 GREENFIELD DR	S2
WG0646	1282 GREENFIELD DR	S2
WG0602	1311 FIVE D DR	S2
WG0636	1101 GREENFIELD DR	S2
WG0441	1475 PEPPER DR	S1
WG0437	1806 WIGHT WAY	S1
WG0294	8170 MELROSE LN	R1
WG0002	1656 N 2ND ST	S2
WG0641	1201 GREENFIELD DR	S1
WG0429	1727 SUNBURST DR	S1
WG0640	1176 GREENFIELD DR	S1
WG0436	1453 PEPPER DR	S1
WG0440	1806 WIGHT WAY	S1
WG0443	1475 PEPPER DR	R2
WG0422	1400 Pepper Dr	S1
WG0419	1347 PEPPER DR	S1
WG0586-M	1024 GREENFIELD DR	S2
WG0639-M	1150 GREENFIELD DR	S1

Notes:
(1) CONDITION KEY: R=Light Roots, T=Tap (Heavy) Roots, G=Grease, S=Sludge, including grit.
RATING KEY: 1 through 3, 3 being worst (near blockage).

Attachment C

REPORTED SEWER SYSTEM OVERFLOWS

REPORTED SEWER SYSTEM OVERFLOWS

Item No.	Event ID	Category	Spill Start	Location	Cause
1	748067	Category 3	1/1/2010 0:00	10263 Vista de la Cruz	Debris
2	748722	Category 3	1/22/2010 0:00	Kenora Dr & Quail Creek Ln	Debris
3	748734	Category 3	1/23/2010 0:00	Fairway Drive & Central Avenue	Debris
4	749720	Category 3	1/28/2010 9:07	2621 Sweetwater Road	Debris
5	757440	Category 1	10/6/2010 0:00	1124 Midway Drive	Debris
6	758990	Category 3	11/29/2010 0:00	Alpine Village Apts	Grease Deposit
7	759288	Category 3	12/9/2010 0:00	Intersection of mapleview Street and Ashwood	Debris / Ragging
8	716105	Category 1	1/25/2019 13:00	Julian Main Street	Debris
9	759870	Category 1	12/21/2010 0:00	Bancroft Drive and Spring Place	Exceeded System Capacity / Rain Event
10	759867	Category 1	12/21/2010 0:00	5682 Sweetwater Road	Exceeded System Capacity / Rain Event
11	762894	Category 1	2/13/2011 0:00	Conrad Drive & Casa De La Torre	Debris
12	771934	Category 3	10/11/2011 5:00	9364 Westhill Dr.	Grease Deposit
13	773000	Category 3	11/4/2011 8:50	Apple St. and Ramona Ave.	Root Intrusion
14	776806	Category 3	1/30/2012 12:05	Date st. and Portola ave.	Root Intrusion
15	778633	Category 3	3/13/2012 7:32	2335 Alpine Blvd.	Debris
16	783587	Category 2	7/13/2012 0:00	4328 Vista Way	Root Intrusion
17	792747	Category 3	3/18/2013 9:20	8335 Lamar St.	Grease Deposit
18	793274	Category 1	4/9/2013 0:00	1225 Portola ave. Spring Valley Ca. 91978	Root Intrusion
19	794411	Category 3	5/22/2013 9:55	451 Kempton St, Spring Valley	Vandelism
20	797242	Category 3	7/25/2013 6:55	4306 Vista Way	Debris
21	797966	Category 1	8/12/2013 0:00	Grand Ave. and Jamacha Road	Root Intrusion
22	798897	Category 3	9/19/2013 9:10	9748 Campo Road, Spring Valley	Root Intrusion
23	799305	Category 3	9/30/2013 8:00	3147 Highlands Blvd., Spring Valley, CA. 91978	Root Intrusion
24	799557	Category 2	10/7/2013 1:30	3625 Wild Oats Lane, Chula Vista, CA 91902	Debris
25	800101	Category 3	10/22/2013 8:22	4437 Conrad Drive	Root Intrusion
26	800420	Category 3	10/29/2013 11:30	3536 Sweetwater Springs	Root Intrusion
27	801291	Category 3	11/30/2013 1:00	9029 lemon street spring valley ca	Maintenance Hole Ragging
28	802736	Category 3	1/14/2014 0:00	10350 Challenge Blvd., Spring Valley, CA.	Root Intrusion
29	804363	Category 3	3/2/2014 5:00	8693 Shannon Brook Court, Spring Valley, CA	Root Intrusion
30	804865	Category 2	3/23/2014 8:45	2127 Arnold Way, Alpine, Ca	Debris

REPORTED SEWER SYSTEM OVERFLOWS

Item No.	Event ID	Category	Spill Start	Location	Cause
31	805331	Category 2	4/3/2014 7:00	447 Kempton Street Spring Valley, Ca.	Sewer Main Failure
32	805607	Category 2	4/22/2014 10:50	1561 Helix Street, Spring Valley, CA	Root Intrusion
33	805830	Category 3	5/1/2014 8:34	3102 South Granada Avenue	Root Intrusion
34	806907	Category 3	6/5/2014 6:50	9713 Campo Road	Root Intrusion
35	807437	Category 3	6/28/2014 1:00	13262 Interstate 8 Business Lakeside, CA	Root Intrusion
36	808706	Category 3	8/25/2014 11:03	just k	Grease Deposit
37	808752	Category 3	8/27/2014 6:45	1225 Portola Avenue, Spring Valley, CA	Root Intrusion
38	808780	Category 3	8/28/2014 1:30	3017 Plaza Paolo Drive, Bonita, CA	Root Intrusion
39	809353	Category 3	9/23/2014 7:40	3620 Wild Oats Lane, Bonita, CA	Root Intrusion
40	810546	Category 3	10/24/2014 21:00	10020 Carissa Ln	Root Intrusion
41	810610	Category 3	11/8/2014 11:45	9104 Lamar St.	Root Intrusion
42	812345	Category 3	1/18/2015 0:00	10143 Toledo Rd Spring Valley	Root Intrusion / Lateral Connection
43	814146	Category 3	3/28/2015 0:00	9910 Grandview Dr., La Mesa	Root Intrusion / Maintenance Hole
44	814520	Category 3	4/12/2015 0:00	3365 South Bonita	Root Intrusion / Lateral Connection
45	815062	Category 3	5/5/2015 0:00	9766 Campo Rd	Root Intrusion
46	815576	Category 3	5/28/2015 0:00	4306 Vista Way, La Mesa	Root Intrusion
47	816652	Category 3	7/16/2015 0:00	4192 Conrad Drive, Spring Valley	Root Intrusion
48	820706	Category 3	1/3/2016 0:00	11805 Altadena Rd. Lakeside	Root Intrusion
49	820855	Category 3	1/8/2016 0:00	8200 Sunset Rd. Lakeside	Root Intrusion / Lateral Connection
50	821305	Category 3	1/25/2016 0:00	10336 San Vicente, Spring Valley	Root Intrusion / Maintenance Hole
51	824015	Category 3	2/4/2016 0:00	9011 Los Coches Rd. Lakeside	Contractor Error / Bypass Failure
52	824923	Category 3	5/28/2016 0:00	12110 Gay Rio Way, Lakeside CA	Root Intrusion / Maintenance Hole
53	825890	Category 3	6/30/2016 0:00	1709 Canyon Road Spring Valley	Ragging in Maintenance Hole
54	826474	Category 3	7/19/2016 0:00	4157 Conrad Drive, Spring Valley	Root Intrusion
55	827922	Category 3	9/1/2016 0:00	9735 Silva Road, El Cajon	Force Main Failure
56	831380	Category 3	1/1/2017 11:00	9078 Winter Gardens Blvd	Debris
57	831966	Category 1	1/23/2017 11:00	4306 Vista Way, La Mesa	Root Intrusion
58	832427	Category 3	1/31/2017 18:00	4374 North Rogers Rd. Spring Valley	Root Intrusion
59	833427	Category 1	2/27/2017 18:00	604 Galopago, Spring Valley	Exceeded System Capacity / Rain Event
60	833770	Category 1	2/28/2017 0:00	9118 E Sierra Alta Way, El Cajon, CA 92021	Sewer Main Failure / Rain Event

REPORTED SEWER SYSTEM OVERFLOWS

Item No.	Event ID	Category	Spill Start	Location	Cause
61	833604	Category 3	3/6/2017 11:45	10012 Grandview, La Mesa	Root Intrusion
62	833605	Category 3	3/9/2017 1:30	Jamacha Siphon	Contractor Error
63	834445	Category 3	4/10/2017 11:00	9883 Grandview, La Mesa	Contractor / Sewer Main Damage
64	841456	Category 3	11/7/2017 17:00	10404 Artesian Springs, Spring Valley	Root Intrusion / Maintenance Hole
65	842656	Category 3	12/3/2017 8:00	10143 Toledo Rd, Spring Valley	Root Intrusion / Lateral Connection
66	842741	Category 2	12/10/2017 12:00	Ramona Avenue & San Carlos Street Spring Valley	Force Main Pipe Failure
67	845949	Category 3	3/24/2018 11:00	8771 Valencia St. Spring Valley	Contractor / Sewer Main Damage
68	847557	Category 3	5/27/2018 12:00	10045 Jacoby Rd	Root Intrusion
69	849394	Category 1	7/21/2018 0:00	1999 Sweetwater Road National City	Vandelism / Soccer Ball
70	849660	Category 3	7/30/2018 12:00	3194 Highlands Blvd, Spring Valley	Root Intrusion
71	851271	Category 1	9/22/2018 0:00	1656 Braddon Way, El Cajon, CA	Sewer Main Failure/Break
72	852731	Category 2	11/12/2018 16:30	9462 San Carlos St, Spring Valley CA	Force Main Pipe Failure
73	855053	Category 2	1/4/2019 6:50	San Carlos Street Force Main	Force Main Pipe Failure
74	856064	Category 3	2/8/2019 15:00	4135 N Cordoba Ave	Debris
75	856256	Category 3	2/16/2019 16:30	9067 Westhill	Root Intrusion / Lateral Connection
76	860318	Category 3	8/6/2019 21:00	8400 Cordial Rd	Vandelism / Pool Plaster
77	861440	Category 3	9/20/2019 8:00	8665 Valencia St, Spring Valley	Root Intrusion / Lateral Connection

Attachment D

FSE, SSO, AND SPECIAL MAINTENANCE SITE LOCATIONS FOR ALPINE, LAKESIDE, AND SPRING VALLEY

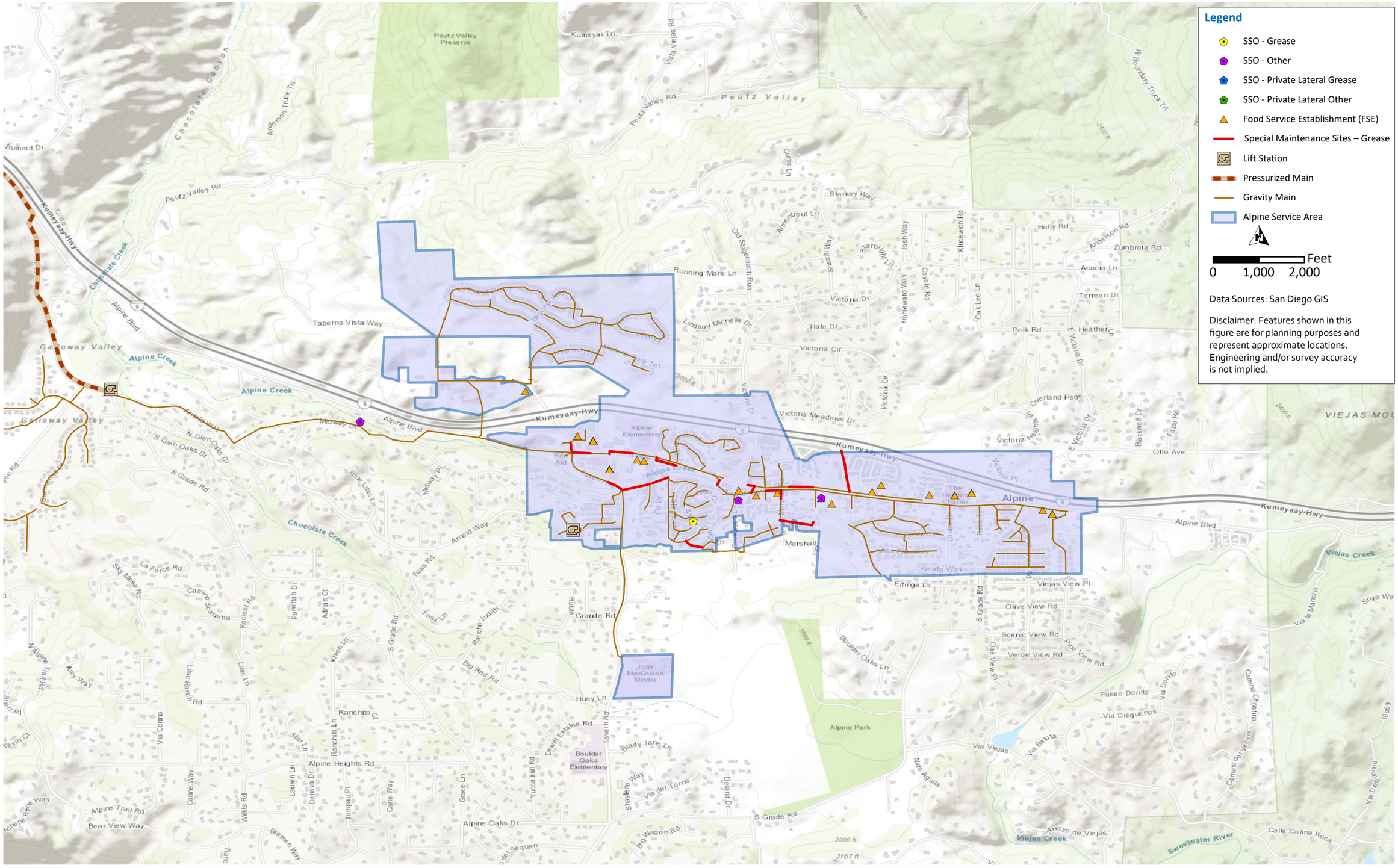

Figure 1 Food Service, Overflow Locations and Grease Related SSOs within Alpine Service Area

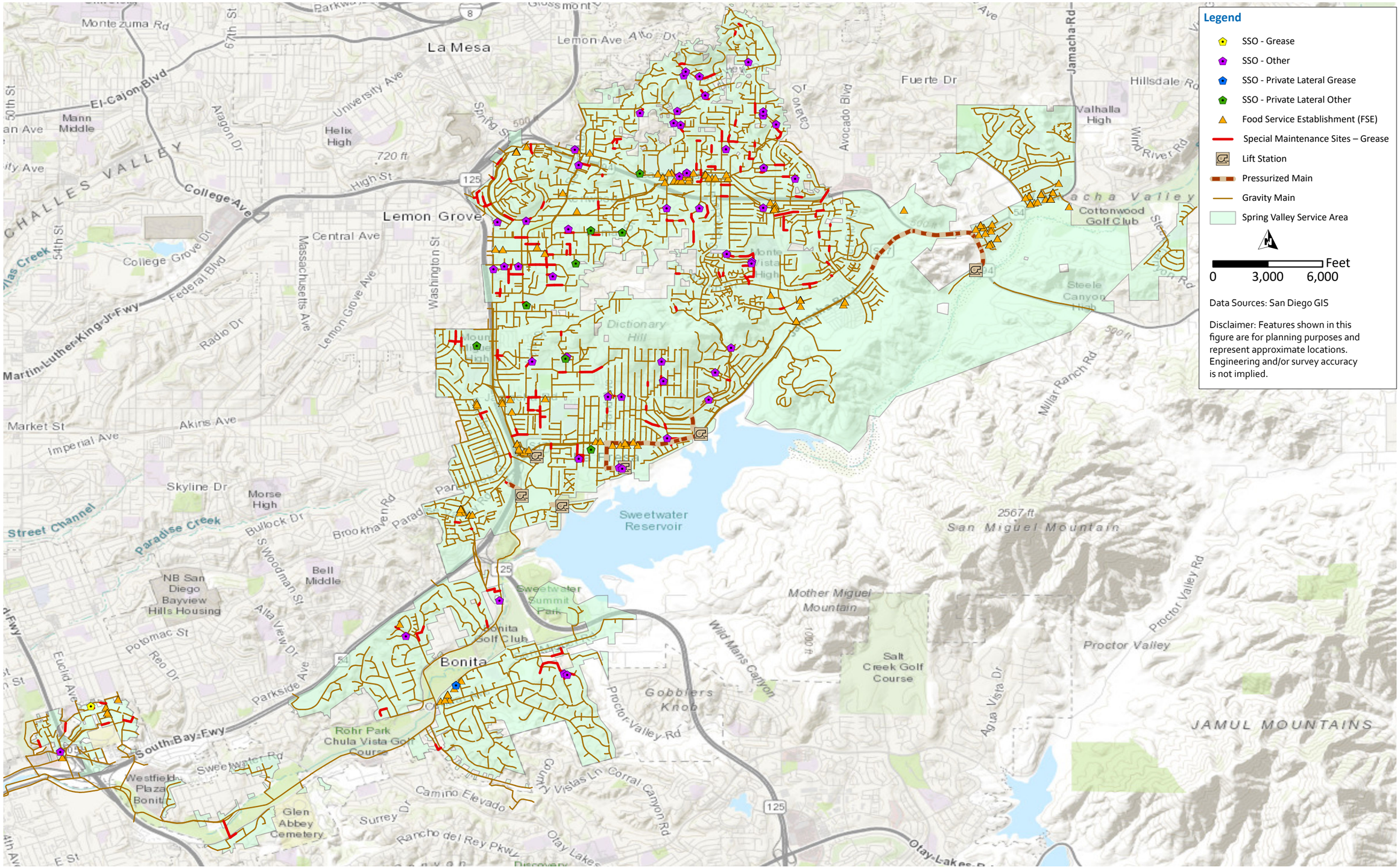

Figure 2 Food Service, Overflow Locations and Grease Related SSOs within Spring Valley Service Area

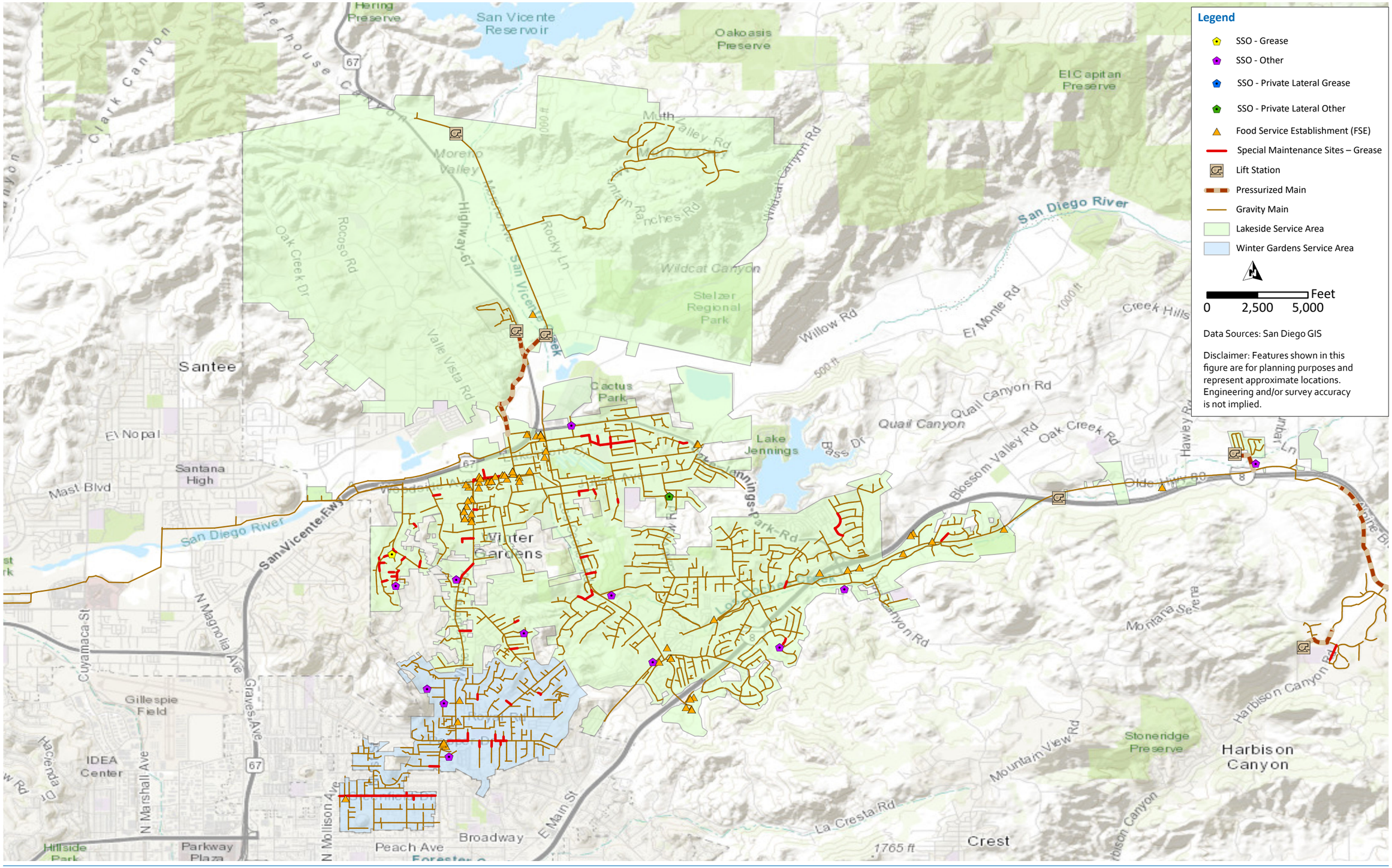

Figure 3 Food Service, Overflow Locations and Grease Related SSOs within Wintergarden and Lakeside Service Areas

Attachment E

2015 FATS, OILS, AND GREASE CHARACTERIZATION STUDY

County of San Diego
Department of Public Works
Fats, Oils, and Grease
Characterization Study

March 2015

Prepared for:

5555 Overland Drive
San Diego, CA 92123

Prepared by:

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San Diego, CA 92130
858.874.1810

Atkins Project No.: 1000040727

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Attachments

Executive Summary

The County of San Diego (County) is committed to complying with the mandates set forth under the General Waste Discharge Requirements for Sanitary Sewer Systems Order No. 2006-0003 (WDRs). To comply with one of the eleven (11) mandatory elements of the SSMP, the County prepared a Fats, Oils, and Grease (FOG) characterization study to demonstrate its existing preventative maintenance program effectively reduces the quantity of FOG and other debris discharged to the wastewater collection system that may cause sewerage collection system blockages or sewer system overflows (SSOs).

The likely sources of FOG were identified and mapped. Approximately 232 food service establishments (FSEs) likely to use, produce, and/or contribute FOG to the wastewater collection system were identified and mapped. Additionally, the County's Special Maintenance Sites per service area were mapped. The Special Maintenance Sites being cleaned due to FOG conditions were located in the Alpine, Lakeside, Spring Valley, and the Winter Gardens Service Areas.

As well, historical SSO records reported to the RWQCB between January 2007 and January 2010 were obtained and reviewed to identify additional locations of potential problem sites due to excessive FOG concentrations.

Mapping the information serves to visually illustrate the existing sites with excessive FOG concentrations and historical SSOs as well as identify sites potentially susceptible to SSOs. Additionally, it allows the County to determine the potential impact of each FSE based on its proximity and relative location to Special Maintenance Sites or other potential FOG contributors.

Exhibits 1, 2, and 3, included in Attachment D, illustrate the approximate location of the FSEs which are located within the Alpine, Lakeside, Spring Valley, and Winter Gardens Service Areas, respectively. The location of each FSE is based on permit information obtained from the County of San Diego's Department of Environmental Health. Also shown on the exhibits are the locations of the current Special Maintenance Sites. The locations of the reported SSOs for which specific information was available were also superimposed.

Conclusions

The County's concentrated effort for addressing FOG related issues has been its proactive preventive maintenance program and the routine cleaning of its Special Maintenance Sites. Only one (1) SSO, which occurred in June 2008, was reported as having been caused due to excessive FOG in the wastewater collection system and this SSO is related to FOG generated by residential customers. The majority of the SSO occurrences have been primarily due to debris accumulation in the pipelines. Overall, the data indicates that the SSOs are not associated with FSEs. Rather, most FOG related issues appear to be due to residential discharge of FOG into the system. Implementing a FOG program at this time would place additional burdens on County staff and the rate payers. Instead, the County should continue to maintain the collection system and monitor grease related spills.

Chapter 1
Introduction

Several factors contribute to the periodic failure of a wastewater collection system that may potentially result in the occurrence of a Sanitary Sewer Overflow (SSO). SSOs can be attributed to many causes, including high concentrations of fats, oils, and grease (FOG), roots, poor conditions of the wastewater collection system lines, wet weather flows, or a combination of these conditions. It has been estimated that more SSOs are caused by FOG statewide than by any other factor, prompting state and local regulating agencies to focus on FOG Control Program development as a key element of Wastewater Discharge Requirements (WDRs).

Proper handling and disposal of waste containing excessive FOG quantities is important as it can accumulate in the wastewater collection system and eventually block collection pipes and sewer lines, resulting in backups and overflows on streets, properties, and even in private residences. Sewer overflows are unsanitary and negatively impact the environment. They are costly to agencies and the rate payers since the expense of cleaning up and repairs associated with improper disposal of FOG can lead to increased sewer rates.

This document describes the purpose of a FOG program, evaluates the issues the County of San Diego (County) is currently experiencing with the accumulation and control of FOG, and recommends whether the County should implement a FOG Control Program.

1.1 Purpose of a FOG Control Program

The County is committed to complying with the mandates set forth under the General Waste Discharge Requirements for Sanitary Sewer Systems Order No. 2006-0003 (WDRs). The WDRs require that the County develop a specific Sewer System Management Plan (SSMP) to include the provisions necessary to provide proper and efficient management, operation, and maintenance of the wastewater collection system. To comply with one of the eleven (11) mandatory elements of the SSMP, the County is to prepare a FOG Control Program, or demonstrate its existing preventative maintenance program effectively reduces the quantity of FOG and other debris discharged to the wastewater collection system that may cause sewerage collection system blockages or SSOs.

1.2 Sources of FOG

Residual FOG is primarily a by-product from food preparation in residential buildings and, more commonly, Food Service Establishments (FSEs). Typically, FOG enters a facility's plumbing system from ware washing, floor cleaning, and equipment sanitation. Wastewater collection systems are neither designed nor equipped to handle the FOG that can accumulate on the interior of the sewer collection system pipes from improper discharges. These accumulations restrict flow in pipes and can eventually result in SSOs. The unintentional overflow of untreated sewage creates a health risk to the public, damages property, and pollutes our environment.

FOG comes in two basic forms with each being handled and processed in a difference manner. One form of FOG is known in the industry as 'Yellow Grease.' Generally, yellow grease can be defined as the inedible and unadulterated FOG that is removed from FSE operations. Yellow Grease is placed in an enclosed container marked 'inedible' and typically located outside of the FSE. Sources of yellow grease generated in FSEs are from bulk deep-frying operations and

water/oil separator units usually associated with specific food preparation areas. The second form of FOG generated in the food service industry is the material recovered from grease traps, and is often designated in the FOG treatment industry as 'Brown Grease.' Brown grease is the general term used to describe the floatable FOG, settled solids and associated wastewater retained by grease traps. Unlike yellow grease, the majority of brown grease removed from grease traps has been contaminated by coming in contact with such agents as detergents and cleaning solutions used in FSEs. The major source of brown grease generated in FSEs is from the cleaning of equipment and utensils used in the preparation and servicing of food.

Development and implementation of a FOG Control Program facilitates the maximum beneficial public use of an agencies wastewater collection system by preventing blockages of sewer lines and reducing the adverse affects on sewage treatment operations resulting from discharges of FOG. In addition, an effective FOG Control Program can minimize revenue losses associated with enforcement actions and the impacts of restricting public activities, such as roadway closures to respond to a FOG related SSOs or closures of public access facilities.

1.3 FOG Characterization Study

To determine whether a comprehensive FOG Control Program and implementation of control mechanisms are required, it is necessary to identify the sources and nature of FOG. As well, the location of high frequency maintenance locations (Special Maintenance Sites) and the relationship to FOG discharge locations must also be determined.

Generally, large quantities of FOG are generated at FSEs during food preparation from both FOG used to assist in the cooking of the food (e.g. frying oil) and from the food itself (e.g. hamburger meat). The quantity of FOG generated varies by site based on the type of food being prepared, the cleaning and maintenance practices employed, and seating capacity. The County has also identified several high frequency maintenance locations within the collection system, several of which records indicate are due to excessive FOG accumulation.

The primary goal of a Characterization Study is to identify the source and nature of FOG within the County's wastewater collection system. The study serves to compile and categorize information provided by the County that pertains to the County's wastewater collection system as it relates to FOG. By identifying and locating the sources of FOG in the wastewater collection system, FOG build-up in the system can be controlled and subsequently reduced, thereby increasing the system operating efficiency and reducing the number of sewer line blockages and overflows. The objectives of the characterization study may be summarized as:

- Compile and categorize FOG related information;
- Identify and locate potential FOG sources;
- Identify high frequency maintenance locations due to FOG;
- Identify areas potentially susceptible to excessive FOG accumulation; and
- Identify and locate areas within the wastewater collection system in which SSOs have occurred due to excessive FOG.

To locate the likely sources of FOG, Atkins obtained a comprehensive list of the existing businesses permitted by the County of San Diego's Department of Environmental Health (DEH). As of January 2001 there have been over 6,700 permits issued by the DEH. From this list of businesses, 232 FSEs likely to use, produce, and/or contribute FOG to the wastewater collection system were identified and mapped as potential sources of FOG. Included in Attachment A is the list of FSEs mapped.

The lists of Special Maintenance Sites per service area were provided by the County's sewer maintenance staff. Attachment B includes the Special Maintenance Sites currently being cleaned by wastewater maintenance staff on a quarterly basis. The County's current Special Maintenance Sites are located within the Alpine, Lakeside, Spring Valley, and Winter Gardens Service Areas. The Special Maintenance Sites include pipe segments identified as having high concentrations of FOG and roots and sludge accumulations.

Atkins also investigated the historical SSO records reported to the RWQCB since January 2007 to identify additional locations of potential problem sites due to excessive FOG concentrations.

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Chapter 2
Characterization Study Results

The following is a summary of the characterization study performed by the County to determine whether the County's current preventive maintenance procedures are addressing the maintenance needs for the areas identified as potentially having FOG related conditions.

2.1 Characterization Study Results

Currently, the Special Maintenance Sites are located within the Alpine, Lakeside, Spring Valley, and the Winter Gardens Service Areas. The list of Special Maintenance Sites for Alpine, Lakeside, Spring Valley, and the Winter Gardens Service Areas are included in Attachment B, and provide a description of the condition for which the high frequency maintenance is required for each pipe segment identified. Table 2-1 provides a summary of the quantity of Special Maintenance Sites pipe segments within a specific service area and the condition for which the pipe segments are being maintained on a quarterly basis.

Table 2-1 Summary of Condition at Special Maintenance Sites

Service Areas	Special Maintenance Sites Conditions					Total Special Maintenance Sites
	Grease Sites	Roots Sites	Sludge Sites	Sludge / Roots Sites	Sludge / Grease Sites	
Alpine	4	3	17	-	-	24
Lakeside	16	10	44	-	-	70
Spring Valley	38	67	140	3	2	250
Winter Gardens	0	1	29	1	-	31
Total Sites	58	81	230	4	2	375

As shown in Table 2-1, there are 375 Special Maintenance Sites. Approximately 6% of the Special Maintenance Sites are located within the Alpine Service Area, 19% of the sites are in the Lakeside Service Area, 67% are in the Spring Valley Service Area, and approximately 8% are in the Winter Gardens Service Area. Currently there are no Special Maintenance Sites identified within the Julian, Pine Valley, Campo, East Otay Mesa or Harmony Grove. The Harmony Grove Service Area was recently formed in anticipation of planned development. Since development within the service area was suspended, it does not currently have wastewater collection facilities within the district boundary.

Table 2-2 includes a summary of the total length of Special Maintenance Sites pipe within each service area.

As shown on Table 2-2, County wastewater maintenance crews are currently responsible for the quarterly cleaning of approximately 89,687 lineal feet (17 miles) of Special Maintenance Sites pipe.

Table 2-2 Special Maintenance Sites Pipe Lengths

Service Area	Length of Special Maintenance Sites Pipe	
	Feet	Miles
Alpine	6,667	1.3
Lakeside	17,377	3.3
Spring Valley	57,499	10.9
Winter Gardens	8,144	1.5
Total	89,687	17.0

2.2 Severity of FOG Special Maintenance Sites

The County's current preventive maintenance program includes a cleaning cycle for the areas that have been identified by County staff as Special Maintenance Sites. The Special Maintenance Sites include pipe segments with high FOG, root, and sludge concentrations. The pipe segments within the wastewater collection system that have been identified as having an excessive amount of grease accumulation are routinely cleaned on a quarterly basis. Cleaning of all Special Maintenance Sites is tracked and scheduled manually by the Sanitation Regional Supervisor.

Of the total length of Special Maintenance Sites pipe maintained, Table 2-3 summarizes the total length of pipe cleaned due to excessive FOG.

Table 2-3 Special Maintenance Sites – FOG Related

Service Area	Special Maintenance Sites		Percent FOG Related
	Length of Pipe Segments Maintained for FOG (ft)	Total Length of Special Maintenance Site Pipe (ft)	
Alpine	1,181	6,667	18%
Lakeside	4,344	17,377	25%
Spring Valley	9,931	57,499	17%
Winter Gardens	0	8,114	0%
Total	15,456	89,657	17%

The Special Maintenance Sites within the Winter Gardens Service Area include only sludge and root accumulation. Currently, there are no Special Maintenance Sites due to FOG conditions within the Winter Gardens Service Area.

County sewer maintenance crews assign the FOG related pipe segments a rating of one (1) through three (3). A severity rating of three (3) indicates the worst condition and the pipe segment as near blockage. Table 2-4 provides a summary of the Special Maintenance Sites related to FOG concentrations and the rating assigned during the most recent cleaning of pipe segments. A "G" is used to indicate the Special Maintenance Site is due to excessive grease quantities in the pipe segment.

Overall, there are more sites rated at a severity level of two (2) and only two pipe segments within the Spring Valley Service Area rated at a severity level of three (3).

Table 2-4 Summary of Ratings for FOG Related Special Maintenance Sites

Service Area	FOG Condition Ratings			Total Sites
	G1	G2	G3	
Alpine	0	4	0	4
Lakeside	15	1	0	16
Spring Valley	8	28	2	35
Total	23	33	2	58
Rating Key: 1 through 3 (3 being worst, near blockage)				

2.3 Reported SSOs

Historical records obtained from the San Diego RWQCB website were reviewed to determine the approximate location of the SSO reported by the County between January 2007 and January 2010. A summary of the information obtained is included in Attachment C. As agencies within Region 9 are required to report SSOs occurrences at private laterals, Attachment C also includes information pertaining to SSOs occurrences at private laterals. Several of the SSOs reported did not include addresses to indicate the approximate location of the SSO occurrence.

In an effort to identify the location of SSO occurrences, the County's Maintenance Action Report (MAR) summary spreadsheet was obtained from the County. The MAR which includes a summary of the emergency calls received by the County's sewer system maintenance staff was reviewed to determine the types of calls received and responded to by the wastewater maintenance crews. This list includes information documented between July 2007 and December 2008.

Based on the review of the data obtained from the San Diego RWQCB website in conjunction with the MAR summary, several approximate locations of SSO occurrences were identified.

2.4 Mapping

Mapping the information allows the County to visually identify existing areas with excessive FOG concentrations and historical SSOs as well as identify areas susceptible to potential SSOs. Additionally, it allows the County to determine the potential impact of each FSE based on its proximity and relative location to Special Maintenance Sites or other potential FOG contributors. This information serves to assist the County in determining where its resources should be focused to systematically and effectively reduce the potential for overflows and operation problems in a cost effective manner.

Exhibits 1, 2, and 3, included in Attachment D, illustrate the approximate location of the FSEs identified within the Alpine, Lakeside, Spring Valley, and Winter Gardens Service Areas, respectively. Also shown on the exhibits are the locations of the current Special Maintenance Sites. The Special Maintenance Sites illustrated have been identified as requiring maintenance due to grease conditions. The locations of the SSOs were also superimposed. The exhibits illustrate the locations of the reported SSOs for which specific information was available, and that were reported by the County. The SSO locations are shown relative to the FSEs and the Special Maintenance Sites.

2.5 Results

The data indicates that FOG related SSOs are not associated with FSEs. Rather, most FOG related issues are tied to residential discharge of FOG into the system.

Alpine Service Area

Exhibit 1 illustrates the approximate location of the FSEs identified in the vicinity of the Alpine Service Area. As shown, the majority of the FSEs are located along Alpine Boulevard as well as several along Tavern Road. Also illustrated are the locations of the current Special Maintenance Sites maintained due to FOG conditions to illustrate the spatial relationship between the FSEs and the Special Maintenance Sites. Generally, the Special Maintenance Sites shown on the exhibit do not appear to be in close proximity to the FSEs. With the exception of the few Special Maintenance Sites at the intersection of Marshall Road and Alpine Boulevard and at Alpine Boulevard and Tavern Road, the majority of Special Maintenance Sites are along Arnold Way.

According to data records, there have been five (5) SSO occurrences. Of the SSOs reported, one (1) SSO was located outside of the service area. The other four (4) SSOs occurred within the Alpine Service Area boundary. The location of the SSOs reported was also superimposed onto the exhibit. Of the four (4) SSOs located within the service area boundary, one (1) SSO was reported as a private SSO, and three (3) as public SSOs. Two of the spills were caused due to vandalism and two (2) due to construction debris left by contractors. The SSOs do not appear to have occurred along pipelines designated as Special Maintenance Sites.

Lakeside Service Area

Exhibit 2 illustrates the approximate location of the FSEs identified in the Lakeside Service Area. As shown, FSEs are located throughout the service area with a large concentration located along Woodside Avenue and Maine Avenue. Also illustrated are the locations of the current Special Maintenance Sites maintained due to FOG conditions to illustrate the spatial relationship between the FSEs and the Special Maintenance Sites.

The majority of the Special Maintenance Sites are located along Woodside Avenue as are a large quantity of FSEs. Several Special Maintenance Sites are located in residential areas where the FOG condition may be primarily due to the discharge of FOG into the wastewater collection system by residents or due to other specific facility conditions (e.g. pipe sags or minimal slopes). Further research should be conducted to determine whether these sites are located downstream of FSEs or if deficiencies in pipelines exist.

According to data records, there have been two (2) SSO occurrences in the Lakeside Service Area. One occurrence was reported as a private lateral spill while the other was reported as a public SSO. Information for the private lateral spill was not available therefore is not illustrated on Exhibit 2. The location of the public SSO reported was also superimposed onto the exhibit. The SSO occurred along Winter Gardens Blvd. within the Lakeside Service Area and was reported to have occurred due to debris accumulation. The SSOs did not occur along pipelines designated as Special Maintenance Sites.

Winter Gardens Service Area

Exhibit 2 also illustrates the approximate location of the FSEs identified in the Winter Gardens Service Area. As shown, several FSEs are located along Winter Gardens Boulevard and there are no Special Maintenance Sites located within the Winter Gardens Service Area.

According to data records, there has been one (1) public SSO on Royal Road due to excessive debris. The location of the public SSO reported was also superimposed onto the exhibit and was reported to have occurred due to debris accumulation.

Spring Valley Service Area

Exhibit 3 illustrates the approximate location of the FSEs identified in the Spring Valley Service Area. As shown, FSEs are located throughout the service area with clusters concentrated along Campo Road, Jamacha Road, Buena Vista Road and the intersection of Buena Vista Drive and Willow Glen Road. Also illustrated are the locations of the current Special Maintenance Sites maintained due to FOG conditions to illustrate the spatial relationship between the FSEs and the Special Maintenance Sites.

The Special Maintenance Sites mapped are throughout the Spring Valley Service Area with several located in the vicinity of the FSEs as well as in areas that appear to be residential. The Special Maintenance Sites located in residential areas may be primarily due to the discharge of FOG into the wastewater collection system by residents or due to other specific facility conditions (e.g. pipe sags or minimal slopes). Further research should be conducted to determine whether these sites are located downstream of FSEs or if deficiencies in pipelines exist.

According to data records, there have been nine (9) private lateral and eight (8) public SSO occurrences reported within the Spring Valley Service Area. The location of each SSO was also superimposed onto the exhibit. Table 2-5 includes a summary of the conditions reported as causing the SSOs.

Table 2-5 Summary of SSO Causes

Condition	Public SSOs	Private SSOs
Debris	3	6
Grease	1	–
Roots	2	1
Structural	1	1
Vandalism	1	–
Other	–	1
Total	8	9

Of the total seventeen (17) SSOs reported, only one (1) was reported as having been caused due to FOG. Since approximately half of the SSOs reported were due to debris accumulation, further research should be conducted to determine whether deficiencies in pipelines exist.

2.6 Conclusions

The County's concentrated effort for addressing FOG related issues has been its proactive preventive maintenance program and the routine cleaning of its Special Maintenance Sites. Only one (1) SSO that occurred in June 2008 was reported as having been caused due to excessive FOG in the wastewater collection system. Since then, the majority of the SSO occurrences have been primarily due to debris accumulation in the pipelines. Overall, the data indicates that the SSOs are not associated with FSEs. Rather, most FOG related issues appear to be due to residential discharge of FOG into the system.

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Chapter 3
FOG Maintenance Recommendations

The County's proactive maintenance procedures have been successful in minimizing the number of SSOs due to excessive FOG. This section includes recommended actions for the County to consider for supplementing its current preventative maintenance program. The recommendations are intended to be consistent with existing operations and maintenance procedures.

3.1 Adjust Special Maintenance Site Frequencies

The County has established a cleaning interval for Special Maintenance Sites with the potential to accumulate debris and susceptible to blockages that can result in SSOs. Currently, County maintenance crews clean Special Maintenance Site pipe segments on a quarterly basis. However, establishing a cleaning schedule based on objective standards could reduce the frequency of scheduled routine cleaning occurring at particular locations and optimize the use of the County's crews. Table 3-1 (included as Table 3-4 in the County of San Diego Operations and Maintenance Program) provides objective guidelines for establishing the condition findings of the Special Maintenance Sites and includes a description for each potential condition finding.

Table 3-1 Guidelines for Condition Findings

Clear	Light	Medium	Heavy
No observable grease, roots, sludge, or debris	1.0 – 1.5 gallons of sludge, small chunks of grease; 20 – 30 minutes to clean a line; 1 – 2 passes to clear the water	2 – 3 gallons of sludge, moderate chunks of grease; 30 minutes to clean a line; 2 – 3 passes to clear the water	4 or more gallons of sludge, grease, clumps of roots; more than 30 minutes to clean a line; 4 or more passes to clear the water

Note: a "line" is a pipe segment that averages 300 feet between two maintenance holes

The information obtained should be recorded and identified according to one of the four (4) standard Condition Findings: "clear", "light", "medium", and "heavy". The condition finding for pipe that is being cleaned on an appropriate cleaning frequency will return a "light" condition finding. A pipe consistently indicating a "clean" condition finding indicates that the pipe cleaning may be occurring too frequently. A pipe returning a "medium" or "heavy" condition finding is an indication that the cleaning frequency for the pipe may need to be increased. Situations that may result in false condition findings include pipelines with structural failure, vandalism, construction related blockages, etc.

Prior to implementing changes to the current cleaning schedule, sewer maintenance crews should conduct a thorough evaluation of each Special Maintenance Site including pipe segment location, length, diameter, and current cleaning schedule and frequency interval to establish the purpose for designating the site as a Special Maintenance Site. Additionally, County maintenance crews should continue to thoroughly document the type and quantity of debris removed from each pipe segment. The results of the initial evaluation will establish a basis from which the County's wastewater maintenance staff can begin tracking and monitoring the condition findings and other critical elements of each site to determine if the pipe segment has been appropriately designated as a Special Maintenance Site and whether the current cleaning frequency should be modified.

Throughout the year, the sewer maintenance staff, in consultation with the engineering staff, should evaluate the data and determine whether the interval between cleanings should be adjusted. To determine if the cleaning interval should be adjusted for a Special Maintenance Site, staff should review the following items:

- History of SSOs for the specific segment
- The past four (4) condition findings
- CCTV inspection data collected within the last 12 months
- As-built data

Based on the thorough and routine monitoring of the sites and the information obtained, the cleaning frequency can be adjusted and re-evaluated as necessary.

3.2 Public Outreach

The County of San Diego's Operations and Maintenance Program documents the County's activities which serve to facilitate the maximum beneficial public use for the County's sanitary sewer system while preventing blockages of the sewer lines and reducing the adverse affects on sewage treatment operations resulting from discharges of FOG into the system.

The County's efforts to minimize the effects of FOG entering into the wastewater collection system though its preventive maintenance program can be further supplemented with efforts that include public education and through the common interest in preventing health hazards and damage to homes and businesses. Education of the residents and owners of FSEs about the effects of FOG is essential to reduce the quantity of FOG that is introduced into the wastewater collection system.

The County's concentrated effort for addressing FOG related issues has been its proactive preventive maintenance program. Working with the Department of Environmental Health (DEH) and the Media and Public Relations Office, the Department of Public Works can emphasize the importance of minimizing the discharging of FOG into the wastewater collection system. Best management practices (BMPs), which include simple and effective practices that residents and FSEs can implement to prevent and reduce the quantity of FOG discharged into the sanitary sewer system can be developed and made readily available. Several acceptable BMPs can be included on the County's website to facilitate dissemination of and access to the information.

As well, the routine inspections performed of FSEs by the DEH for permit renewal provides the County an opportunity to reiterate the importance of limiting FOG discharge into the County's wastewater collection system and reduce the potential of SSOs due to excessive FOG. Practical BMPs should continue to be included in the permit conditions as a method to enforce the County's efforts.

Attachment A
County of San Diego
Food Service Establishments

COUNTY OF SAN DIEGO
FOOD SERVICE ESTABILISHMENTS

Business Name	Business Address	City	State	Zip	District
ALPINE VALERO RESTAURANT	1140 TAVERN ROAD	ALPINE	CA	91901	ALPINE
MEDITERRANEO	1347 TAVERN ROAD	ALPINE	CA	91901	ALPINE
LA CARRETA	1347 TAVERN ROAD	ALPINE	CA	91901	ALPINE
SUBWAY	1620 ALPINE BLVD	ALPINE	CA	91901	ALPINE
ALPINE FITNESS	1620 ALPINE BLVD	ALPINE	CA	91901	ALPINE
MANANAS MEXICAN FOOD	1730 ALPINE BLVD	ALPINE	CA	91901	ALPINE
STEPHS DONUT HOLE	1730 ALPINE BLVD	ALPINE	CA	91901	ALPINE
RAMONS SMOKE HOUSE BBQ	1730 ALPINE BLVD	ALPINE	CA	91901	ALPINE
LITTLE CAESARS PIZZA	1730 ALPINE BLVD	ALPINE	CA	91901	ALPINE
PANDA MACHI CHINESE & JAPANESE CUISINE	1730 ALPINE BLVD	ALPINE	CA	91901	ALPINE
ALPINE TACO SHOP INC	1903 ALPINE BLVD	ALPINE	CA	91901	ALPINE
COBBLESTONE COTTAGE TEA SHOPPE	1945 ALPINE BLVD	ALPINE	CA	91901	ALPINE
ALPANCHOS MEXICAN RESTAURANT	2139 ALPINE BLVD	ALPINE	CA	91901	ALPINE
ALPINE PIZZA & PASTA	2165 ARNOLD WAY	ALPINE	CA	91901	ALPINE
ALPINE INN	2225 ALPINE BLVD	ALPINE	CA	91901	ALPINE
TAPATIOS MEXICAN FOOD	2335 ALPINE BLVD	ALPINE	CA	91901	ALPINE
THE VINE WINE BART BISTRO	2502 ALPINE BLVD	ALPINE	CA	91901	ALPINE
JANETS MONTANA CAFE	2506 ALPINE BLVD	ALPINE	CA	91901	ALPINE
DONATOS ITALIAN REST	2654 ALPINE BLVD	ALPINE	CA	91901	ALPINE
PIZZA HUT & WING STREET	2710 ALPINE BLVD	ALPINE	CA	91901	ALPINE
SUBMARINA ALPINE	2710 ALPINE BLVD	ALPINE	CA	91901	ALPINE
SALSA MEXICAN FOOD	2710 ALPINE BLVD	ALPINE	CA	91901	ALPINE
FREDS OLD FASHIONED BURGERS	2754 ALPINE BLVD	ALPINE	CA	91901	ALPINE
WANNA PIZZA	2754 ALPINE BLVD	ALPINE	CA	91901	ALPINE
ANTONIO L LOPEZ	2806 ALPINE BLVD	ALPINE	CA	91901	ALPINE
SUBWAY	2963 ALPINE BLVD	ALPINE	CA	91901	ALPINE
JULIAN JAM COFFEE HOUSE	1921 MAIN STREET	JULIAN	CA	92036	ALPINE
JULIAN TEA & COTTAGE ARTS	2124 3RD STREET	JULIAN	CA	92036	ALPINE
THE BAILEY BARBECUE	2305 MAIN STREET	JULIAN	CA	92036	ALPINE
WENDYS/DAIRY QUEEN	1497 PIPER RANCH RD	SAN DIEGO	CA	92154	EAST OTAY
ALTA CAFE	511 ALTA RD	SAN DIEGO	CA	92154	EAST OTAY
HEROS DELI	2000 MAIN ST	JULIAN	CA	92036	JULIAN
SOUPS & SUCH CAFE	2000 MAIN ST	JULIAN	CA	92036	JULIAN
THE FAJITA GRILL	2018 MAIN ST	JULIAN	CA	92036	JULIAN
JULIAN GOLD RUSH HOTEL	2032 MAIN ST	JULIAN	CA	92036	JULIAN
JULIAN CAFE	2112 MAIN ST	JULIAN	CA	92036	JULIAN
COWBELLA RANCH CAFE	2116 MAIN ST	JULIAN	CA	92036	JULIAN
MOMS PIE HOUSE	2119 MAIN ST	JULIAN	CA	92036	JULIAN
MOM'S PIE HOUSE	2119 MAIN ST	JULIAN	CA	92036	JULIAN
APPLE ALLEY BAKERY	2122 MAIN ST	JULIAN	CA	92036	JULIAN
CANDIED APPLE PASTRY COMPANY	2128 4TH ST	JULIAN	CA	92036	JULIAN
MINERS DINER	2134 MAIN ST	JULIAN	CA	92036	JULIAN
JULIAN GRILLE	2224 MAIN ST	JULIAN	CA	92036	JULIAN
JULIAN PIE CO	2225 MAIN ST	JULIAN	CA	92036	JULIAN
ORCHARD HILL COUNTRY INN	2502 WASHINGTON ST	JULIAN	CA	92036	JULIAN
BUFFALO BILLS	2603 B ST	JULIAN	CA	92036	JULIAN
ROMANOS DODGE HOUSE	2718 W B STREET	JULIAN	CA	92036	JULIAN
RONGBRANCH RESTAURANT	2722 WASHINGTON ST	JULIAN	CA	92036	JULIAN
PONCHO VILLA	2907 WASHINGTON ST	JULIAN	CA	92036	JULIAN
TACO BELL	13418 CAMINO CANADA	EL CAJON	CA	92021	LAKESIDE
PANDA EXPRESS	13439 CAMINO CANADA	EL CAJON	CA	92021	LAKESIDE
SUBWAY	13465 CAMINO CANADA	EL CAJON	CA	92021	LAKESIDE
GIANT NEW YORK PIZZA	13465 CAMINO CANADA	EL CAJON	CA	92021	LAKESIDE
GIANT NEW YORK PIZZA	13465 CAMINO CANADA	EL CAJON	CA	92021	LAKESIDE
MCDONALDS	13574 CAMINO CANADA	EL CAJON	CA	92021	LAKESIDE
DENNYS	13584 CAMINO CANADA	EL CAJON	CA	92021	LAKESIDE
JACK IN THE BOX	14039 HWY 8 BUSINESS	EL CAJON	CA	92021	LAKESIDE
KARLAS MEXICAN FOOD	14110 OLDE HWY 80	EL CAJON	CA	92021	LAKESIDE
MARECHIAROS ITALIAN RESTAURNT	14120 OLDE HWY 80	EL CAJON	CA	92021	LAKESIDE
MARY ETTAS CAFE	14809 OLDE HWY 80	EL CAJON	CA	92021	LAKESIDE
LA POSTA DE ACAPULCO	8575 LOS COCHES RD	EL CAJON	CA	92021	LAKESIDE
DANNYS RESTAURANT & PIZZA	8575 LOS COCHES RD	EL CAJON	CA	92021	LAKESIDE
DONUTS AVE	8575 LOS COCHES RD	EL CAJON	CA	92021	LAKESIDE
EAST BOUND BAR & GRILL	10053 MAINE AVE	LAKESIDE	CA	92040	LAKESIDE

COUNTY OF SAN DIEGO
FOOD SERVICE ESTABILISHMENTS

Business Name	Business Address	City	State	Zip	District
SIXTY 7 BAR & GRILL	10109 MAINE AVE	LAKESIDE	CA	92040	LAKESIDE
BURGER KING	10130 MAINE AVE	LAKESIDE	CA	92040	LAKESIDE
DOMINOS PIZZA	10135 MAINE AVE	LAKESIDE	CA	92040	LAKESIDE
SARITAS TACO SHOP	10143 MAINE AVE	LAKESIDE	CA	92040	LAKESIDE
GOLD DONUTS	10205 LAKE JENNINGS PARK RD	LAKESIDE	CA	92040	LAKESIDE
LOS RANCHERITOS MEXICAN FOOD	10205 LAKE JENNINGS PARK RD	LAKESIDE	CA	92040	LAKESIDE
WILLOWBROOK COUNTRY CL	11905 RIVERSIDE DR	LAKESIDE	CA	92040	LAKESIDE
KFC	12061 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
SONORAS TACO SHOP	12115 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
LA CHULA MEXICAN AND SEAFOOD	12128 WOODISDE AVE	LAKESIDE	CA	92040	LAKESIDE
ARBYS 5172	12136 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
JACK IN THE BOX	12155 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
LA PALAPA	12169 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
THE NEIGHBORS PUB & GRUB	12169 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
COUNTRY DONUT	12169 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
LAKESIDE CAFE	12212 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
LAKESIDE RODEO GIANT PIZZERIA & DELI	12243 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
SOMBRERO MEXICAN FOOD	12250 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
DAIRY QUEEN	12260 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
TACO BELL	12265 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
PIZZA HUT	12336 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
SOMBRERO MEXICAN FOOD	12346 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
GRAMMAR'S DELI	12346 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
CAFE 67	12381 MAPLEVIEW ST	LAKESIDE	CA	92040	LAKESIDE
ROBERTOS TACO SHOP	12401 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
LITTLE CAESARS	12405 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
MARIOS ITALIAN RESTAURANT	12440 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
CUPS & CONES	12481 WOODSIDE AVE	LAKESIDE	CA	92040	LAKESIDE
MI CABANA MEXICAN FOOD	12510 LAKESHORE DRIVE	LAKESIDE	CA	92040	LAKESIDE
VFW POST	12650 LINDO LN	LAKESIDE	CA	92040	LAKESIDE
MIKES GIANT NEW YORK PIZZA	13326 HWY 8 BUSINESS	LAKESIDE	CA	92040	LAKESIDE
ALBERTS MEXICAN FOOD	13334 I 8 BUSINESS	LAKESIDE	CA	92040	LAKESIDE
GAETANOS	13524 HWY 8 BUSINESS	LAKESIDE	CA	92040	LAKESIDE
TASTY PIZZA	9534 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
WIENERSCHNITZEL	9536 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
ROSARITOS MEXICAN FOOD	9562 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
SUBWAY	9562 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
LENGS CHINESE FOOD	9610 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
NEW YORK GIANT PIZZA	9610 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
MCDONALDS	9614 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
CHINA DYNASTY RESTAURANT	9740 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
GIANT PIZZA KING	9742 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
LAKESIDE STEAKHOUSE	9927 MAINE AVE	LAKESIDE	CA	92040	LAKESIDE
LA PARADA	8215 WINTER GARDENS BL	LAKESIDE	CA	92040	LAKESIDE
FROSTY BURGER	28823 OLD HIGHWAY 80	PINE VALLEY	CA	91962	PINE VALLEY
CALVINS	28841 OLD HIGHWAY 80	PINE VALLEY	CA	91962	PINE VALLEY
MAJORS DINER	28870 OLD HIGHWAY 80	PINE VALLEY	CA	91962	PINE VALLEY
MY KIDS CLUBHOUSE	5034 BONITA RD	BONITA	CA	91902	SPRING VALLEY
GIANT PIZZA KING	5035 CENTRAL AV	BONITA	CA	91902	SPRING VALLEY
KFC	5080 BONITA RD	BONITA	CA	91902	SPRING VALLEY
HANS & HARRYS BAKERY	5080 BONITA RD	BONITA	CA	91902	SPRING VALLEY
CARIBE RESTAURANT & NIGHTCLUB	5080 BONITA RD	BONITA	CA	91902	SPRING VALLEY
MURRIETAS MEXICAN RESTAURANT	5170 BONITA RD	BONITA	CA	91902	SPRING VALLEY
LA FINCA D ADOBE	5202 BONITA RD	BONITA	CA	91902	SPRING VALLEY
BONITA GOLF CLUB	5540 SWEETWATER RD	BONITA	CA	91902	SPRING VALLEY
LA VIDA REAL LLC	11588 VIA RANCHO SAN DIEGO	EL CAJON	CA	92019	SPRING VALLEY
JAMBA JUICE	12098 FURY LN	EL CAJON	CA	92019	SPRING VALLEY
DENNYS	2642 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
MCDONALDS	2646 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
HILBERTOS MEXICAN FOOD	2648 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
JANETS CAFE	2650 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
SUBWAY	2650 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
ROUND TABLE PIZZA	2650 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
BAGEL TOWNE CAFE INTERPRISES INC	2650 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY

COUNTY OF SAN DIEGO
FOOD SERVICE ESTABILISHMENTS

Business Name	Business Address	City	State	Zip	District
MANDARIN CHEF	2654 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
SPINNERS	2654 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
LITTLE CAESARS	2920 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
CARLS JR	2935 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
KFC	2949 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
SUBMARINA SUBS	2951 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
HOOLEYS IRISH PUB & GRILL	2955 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
RUBIOS FRESH MEXICAN GRILL	2959 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
PIZZA HUT	2959 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
JUICE BLEND	2959 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
YUKI SUSHI	2963 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
RISTORANTE ARRIVEDERCI	2963 JAMACHA RD	EL CAJON	CA	92020	SPRING VALLEY
CHAMBOI	2963 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
PETER PIPER PIZZA	2983 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
TABOO SUSHI BAR & GRILL	2986 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
HONG KONG CITY	2990 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
PRESS BOX SPORTS LOUNGE	2990 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
SAHARA CAFE	2990 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
DA BOYZ PIZZA AND PASTA	2990 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
TGI FRIDAYS	2991 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
BURGER KING	2992 JAMACHA RD	EL CAJON	CA	92019	SPRING VALLEY
NANCYS TACO SHOP	8731 BROADWAY	LA MESA	CA	91941	SPRING VALLEY
PALERMO PIZZA ITALIAN RESTAURANT	8733 BROADWAY	LA MESA	CA	91941	SPRING VALLEY
BOOMER BEES CAFE BAKERY	8739 BROADWAY	LA MESA	CA	91941	SPRING VALLEY
BEIJING EXPRESS	8741 BROADWAY	LA MESA	CA	91941	SPRING VALLEY
INTERNATIONAL HOUSE OF PANCAKES	8747 BROADWAY	LA MESA	CA	91941	SPRING VALLEY
WENDYS	8749 CAMPO RD	LA MESA	CA	91941	SPRING VALLEY
PIZZA HUT	1838 SWEETWATER RD	NATIONAL CITY	CA	91950	SPRING VALLEY
SUBWAY	1860 SWEETWATER RD	NATIONAL CITY	CA	91950	SPRING VALLEY
L & L HAWAIIAN BARBECUE	1860 SWEETWATER RD	NATIONAL CITY	CA	91950	SPRING VALLEY
DENNYS	1904 SWEETWATER RD	NATIONAL CITY	CA	91950	SPRING VALLEY
COZY CORNER	2548 GRANGER AVE	NATIONAL CITY	CA	91950	SPRING VALLEY
GAETANOS ITALIAN CAFE	10025 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
HORTENCIAS TACO SHOP	1015 GRAND AVE	SPRING VALLEY	CA	91977	SPRING VALLEY
JACK IN THE BOX	10255 CAMPO RD	SPRING VALLEY	CA	91978	SPRING VALLEY
GIANT PIZZA KING	1029 ELKELTON BL	SPRING VALLEY	CA	91977	SPRING VALLEY
RAMBERTOS TACO SHOP	1039 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
LUCYS BAKERY	1043 ELKELTON BL	SPRING VALLEY	CA	91977	SPRING VALLEY
HECTORS TACO SHOP	1045 ELKELTON BL	SPRING VALLEY	CA	91977	SPRING VALLEY
JACK IN THE BOX	1047 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
FOSTERS FREEZE	1069 ELKELTON BLVD	SPRING VALLEY	CA	91977	SPRING VALLEY
CHINA HOUSE EXPRESS	2615 SWEETWATER SPRINGS BL	SPRING VALLEY	CA	91978	SPRING VALLEY
ROLBERTOS	2615 SWEETWATER SPRINGS BL	SPRING VALLEY	CA	91977	SPRING VALLEY
SUBWAY	2615 SWEETWATER SPRINGS BL	SPRING VALLEY	CA	91977	SPRING VALLEY
RANCHWOOD DELI	2731 VIA ORANGE WY	SPRING VALLEY	CA	91978	SPRING VALLEY
FERNANDOS PIZZA	2778 SWEETWATER SPRINGS BL	SPRING VALLEY	CA	91977	SPRING VALLEY
EL PUERTO TACO SHOP	2836 BANCROFT DR	SPRING VALLEY	CA	91977	SPRING VALLEY
PAPAS PIZZA	2844 BANCROFT DR	SPRING VALLEY	CA	91977	SPRING VALLEY
PEDROS COCINA MEXICANA	3515 SWEETWATER SPRINGS BL	SPRING VALLEY	CA	91978	SPRING VALLEY
WIENERSCHNITZEL	3523 SWEETWATER SPRINGS BL	SPRING VALLEY	CA	91978	SPRING VALLEY
LORETOS MEXICAN FOOD	3546 BANCROFT ST	SPRING VALLEY	CA	91977	SPRING VALLEY
CARLS JR	3722 KENORA DR	SPRING VALLEY	CA	91977	SPRING VALLEY
NEW LINLEES CHINESE CUISINE	501 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
PALOMA TACO SHOP	507 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
LITTLE CAESARS PIZZA	539 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
RAFAS MEXICAN FOOD	566 PARAISO AVE	SPRING VALLEY	CA	91977	SPRING VALLEY
ASHTLAN	566 PARAISO AVE	SPRING VALLEY	CA	91977	SPRING VALLEY
A & D SALES	6377 QUARRY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
GODFATHERS PIZZA	685 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
SUBWAY	689 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
SOMBRERO MEXICAN FOOD	691 SWEETWATER RD	SPRING VALLEY	CA	91977	SPRING VALLEY
TASTY CHINA EXPRESS	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
GRACIELAS TACO SHOP	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
PIZZA HUT	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY

COUNTY OF SAN DIEGO
FOOD SERVICE ESTABILISHMENTS

Business Name	Business Address	City	State	Zip	District
LOUISIANA FAMOUS FRIED CHICKEN	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
BAMBINOS PIZZARIA & DELI	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
SARAHS BAKERY	8300 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
KFC	8330 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
LEOCYNNS LUMPIA	8360 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
EL KORA MEXICAN RESTAURANT	8415 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
K T DONUTS	8415 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
KABABAYAN BAKERY	8423 PARADISE VALLEY RD	SPRING VALLEY	CA	91977	SPRING VALLEY
FRUTI TACO	8614 TROY ST	SPRING VALLEY	CA	91977	SPRING VALLEY
RALLYS HAMBURGERS	8667 JAMACHA RD	SPRING VALLEY	CA	91977	SPRING VALLEY
MCDONALDS	8730 JAMACHA BL	SPRING VALLEY	CA	91977	SPRING VALLEY
CALIFORNIA COMFORT	8910 TROY ST	SPRING VALLEY	CA	91977	SPRING VALLEY
MARLENS TACO SHOP	8921 JAMACHA RD	SPRING VALLEY	CA	91977	SPRING VALLEY
MOOSE LODGE	9062 MEMORY LN	SPRING VALLEY	CA	91977	SPRING VALLEY
NEW CHINA RESTAURANT	9142 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
JIM HOMS WHEEL THRU	9330 JAMACHA BL	SPRING VALLEY	CA	91977	SPRING VALLEY
SPRINGVALLEY WATER STORE	9348 JAMACHA BL	SPRING VALLEY	CA	91977	SPRING VALLEY
MARISCOS GERMAN	9410 APPLE ST	SPRING VALLEY	CA	91977	SPRING VALLEY
DON JILBERTOS MEXICAN FOOD	9569 JAMACHA BL	SPRING VALLEY	CA	91977	SPRING VALLEY
SILVAS MEXICAN FOOD	9664 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
GRECIAN CAFE	9676 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
ROUND TABLE PIZZA	9676 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
RANASCOM	9683 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
MAMA CHRIS'S BAR BE QUE	9725 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
CHEF CHINA	9726 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
MS DONUT	9729 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
AVOS CATERING	9735 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
BAGATELLE FRENCH BAKERY	9738 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
TROPICAL HUT RESTAURANT & BAKERY	9766 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
LITTLE CAESARS PIZZA	9770 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
SUBWAY	9805 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
SANTANAS MEXICAN GRILL	9824 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
SARITA TACO SHOP	9906 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
LA POSTA DE ACAPULCO	9914 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
SUNRISE DELI NEW YORK STYLE	9945 CAMPO RD	SPRING VALLEY	CA	91977	SPRING VALLEY
ROSES DONUTS	1760 N 2ND ST	EL CAJON	CA	92021	WINTER GARDENS
PIZZA HUT	1762 N 2ND ST	EL CAJON	CA	92021	WINTER GARDENS
MARISCOS EL TITANIC	1771 N 2ND ST	EL CAJON	CA	92021	WINTER GARDENS
HOLE IN THE WALL PIZZA SHOPPE	8049 WINTER GARDENS BL	EL CAJON	CA	92021	WINTER GARDENS
CALYPSO	975 GREENFIELD DR	EL CAJON	CA	92021	WINTER GARDENS

Attachment B
Existing Special Maintenance Sites

SPECIAL MAINTENANCE SITES FOR ALPINE SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
403	130	55	B	Alpine Blvd.	S1
403	130	432	C	Alpine Blvd.	S2
403	220	67	B	Alpine Blvd.	S2
403	220	326	C	Alpine Blvd.	S2
403	221	315	D	Arnold cs Alpine Grove	G2
403	221	535	E	Arnold cs Alpine Grove	G2
403	250	196	C	Alpine Blvd. To Arnold Way	S2
403	250	133	G	Esmt	T1
403	250	162	H	Alpine Blvd.	T1
403	261	442	F	Alpine Blvd.	T1
403	271	286	E	Alpine Blvd.	S2
403	271	181	G	Marshall @ Restaurant	G2
403	360	360	A	Marshall	S2
403	360	249	B	Marshall	S2
403	360	73	C	Marshall	S2
403	370	347	AC	Tavern cs Arnold	S2
403	370	347	B	Alpine Blvd. cs Tavern	S2
403	392	150	B	Tavern cs Alpine Blvd.	G2
403	400	350	AC	The Village off Arnold	S2
403	410	308	C	Trailer Park Alpine Blvd.	S2
403	410	280	D	Trailer Park Alpine Blvd.	S1
403	410	297	E	Trailer Park Alpine Blvd.	S1
403	462	395	A	Esmt. Harbinson Canyon	S2
403	462	381	B	Esmt. Harbinson Canyon	S2

CONDITION KEY: T=Roots, G=Grease, S=Sludge, including grit.
RATING KEY: 1 through 3, 3 being worst (near blockage)

SPECIAL MAINTENANCE SITES FOR LAKESIDE SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
382	71	300	F	Esmt Riverview	S1
382	80	98	E	9316 Westhill	S1
382	100	206	B	Marilla	S1
382	122	384	C	Westhill	S1
382	122	190	E	Westridge Pl.	T3
382	122	358	G	Westhill	S1
382	122	220	J	Westhill Vista	T1
382	122	188	L	Westhill Vista	S1
382	122	40	N	Westhill	S1
382	130	197	A	Esmt. off of Marilla	S1
382	130	107	E	Esmt. off of Marilla	T1
382	140	306	E	Emerald Hills	S1
382	191	364	B	Winter Gardens Blvd.	S2
382	191	366	C	Winter Gardens Blvd.	S2
382	191	353	D	Winter Gardens Blvd.	S2
382	200	217	C	Esmt. off of Westhill	T1
382	200	141	E	Esmt. Off Paradise Pk Dr	S1
382	200	52	H	Esmt. Off Paradise Pk Dr	S1
382	240	180	J	Esmt. off of Westhill	T2
382	270	101	B	Winter Gardens Blvd.	G2
382	290	350	G	Saguaro	S1
382	290	134	H	Saguaro	S1
382	290	180	J	Saguaro	S1
385	330	350	D	Winter Gardens Blvd.	S1
385	330	315	E	Winter Gardens Blvd.	T3
394	40	281	K	Vine St.	S1
394	101	215	D	Woodside	G2
394	101	350	E	Esmt off Woodside	G2
394	101	66	F	Esmt off Woodside	G2
394	102	350	F	Woodside	G2
394	102	320	G	Woodside	G2
394	300	206	H	Castle Court	T2
394	300	393	J	Castle Court	T1
394	320	250	A	Esmt Castle Court	T1
394	450	187	B	Petite Ln.	S1
394	490	225	A	Beechtree	S2
394	490	218	B	Beechtree	S1
394	490	100	C	Beechtree	S1
394	490	350	D	Beechtree	S1
394	490	161	E	Esmt.	S1
394	490	270	F	Esmt.	S1

SPECIAL MAINTENANCE SITES FOR LAKESIDE SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
394	551	151	L	Wintercrest	S1
394	561	330	B	Laurel St.	S2
394	561	325	C	Beechtree	S2
394	10-1	350	B	Winter Gardens Blvd.	G2
394	10-1	135	C	Winter Gardens Blvd.	G2
395	270	300	D	Beechtree	S1
395	270	350	E	Beechtree	S1
395	270	393	F	Beechtree	S1
395	270	50	H	Beechtree	S1
395	270	335	J	Beechtree Esmt.	S1
395	270	188	M	Beechtree Esmt.	S1
395	290	166	M	Appaloosa	S1
395	290	166	N	Appaloosa	S1
395	322	317	R	Telkaif	G2
395	331	261	H	Telkaif	G2
395	331	252	J	Telkaif	G2
395	331	197	K	Telkaif	G2
395	331	343	L	Telkaif	G2
396	160	124	G	Miguel Ln. Esmt	S1
396	160	345	P	Miguel Ln. Esmt	S1
397	260	300	S	Esmt off of Gay Rio	S1
397	340	243	A	Chestnut	S2
397	340	250	B	Esmt	S2
397	340	148	C	Esmt	S2
397	340	343	D	Calle Lucia	S1
397	410	415	D	Meseta Ln.	G2
397	410	302	M	Cochera Rd.	G2
398	261	370	B	Pinkard Lane	G1
398	460	289	D	Rosada Way	T3

CONDITION KEY: T=Roots, G=Grease, S=Sludge, including grit.

RATING KEY: 1 through 3, 3 being worst (near blockage)

SPECIAL MAINTENANCE SITES FOR SPRING VALLEY SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
495	440	120	G	Highland Glen	T2
495	440	109	H	Highland Glen	T2
496	72	165	P	Esmt. @ Vivera	T1
496	211	254	G	Heavenly Way	T3
496	212	260	D	Grandview	G2
496	221	350	N	Grandview	S2
496	221	350		Grandview	S2
496	330	160	C	Esmt. @ Vivera	T1
499	150	353	A	Thunderbird Ln.	G2
499	240	162	D	Birdie Dr.	S1
499	260	100	A	Esmt. @ Campo Rd.	S1
499	260	46	B	Esmt. @ Campo Rd.	S1
499	260	190	C	Esmt. @ Campo Rd.	S1
499	260	164	D	Esmt. @ Campo Rd.	S1
499	320	116	A	Esmt. @ Fairway	G2
499	362	206	S	Saddle	T1
500	11	167	A	Esmt. @ Kahlua	T2
500	11	192	B	Esmt. @ Kahlua	T2
500	180	334	C	Esmt.	S2
500	220	113	A	Esmt. @ Kahlua	T2
500	220	152	B	Esmt. @ Kahlua	T2
500	220	100	F	Esmt. @ Kahlua	S1
501	30	527	F	Crestview	S1
501	40	193	C	Esmt. @ Rancho Rd.	T1
501	90	276	S	N. Cordoba	T1
501	90	267	T	N. Cordoba	T1
501	94	357	N	Cortez Way	S1
501	95	157	X	Esmt @ N. Bonita	S1
501	100	105	AH	Challenge	S2
501	100	130	AN	Cliffwood	T1
501	100	175	E	Lovette Esmt.	T1
501	100	56	F	Lovette Esmt.	S1
501	100	114	G	Lovette Esmt.	T1
501	100	229	L	Estrella	T1
501	100	189	M	Estrella	T1
501	120	384	C	Rancho Rd.	S2
501	120	253	D	Esmt. @ Rancho Rd.	T1
501	120	110	E	Esmt. @ Rancho Rd.	S1
501	171	150	AC	Esmt. @ San Juan	S1
501	171	190	AD	Esmt. @ San Juan	S1
501	171	163	AE	Esmt. @ San Juan	T1

SPECIAL MAINTENANCE SITES FOR SPRING VALLEY SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
501	171	160	W	North Bonita	G2
501	171	127	X	North Bonita	G2
501	180	168	AA	Esmt @ Casa De Oro	T2
501	180	259	J	Esmt @ Casa De Oro	S1
501	180	109	K	Esmt @ Casa De Oro	S1
501	180	204	L	Esmt @ Casa De Oro	S1
501	180	63	M	Esmt @ Casa De Oro	S1
501	180	216	W	Esmt @ Casa De Oro	T2
501	180	198	X	Esmt @ Casa De Oro	T2
501	190	141	B	Esmt. @ Gaul	T2
501	210	285	S	Ramona Dr.	S1
501	241	170	A	Esmt. @ Bonita St.	G2
501	241	165	B	Bonita St.	G2
501	242	310	J	Buena Vista	S1
501	245	310	J	Buena Vista	S1
501	270	291	D	Esmt. Madrid	T2
501	300	410	C	Toledo Rd.	S1
501	382	300	E	Miriam	S1
503	20	178	A	Trophy	S1
503	20	236	B	Trophy	S1
503	20	145	C	Turf Ln.	S1
503	30	300	A	Trophy	S1
503	30	250	E	Oar	S1
503	30	290	F	Par	S1
503	30	83	H	Trophy	S1
503	40	225	F	Link	S1
503	52	135	D	Central	T1
503	170	350	A	Fairway	S2
503	170	106	B	Fairway	S3
503	271	590	A	Troy St. Park	G1
503	272	397	B	Public Park off Troy	T1
503	272	100	C	Public Park off Troy	S1
503	272	25	D	Public Park off Troy	S2
503	290	191	D	Bancroft	S1
503	290	265	E	Bancroft	S1
503	290	300	K	Valencia	S2
503	391	235	A	Esmt. @ Valencia	S1
503	391	268	E	Carmen Ranch	T1
503	391	127	H	Carmen Ranch	S2T2
503	391	350	J	Carmen Ranch	S2T2
503	391	189	K	Carmen Ranch	S1

SPECIAL MAINTENANCE SITES FOR SPRING VALLEY SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
503	391	461	L	Esmt. @ Carmen Ranch	S1
503	411	308	A	Tyler	S2
503	411	235	C	Esmt. @ Tyler	S1
503	411	24	S	Tyler	S1
503	412	163	E	Esmt. @ Tyler	S2
504	21	130	D	Helix St.	S1
504	21	200	E	Helix St.	S1
504	21	60	L	Helix St.	S1
504	80	267	B	S. Bonita St.	T1
504	100	158	A	S. Bonita St.	T1
504	100	269	B	S. Bonita St.	T1
504	111	30	F	Lamar St.	S1
504	112	150	E	Esmt @ Rosedale	S1
504	112	324	F	Esmt @ Rosedale	T1
504	120	310	V	Esmt. @ Lamar	S1
504	160	315	D	S. Bonita St.	T1
504	170	310	D	Rosedale Drive	S1
504	170	225	J	Esmt @ Rosedale	S1
504	170	240	L	Esmt @ Rosedale	S1
504	200	350	B	Avocado	S1
504	200	370	C	Avocado	S1
504	311	366	B	Esmt. @ Bancroft	G2
504	311	119	C	Esmt. @ Bancroft	S1
504	350	275	G	Kenora	S1
504	350	194	J	Kenora	S1
504	350	60	M	Kenora	T1
505	10	372	B	S. Bonita St.	T1
505	20	145	B	Glen Dr.	T1
505	20	203	C	Glen Dr.	T1
505	82	163	T	Esmt. @ Swtr. Springs	T3
505	82	248	U	Esmt. @ Swtr. Springs	T3
505	101	227	J	Esmt. @ Don Pico	T3
505	101	198	K	Esmt. @ Don Pico	T3
505	101	250	L	Esmt. @ Don Pico	S1
505	102	332	M	Esmt. Calavo Dr.	S1
505	110	163	AA	Esmt. @ Don Pico	S1
505	110	317	B	Esmt. @ Don Pico	T1
505	110	222	C	Esmt. @ Don Pico	T1
505	121	90	G	Ybarra Rd.	S1
505	150	191	B	Esmt. @ Loma Rancho	T1
505	150	170	D	Loma Rancho	T1

SPECIAL MAINTENANCE SITES FOR SPRING VALLEY SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
505	160	272	E	Esmt. @ Calavo	S1
505	160	420	K	Calavo Dr.	T1
505	260	173	A	Esmt.	S1
505	270	258	A	Daleridge	T1
505	270	346	B	Cliffside	T1
505	270	123	D	Cliffside	T1
505	270	149	E	Cliffside	T1
505	270	30	G	Cliffside	T1
505	280	258	A	Canyonridge	S1
505	280	251	B	Canyonridge	S1
505	280	353	C	Daleridge	T1
505	340	243	F	Ridgeside	T1
505	460	118	C	Esmt.	S1
505	460	101	D	Esmt.	T1
505	460	100	E	Esmt.	S1
505	460	75	F	Esmt.	T1
505	460	115	G	Esmt.	S1
505	460	117	H	Esmt.	S1
505	480	335	A	Canyonview	T1
505	480	320	B	Canyonview	T1
505	580	193	D	Calle Marinero	S1
505	580	132	H	Esmt. @ Swtr Springs	S2
505	601	163	T	Calavo	S1
505	621	296	G	Moorpark	S2
505	621	182	H	Esmt. @ Moorpark	S2
505	622	42	S	Austin	S1
505	626	348	L	Moorpark	G2
563	60	233	AM	Esmt. @ 24th St.	T1
563	60	207	AN	Esmt. @ 24th St.	T1
563	161	64	A	Esmt. @ Grove	S1
563	161	207	B	Esmt. @ Grove	S1
563	161	100	C	Esmt. @ Grove	S1
564	50	353	D	Wilma	S1
564	60	276	E	Esmt. @ Alta	S1T1
564	150	364	A	Esmt. @ Alta	S1
570	40	8	E	Plaza Bonita	S1
570	120	500	B	Esmt. Bonita Rd	G2
570	180	362	B	Bonita Rd.	S2
570	180	533	D	Esmt. Bonita Rd.	G2
577	510	290	A	Esmt.	G2
577	510	270	B	Tarlton	G1

SPECIAL MAINTENANCE SITES FOR SPRING VALLEY SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
577	510	305	C	Tarlton	S1G1
577	510	90	D	Tarlton	-
577	510	210	E	Folkstone	G1
577	520	120	C	Tarlton	G1
577	520	250	G	Folkstone	G2
577	520	267	H	Esmt. @ Folkstone	G1
578	80	187	K	Esmt. @ Helix	S1
578	100	209	A	Harness	G2
578	100	285	B	Gowin	S1
578	100	132	C	Gowin	G2
578	100	137	D	Gowin	G1
578	100	214	E	Harness	S1
578	160	327	H	Esmt. Off Grand Ave.	S1
578	160	129	J	Esmt. Off Grand Ave.	S1
578	170	81	D	Jamacha	G1
578	201	245	A	Harness	S1
578	201	330	B	Harness	S1
578	220	170	B	Harness	S1
578	220	145	C	Harness	S1
578	300	122	S	Esmt. @ Central Ave.	G1
579	150	345	C	St. George	S1
579	160	325	K	St. George	S1
579	170	442	D	Jamacha	S1
579	220	265	E	Huron	G2
579	230	430	C	Huron	G2
579	240	214	L	Banock	S1
579	260	264	D	Galopago	S1
579	330	138	D	Mitra Ct.	G2
579	330	64	E	Jamacha	G2
579	330	318	P	Jamacha	G2
579	330	81	R	Jamacha	G2
579	340	212	P	Esmt. @ La Mesa Ct.	S1
579	381	110	D	San Miguel	S1
579	381	80	M	San Miguel	S1
580	200	128	M	Esmt. @ Jacoby	T2
583	500	340	E	Delrose	G2
583	500	288	F	Elkelton	G2
584	40	278	C	Orville	S2
584	40	443	D	Orville	S2
584	40	317	E	Safford	S2
584	61	220	D	Esmt. @ Gillespie	S1

SPECIAL MAINTENANCE SITES FOR SPRING VALLEY SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
584	61	250	H	Gillespie	G2
584	61	21	J	Gillespie	S1
584	61	175	K	Gillespie	S1
584	62	230	D	Esmt. @ Gillespie	S2
584	62	118	E	Gillespie	S2
584	62	282	F	Gillespie	S1
584	62	300	G	Gillespie	T1
584	100	259	J	Ruxton	S1
584	260	360	B	Brucker	G2
584	260	359	C	Brucker	S1
584	320	225	C	Grand Ave.	T3
584	460	258	B	San Diego St.	S1
584	460	35		Kempton	G2
584	460	535		Kempton	G2
584	470	268	B	Kempton	G2
584	470	268	B	Kempton	S2
584	470	340	D	Felicita	S1
584	512	332	E	Esmt. @ Brucker	S1
586	60	293	C	Check Bridge	-
586	181	205	C	Elkelton	S1
586	251	218	F	Broadview	S1
586	282	58	S	Worthington	S1
589	100	314	D	Tennis Ct.	S2
589	100	291	E	Tennis Ct.	S2
589	231	198	Y	Esmt. @ Briarwood	T1
590	12	254	A	Esmt. @ Briarwood	S2
590	12	390	B	Esmt. @ Briarwood	S1
590	52	360	B	Sweetwater Rd.	S1
590	52	186	C	Esmt @ Sweetwater	S1
590	52	230	D	Esmt @ Sweetwater	S1
590	220	510	D	Esmt. @ San Miguel	S1
590	220	294	E	Esmt. @ San Miguel	S1
590	260	360	B	Pray St.	S1
590	270	132	B	Pray St.	T2
590	381	387	C	Country Trails	T1
590	381	334	D	Wildoats	S1
590	381	309	E	Country Trails	S1
590	390	328	F	Via De Cabello Blanco	T1
590	400	209	A	Esmt. @ Loma Del Sol	T1
590	400	383	B	Esmt. @ Country Trails	S1
590	400	299	C	Esmt. @ Country Trails	S2

SPECIAL MAINTENANCE SITES FOR SPRING VALLEY SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition & Rating
590	400	415	D	Esmt. @ Country Trails	S2
590	400	299	E	Sunny View	S2
593	60	310	E	Palm	G3
593	70	168	D	Esmt. @ Acacia	G3

CONDITION KEY: T=Roots, G=Grease, S=Sludge, including grit.
RATING KEY: 1 through 3, 3 being worst (near blockage)

SPECIAL MAINTENANCE SITES FOR WINTER GARDENS SERVICE AREA

Book	Page	Line#	Line Letter	Street/Esmt.	Condition Key
388	251	294	G	Pepper Dr.	S1
388	261	495	J	Pepper Dr.	S1
388	261	385	M	Pepper Valley	S1
388	370	400	B	Cresthill Rd.	S1
400	142	223	A	Pepper Dr.	S1
400	142	300	E	Esmt.	S1
400	151	310	E	Peerless Dr.	S1
400	160	120	A	Pepper Dr.	S1
400	160	200	B	Wight Way	S1
400	160	131	D	Pepper Dr.	S1
400	280	125	F	Esmt	T1
400	280	50	G	Sunview Dr.	S1,T1
400	322	253	B	Merril Dr.	S1
400	340	288	D	Sunburst Dr.	S1
400	340	200	L	Bird Song	S1
484	11	322	C	Greenfield Dr.	S2
484	11	199	F	Greenfield Dr.	S2
484	11	196	J	Greenfield Dr.	S2
484	12	172	D	Greenfield Dr.	S2
484	12	153	G	Greenfield Dr.	S2
484	12	377	K	Greenfield Dr.	S2
484	51	400	A	Greenfield Dr.	S2
484	51	380	B	Greenfield Dr.	S1
484	51	360	C	Greenfield Dr.	S1
484	51	225	D	Greenfield Dr.	S1
484	51	150	E	Olive St.	S2
484	52	293	A	Greenfield Dr.	S1
484	52	383	B	Greenfield Dr.	S2
484	52	380	C	Greenfield Dr.	S2
484	52	150	D	Greenfield Dr.	S2
484	110	200	F	Esmt.	S2

CONDITION KEY: T=Roots, G=Grease, S=Sludge, including grit.

RATING KEY: 1 through 3, 3 being worst (near blockage)

Attachment C
County of San Diego
Sanitary Sewer Overflow Locations

COUNTY OF SAN DIEGO
REPORTED SEWER SYSTEM OVERFLOWS

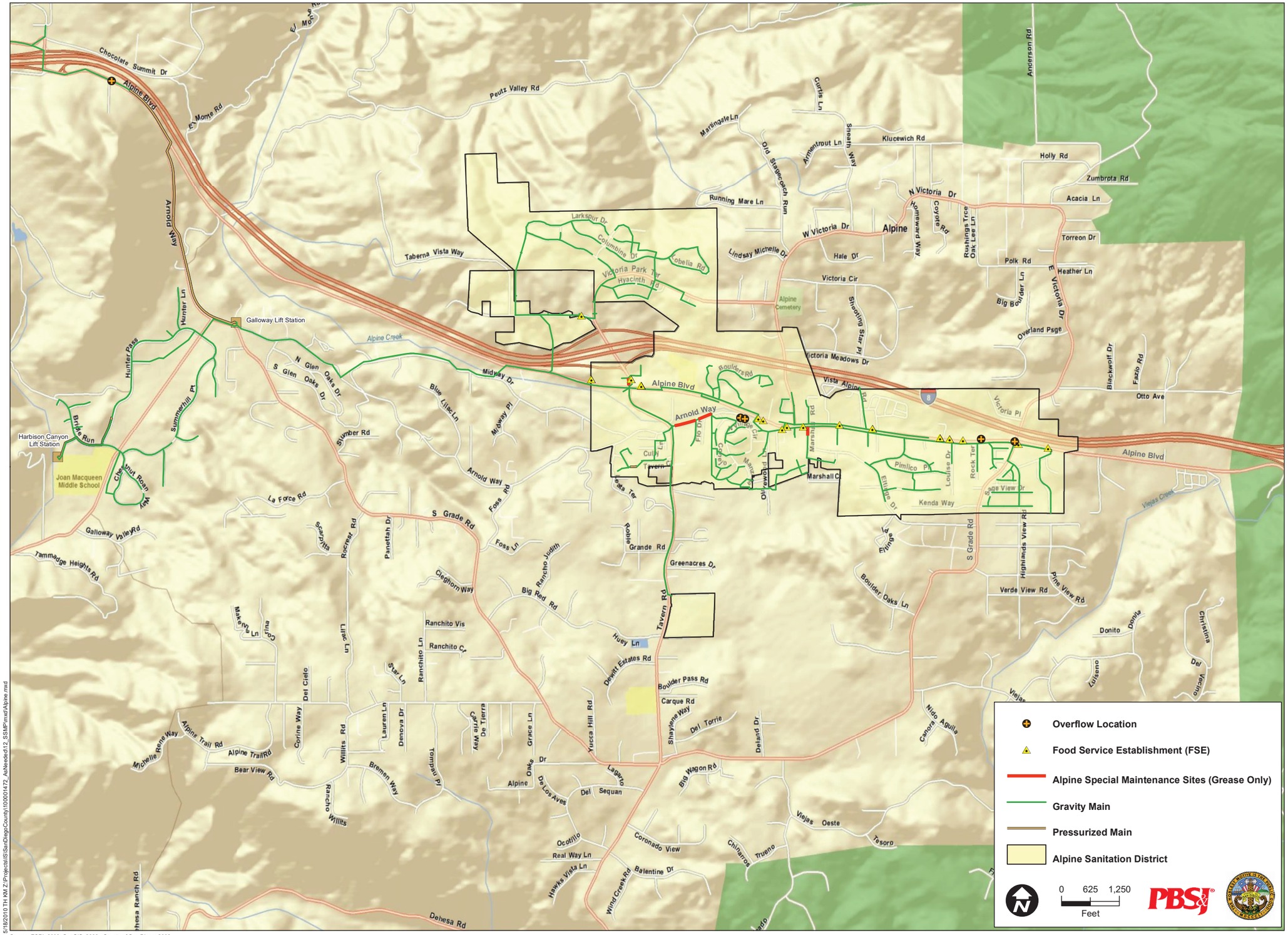
ITEM NO.	EVENT ID	Collection System	SSO Category	Start Date & Time	SSO Address	SSO City	Cause
SSO Occurences at Mains							
1	748067	County Of San Diego CS	Category 1	1/1/2010 9:55	10263 Vista de la Cruz	La Mesa	Debris
2	747145	County Of San Diego CS	Category 1	11/27/2009 20:45	16666 Alpine Blvd	Alpine	Debris
3	744310	County Of San Diego CS	Category 1	9/5/2009 9:10	4255 Conrad Drive	Spring Valley	Roots
4	741723	County Of San Diego CS	Category 1	7/22/2009 11:55	Wild Oats & Country Trails	N/A	Debris
5	737515	County Of San Diego CS	Category 1	5/15/2009 7:50	2415 Ridgeway	National City	Debris
6	737153	County Of San Diego CS	Category 2	5/3/2009 12:30	2055 Arnold	Alpine	Vandalism
7	737009	County Of San Diego CS	Category 1	4/30/2009 10:40	9260 Harness	Spring Valley	Vandalism
8	736744	County Of San Diego CS	Category 2	4/23/2009 9:25	2055 Arnold	Alpine	Vandalism
9	732954	County Of San Diego CS	Category 1	12/3/2008 10:57	10441 Madrid	Spring Valley	Roots
10	730114	County Of San Diego CS	Category 1	11/28/2008 10:00	11934 Royal	El Cajon	Debris
11	719563	County Of San Diego CS	Category 1	6/15/2008 21:00	1201 Elkelton	Spring Valley	Grease
12	713196	County Of San Diego CS	Category 1	2/16/2008 10:40	Alpine Blvd & South Grade Rd	Alpine	Debris
13	707819	County Of San Diego CS	Category 2	11/3/2007 9:30	Quarry Rd & Sweetwater Rd	Spring Valley	Debris
14	706754	County Of San Diego CS	Category 1	10/27/2007 8:00	Jamacha Blvd & Trace Rd	Spring Valley	Structural
15	654144	County Of San Diego CS	Category 2	7/14/2007 16:45	1832 Helix Street	Spring Valley	Debris
16	651083	County Of San Diego CS	Category 2	5/21/2007 20:30	9060 Winter Gardens Blvd	Winter Gardens	Debris
17	647416	County Of San Diego CS	Category 1	2/22/2007 20:00	8759 Bigford	Spring Valley	Roots
SSO Occurences at Private Laterals							
1	745112	County Of San Diego CS	Category 2	9/26/2009 8:45	N/A	Spring Valley	Debris
2	742969	County Of San Diego CS	Category 2	8/12/2009 10:10	N/A	El Cajon	Roots
3	733823	County Of San Diego CS	Category 1	2/10/2009 7:24	N/A	Spring Valley	Debris
4	730262	County Of San Diego CS	Category 2	12/5/2008 11:45	N/A	National City	Roots
5	731245	County Of San Diego CS	Category 2	11/21/2008 16:15	2390 Bancroft Dr	Spring Valley	Debris
6	728649	County Of San Diego CS	Category 2	10/25/2008 19:00	9902 Jamacha Blvd	Spring Valley	Debris
7	720309	County Of San Diego CS	Category 1	6/24/2008 10:15	N/A	Spring Valley	Debris
8	716705	County Of San Diego CS	Category 2	4/26/2008 11:00	8628 Valencia St	Spring Valley	Roots

COUNTY OF SAN DIEGO
REPORTED SEWER SYSTEM OVERFLOWS

9	716794	County Of San Diego CS	Category 2	4/22/2008 7:30	2011 Hawkins Way	Spring Valley	Structural
10	714822	County Of San Diego CS	Category 1	3/11/2008 9:45	N/A	Spring Valley	Other
11	713197	County Of San Diego CS	Category 1	2/17/2008 8:15	2812 Alpine Blvd	Alpine	Debris
12	657672	County Of San Diego CS	Category 2	9/17/2007 10:00	N/A	Spring Valley	Debris
13	651639	County Of San Diego CS	Category 2	6/7/2007 7:20	N/A	Lakeside	Debris

Addresses obtained from County MAR

Attachment D
Exhibits 1, 2, and 3
FSE, SSO and Special Maintenance Site Locations for Alpine, Lakeside, and Spring Valley

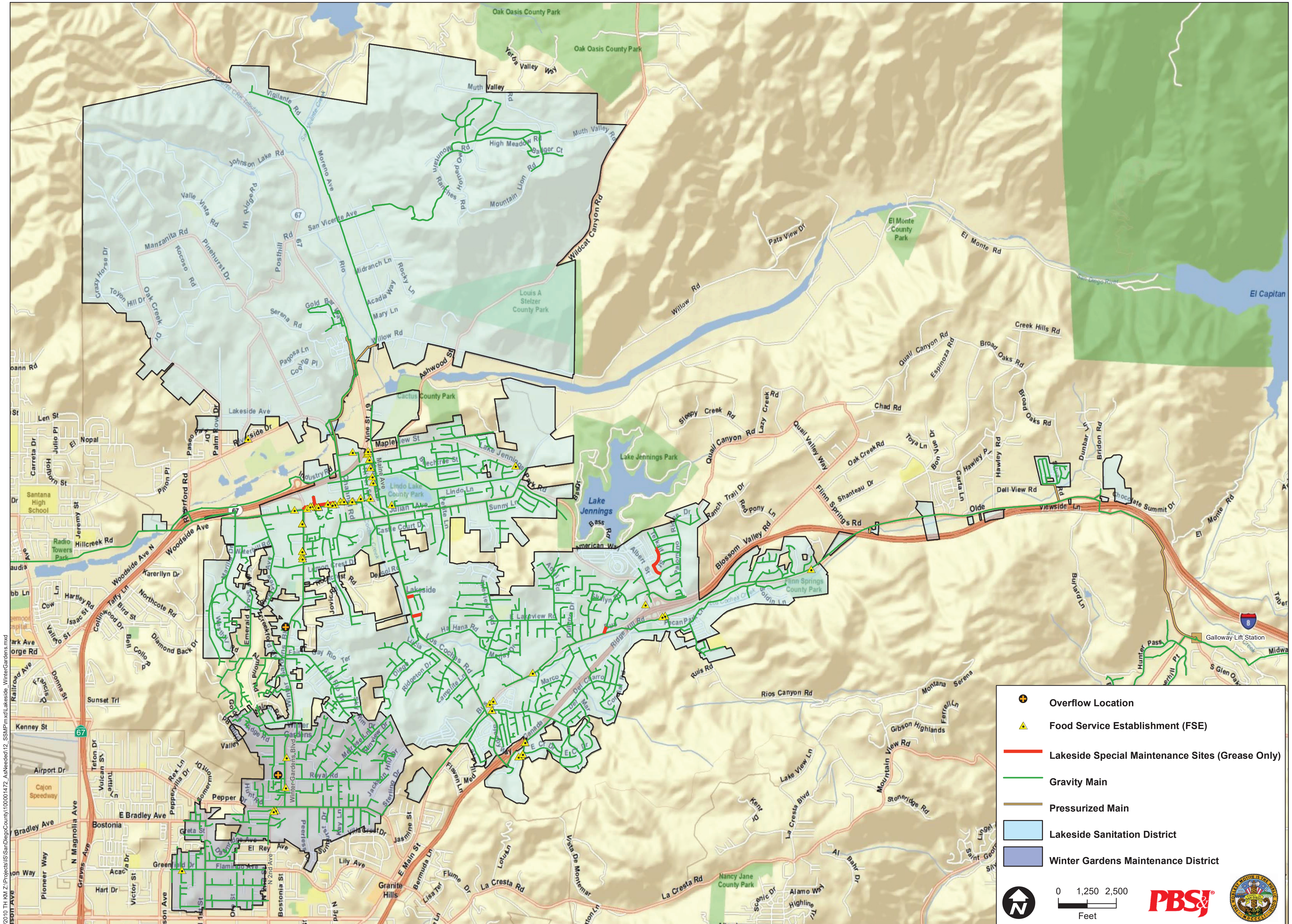


5/18/2010 TH KM Z:\Projects\ISSanDiegoCounty\1010001472_AsNeeded\12_SSMP\mxd\Alpine.mxd

Source: ESRI, 2009; SanGIS, 2008; County of San Diego, 2008

Food Service Establishments, Overflow Locations, and Special Maintenance Sites within Alpine Sanitation District

Exhibit 1

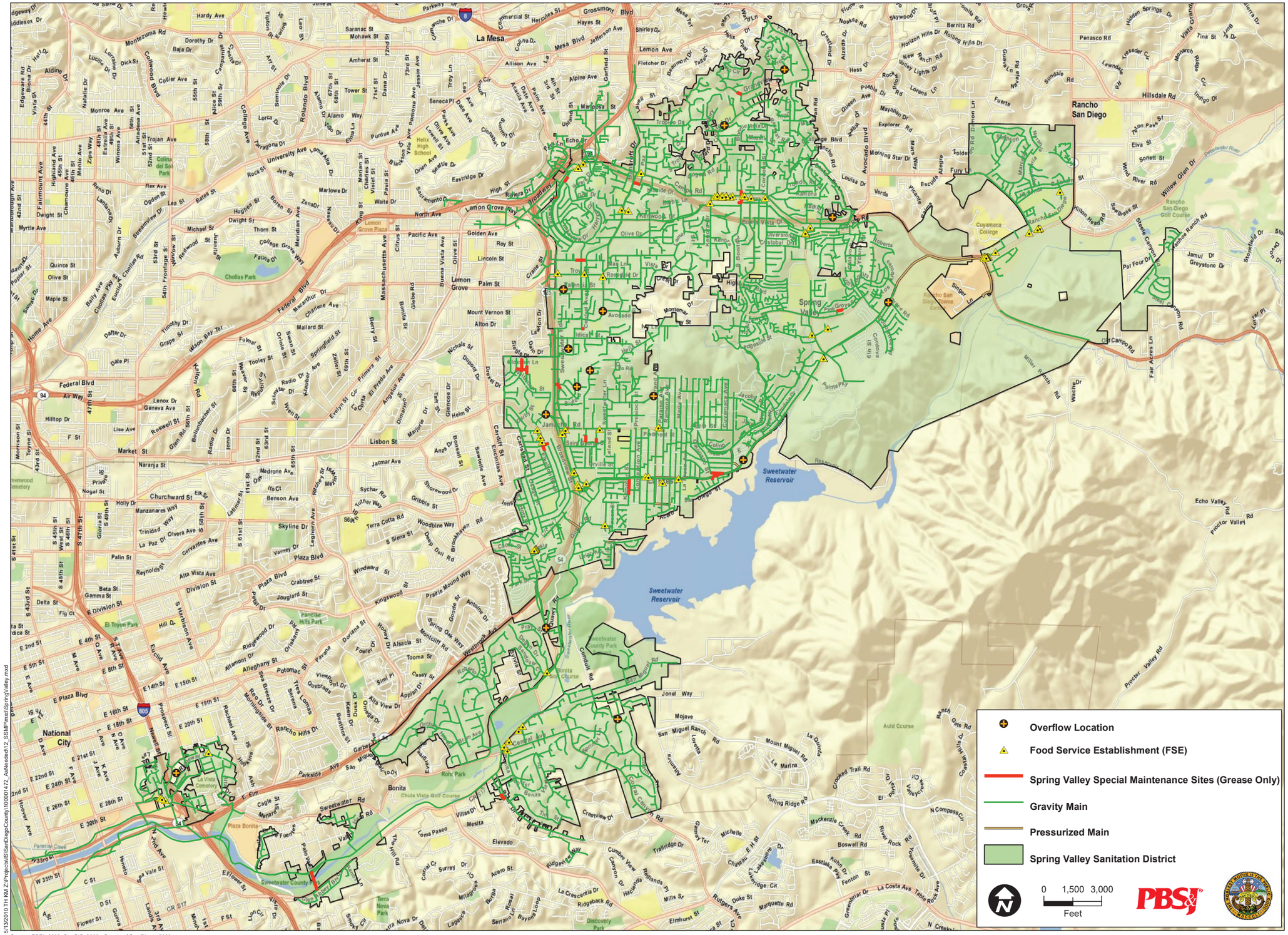


5/18/2010 TH KM Z:\Projects\IS\SanDiegoCounty\100001472_AsNeeded\12_SSMP\mxd\Lakeside_WinterGardens.mxd

Source: ESRI, 2009; SanGIS, 2008; County of San Diego, 2008

Food Service Establishments, Overflow Locations, and Special Maintenance Sites within Lakeside/Winter Gardens Sanitation Districts

Exhibit 2



5/13/2010 TH KM Z:\Projects\IS\SanDiegoCounty\1000001472_AsNeeded\c012_SSMP\mxd\SpringValley.mxd

Source: ESRI, 2009; SanGIS, 2008; County of San Diego, 2008

Food Service Establishments, Overflow Locations, and Special Maintenance Sites within Spring Valley Sanitation District

Exhibit 3

Appendix C

COUNTY OF SAN DIEGO SANITARY SEWER OVERFLOW EMERGENCY RESPONSE PLAN

County of San Diego
Sewer System Management Plan

Appendix C
SANITARY SEWER OVERFLOW EMERGENCY RESPONSE PLAN

FINAL | August 2020

Contents

Attachments

Tables

Figures

Abbreviations

CIWQS	California Integrated Water Quality System
County	County of San Diego
CWA	Clean Water Act
DEH	Department of Environmental Health
EPA	Environmental Protection Agency
gpm	gallons per minute
LRO	Legally Responsible Official
Metro	City of San Diego Metropolitan Wastewater System
OES	Office of Emergency Services
SDRWQCB	San Diego Regional Water Quality Control Board, District 9
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSOERP	Sanitary Sewer Overflow Emergency Response Plan
SWRCB	State Water Resources Control Board
WDRs	Waste Discharge Requirements
WWM	Wastewater Management

Chapter 1

INTRODUCTION

Since Sanitary Sewer Overflows (SSOs) of various volumes occur from time to time in spite of concerted prevention efforts, the County of San Diego (County) has prepared this Sanitary Sewer Overflow Emergency Response Plan (SSOERP). SSOs may occur from blocked sewers, pipe failures, mechanical malfunctions, and other natural or man-made causes. County crews are constantly on alert and ready to respond upon notification and confirmation of an SSO.

This SSOERP establishes the formal procedures for County staff to respond to, contain, correct, and remediate SSOs that occur within any of the County's Service Areas, and it is intended to minimize the effects of SSOs on the environment while protecting the public's health and safety. Chapter 1 provides an overview of the County's wastewater collection system, the purpose and goals of the SSOERP, the regulatory authority requiring this plan, an overview of this document's organization, and definitions of terms contained in this document.

1.1 Wastewater Collection System Overview

The County of San Diego's Department of Public Works staff is responsible for the operation and maintenance of an extensive wastewater collection system and is tasked with ensuring proper and efficient operation of the system. The County spans approximately 4,526 square miles and has approximately three (3) million residents. Approximately three-quarters of the unincorporated population are served by private disposal systems. The remaining unincorporated areas are served by the County Sanitation District, reflecting the rural nature of large portions of the County. The vast majority of those currently receiving public sewer service are concentrated in two (2) of the more urbanized service areas including the Spring Valley and Lakeside Service Areas.

The County administers eight (8) sewer service areas that serve approximately 36,000 customers in several diverse and geographically separated unincorporated communities. Figure 1.1 shows the eight (8) County service areas for which the Wastewater Management (WWM) Division of the County's Department of Public Works Department provides management, administrative, operational and various support personnel for proper operation and maintenance of the wastewater collection system. Table 1.1 includes a summary of the existing service areas within the County's jurisdiction. Collectively, the conveyance system includes approximately 432 miles of pipeline, approximately 8,200 maintenance holes, and eight (8) lift stations.

Table 1.1 San Diego County Sanitation District Service Areas

County of San Diego Service Areas	
Alpine	Julian
Lakeside	Campo
Spring Valley	East Otay Mesa
Pine Valley	Winter Gardens

Wastewater treatment is provided by either the City of San Diego Metropolitan Wastewater System (Metro) or one of several locally-based plants operated by the respective County service area depending on the community. Table 1.2 provides a summary of the locally-based plants operated by the County.

Table 1.2 County Operated Treatment Plants

Treatment Facility	Address	City/State/Zip
Rancho Del Campo WWTP	31035 Forrest Gate Rd.	Campo, CA 92006
Julian WWTP	2840 Hwy 78	Julian, CA 92036
Pine Valley WWTP	Pine Valley County Park, Old Hwy. 80	Pine Valley, CA 91962

1.2 Purpose and Goals

The County recognizes the importance of protecting the health and safety of the public as well as the environment by preventing sewer flows from reaching surface and ground waters and waters of the United States. The County also understands the necessity to implement procedures to comply with the requirements of state regulations. The primary goal in establishing this SSOERP is to provide guidance for County staff to respond appropriately and efficiently to all known SSOs immediately.

The objectives of the SSOERP can be summarized as:

- Protect public health and safety, and the environment;
- Protect adverse impacts to surface and ground waters;
- Minimize the effects of SSOs;
- Satisfy regulatory and discharge permit conditions;
- Protect private and public property;
- Protect County personnel;
- Minimize service interruptions to County services; and
- Protect all County owned assets.

This SSOERP is intended to supplement and be consistent with existing emergency plans and standard operating procedures currently implemented by County WWM staff for the wastewater facilities in each service area operated and maintained by County staff. The overall plan will facilitate coordination and mobilization of necessary facilities and personnel in an organized and efficient manner when responding to an SSO.

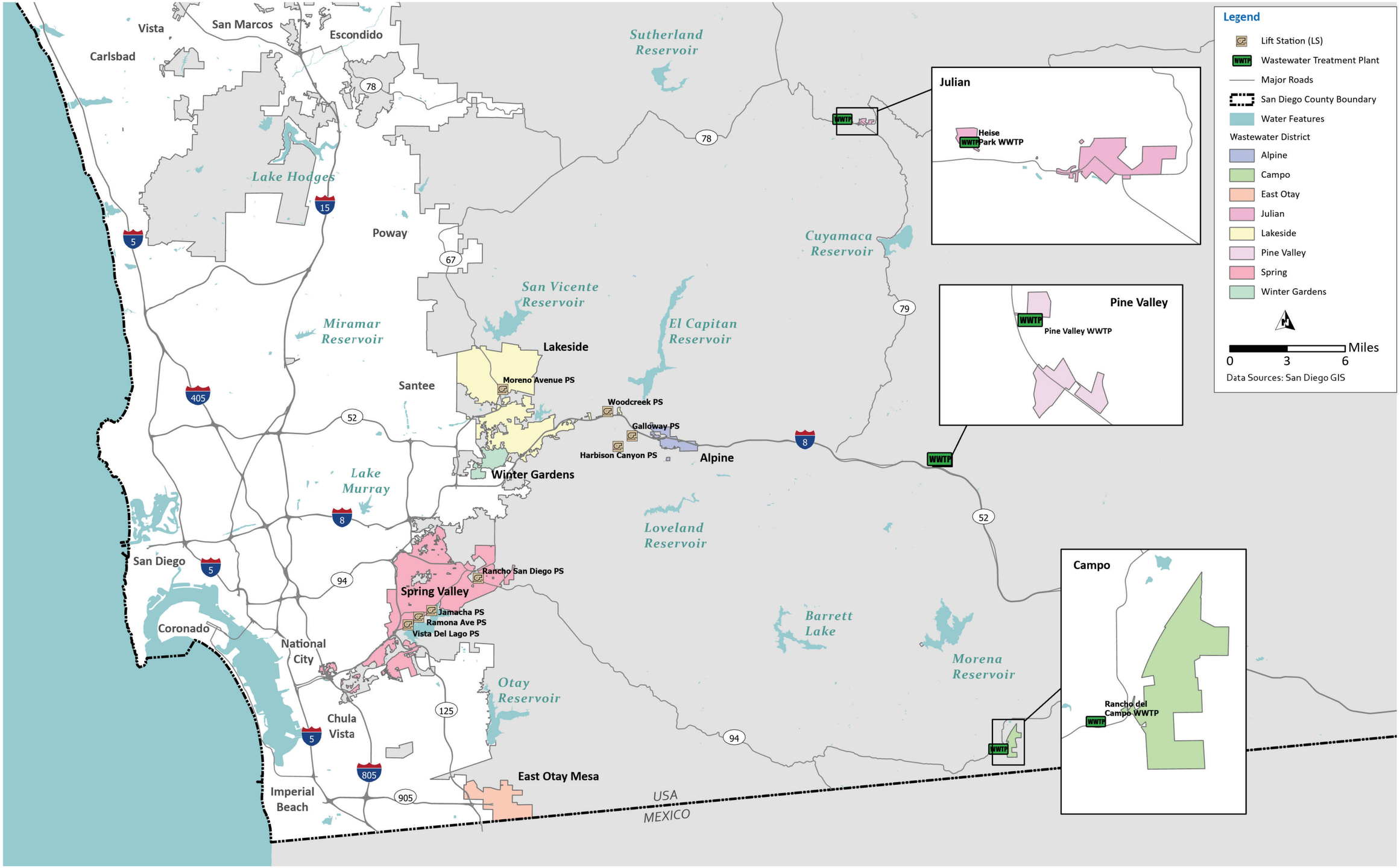


Figure 1.1 County of San Diego Sanitation District Service Areas

1.3 Organization of this SSOERP

This document provides the necessary guidelines for County WWM staff to respond to an SSO event. This SSOERP contains the following elements:

- Introduction.
- SSO Response Procedures.
- Public Advisory Of Sewage Contamination Procedures.
- SSO Monitoring and Reporting Requirements.
- Training Requirements.
- SSOERP Updating Requirements.
- Various Appendices.

1.4 Regulatory Requirements

The following regulatory requirements establish the impetus for the County to develop and follow procedures to minimize SSOs.

- Clean Water Act, Section 1251 of Chapter 33 of the United States Code: In 1972, the federal Congress enacted the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA). The CWA prohibits the discharge of pollutants, including sewage, into public waters of the United States. The federal government has the authority to enforce compliance with the CWA via specific permits, such as National Pollutant Discharge Elimination System permits, as well as court action such as administrative orders and consent decrees.
- California Water Code Section 13271, California Code of Regulations: Section 13271 of the California Water Code, Title 23 of the California Code of Regulations, prohibits the discharge of sewage and hazardous material into the waters of the State and requires the proper notification of authorized agencies in the event of an SSO. Entities which do not properly follow the requirements of this section may be found guilty of a misdemeanor and punished by fine, imprisonment, or both.
- The Water Quality Control Plan for the San Diego Basin 9 (Basin Plan): The Regional Board adopted a Water Quality Control Plan for the San Diego Basin on September 8, 1994. The Basin Plan which was subsequently approved by the State Board on December 13, 1994. The basin plan designates beneficial uses, narrative, and numerical water quality objectives, and prohibitions which are applicable to the discharges prohibited under this Order. Subsequent revisions to the Basin Plan have also been adopted by the Regional Board and approved by the State board.
- 2006 California Waste Discharge Requirements for Sanitary Sewer Systems: On May 2, 2006, the State Water Resources Control Board (SWRCB) adopted the Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems, Order No. 2006-0003. The WDRs are applicable to all federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to publicly owned treatment facilities in the state of California. Specifically, the WDRs, as part of the Monitoring and Reporting Program, require that the County establish monitoring, record keeping, reporting, and public notification requirements for SSOs, including on-line reporting requirements through the State's California Integrated Water Quality System (CIWQS) web-site. The WDRs required that the County began on-line reporting on January 2, 2007, and that the

County prepare an Emergency Response Plan by May 2, 2009. This SSOERP fulfills the later requirement and documents the County's efforts to comply with the on-line reporting.

- 2008 General Waste Discharge Requirements Monitoring and Reporting Amendment: On February 20, 2008, the SWRCB adopted Order No. WQ 2008-0002-EXEC, which amends the Monitoring and Reporting Program of Order No. 2006-0003-DWQ of the Statewide General WDRs for Sanitary Sewer Systems. The amendment serves to confirm that the agencies that have first responder duties are notified in a timely manner in order to effectively protect public health and the beneficial uses of potentially affected water. The Order requires the following:
  - For any discharges of sewage that result in a discharge to a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the State Office Emergency Services, the local health officer or directors of environmental health with jurisdiction over affected water bodies, and the appropriate Regional Water Quality Control Board.
  - As soon as possible, but no later than twenty-four (24) hours after becoming aware of a discharge to a drainage channel or a surface water, the Discharger shall submit to the appropriate Regional Water Quality Control Board a certification that the State Office of Emergency Services (OES) and the local health officer or directors of environmental health with jurisdiction over the affected water bodies have been notified of the discharge.
- 2013 General Waste Discharge Requirements Monitoring and Reporting Amendment: On August 6, 2013, the SWRCB adopted Order No. WQ 2013-0058-EXEC, which amends the Monitoring and Reporting Program No. 2006-0003-DWQ of the Statewide General WDRs for Sanitary Sewer Systems. The amendment serves to implement changes to SSO categories by adding a Category 3 SSO type. This change is intended to improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). It also simplified the notification requirement for SSOs reaching surface waters, modified other notification requirements slightly, and added a requirement for submittal of a technical report and a water quality monitoring plan for spills to surface water above 50,000 gallons
- Waste Discharge Requirements for Sewage Collection Agencies in the San Diego Region: The General WDRs for Sanitary Sewer Systems, adopted by the State Board on May 2, 2006, establishes minimum requirements for publicly owned/operated sanitary sewer system and allows each regional board to issue more stringent or more prescriptive WDRs for sanitary systems within their respective jurisdiction. On February 14, 2007, the San Diego Regional Water Quality Control Board (SDRWQCB) adopted Order R9-2007-0005. The Order includes additional reporting requirements for wastewater collection agencies within Region 9, including notification of all private lateral sewage discharges for which the agencies become aware of, to the SDRWQCB. The County is located within Region 9.

1.5 Definition of Terms

Category 1 Sanitary Sewer Overflow: All discharges of sewage resulting from a failure in the County's wastewater collection system that:

- Reaches a drainage channel and/or surface water; or
- Reaches the separate municipal storm drain system and is not fully captured and returned to the wastewater collection system and disposed of properly;
- Results in wastewater not recovered from a separate municipal storm drain system unless the storm drain system discharges to a dedicated groundwater infiltration basin.

Category 2 Sanitary Sewer Overflow: Discharges of untreated or partially treated wastewater resulting from a failure in the County's wastewater collection system that:

- Equals or exceeds 1,000 gallons;
- Results in a discharge that does not reach surface water, a drainage channel, or a separate municipal storm drain system; or
- Entire SSO discharge into the storm drain system is fully recovered and disposed of properly.

Category 3 Sanitary Sewer Overflow: All other discharges of untreated or partially treated wastewater resulting from a failure in the County's wastewater collection system.

First Responder: The County's Wastewater Maintenance staff person who is initially notified of a possible SSO and arrives first at the reported location of the possible SSO.

Private Lateral Sewage Discharge: Sewage discharges that are caused by blockages or other problems within a privately owned lateral.

Public Waters: Any body of water such as the ocean, bay, lake, pond, river, stream, or creek where there is the potential for human contact as defined by the County Department of Environmental Health (DEH).

Sanitary Sewer Overflow: A SSO is any overflow, spill, release, discharge, or diversion of sewage from a wastewater collection system. SSOs include:

- Release of untreated or partially treated sewage that reaches waters of the United States;
- Release of untreated or partially treated sewage that does not reach waters of the United States; and
- Sewage backups into buildings and private property that are caused by blockages or flow conditions in a wastewater collection system, other than a building lateral. Sewage backups into buildings caused by a blockage or other malfunction of a building lateral that is privately owned is an SSO when sewage is discharged off a private property into streets, storm drains, or waters of the State.

Sewage: Any liquid waste and water borne solid waste resulting from residential, commercial, industrial, or institutional activities or uses.

Surface Waters: All permanent and intermittent drainage ways, lakes, and reservoirs, either public or private, which are not man-made for the treatment of municipal, agricultural, or industrial waste, and wholly or partially within the boundaries of the County. SSOs to storm drains tributary to surface waters shall be reported as discharges to surface waters.

Wastewater: Any volume of untreated or partially treated sewage discharged from the wastewater collection system upstream of a wastewater treatment plant.

Wastewater Collection System: Any system of pipes, pump stations, sewer lines, etc., used to collect and convey sewage to a treatment plant. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, high-lines, etc.) are considered to be part of the sanitary sewer system, and discharges of sewage to these facilities are not sanitary sewer overflows.

Waters of the State: Any surface water or groundwater (including saline waters) within the boundaries of the state.

Waters of the United States: All waters of the United States as defined in the Code of Federal Regulations, Volume 40, Section 122.2 (40 CFR 122.2) such as navigable waters, rivers, streams, lakes, natural ponds, wetlands, etc., including tributaries to traditional navigable waters.

Chapter 2

SSO RESPONSE PROCEDURES

SSOs are caused by a blockage or a restriction in the wastewater collection system, pipe failures, flows exceeding the capacity of the system, and other natural or man-made causes. In the event of an SSO, the County's District Engineering Section of the WWM Division staff must respond and be prepared to:

- Contain the SSO;
- Control the overflow;
- Mitigate and clean up the contaminated area; and
- Notify the appropriate authorities.

This chapter presents a strategy for staff within the County's District Engineering Section of the WWM Division to mobilize labor, materials, tools, and equipment to contain, mitigate, and clean-up residuals from a sewer overflow and correct or repair any condition which may cause or contribute to an un-permitted sewage discharge. This plan is applicable to a wide range of potential system failures within any of the County's service areas that could result in an SSO. Figure 2.1 summarizes the process presented in this chapter and offers a concise overview of the following steps required to quickly respond to an actual or possible SSO event.

2.1 Receiving Information about a Possible SSO

An SSO may be detected by County employees or the public. Suspicious circumstances, such as foul odors, backed up plumbing, unusual flooding, and so on, may also indicate the possibility of an actual or impending SSO. In the event of an SSO that may affect County system operations and/or may become a public health issue, personnel from various service areas of the WWM's District Engineering Section may be utilized. This section describes how County wastewater maintenance staff within this Section is notified of possible SSOs.

2.1.1 Telephone Notifications of Possible SSOs

All telephone calls or complaints of possible or actual SSOs are received via the County's Operations Center Hotline at the Spring Valley Operations Center during business hours and routed to the Standby Duty Supervisor or are routed directly to the Standby Duty Operator if the notification is received during non-business hours. Figure 2.2 shows how a possible SSO will be reported to the District Collections Engineering and Operations staff.

As illustrated on Figure 2.2, notification of a potential SSO will be received by the County's Operations Center Hotline at the Spring Valley Operations Center and routed directly to the Standby Duty Supervisor during normal business hours. During non-business hours, weekends, and designated County holidays, calls will be routed directly to the Standby Duty Supervisor.

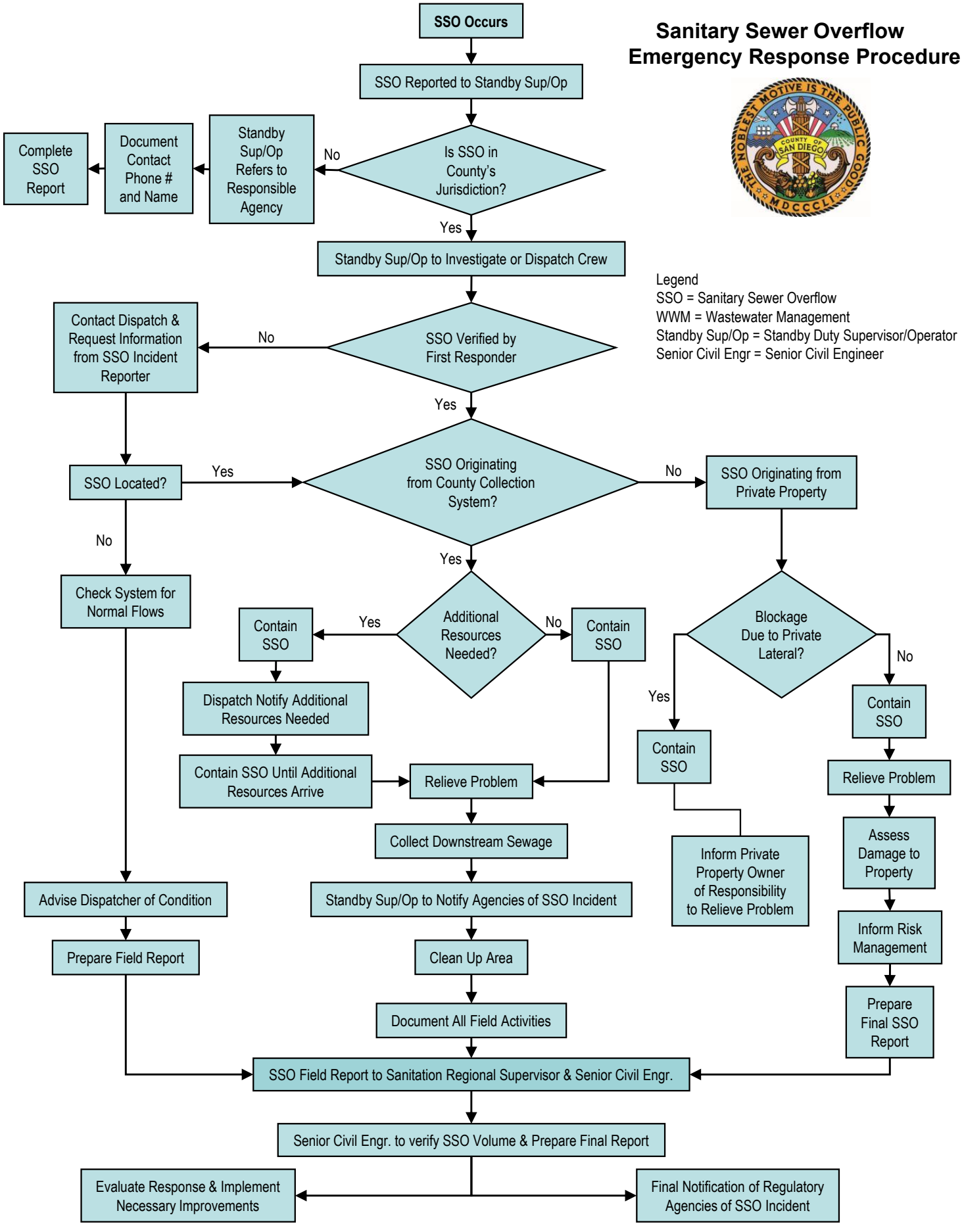


Figure 2.1 Sanitary Sewer Overflow Response Procedure

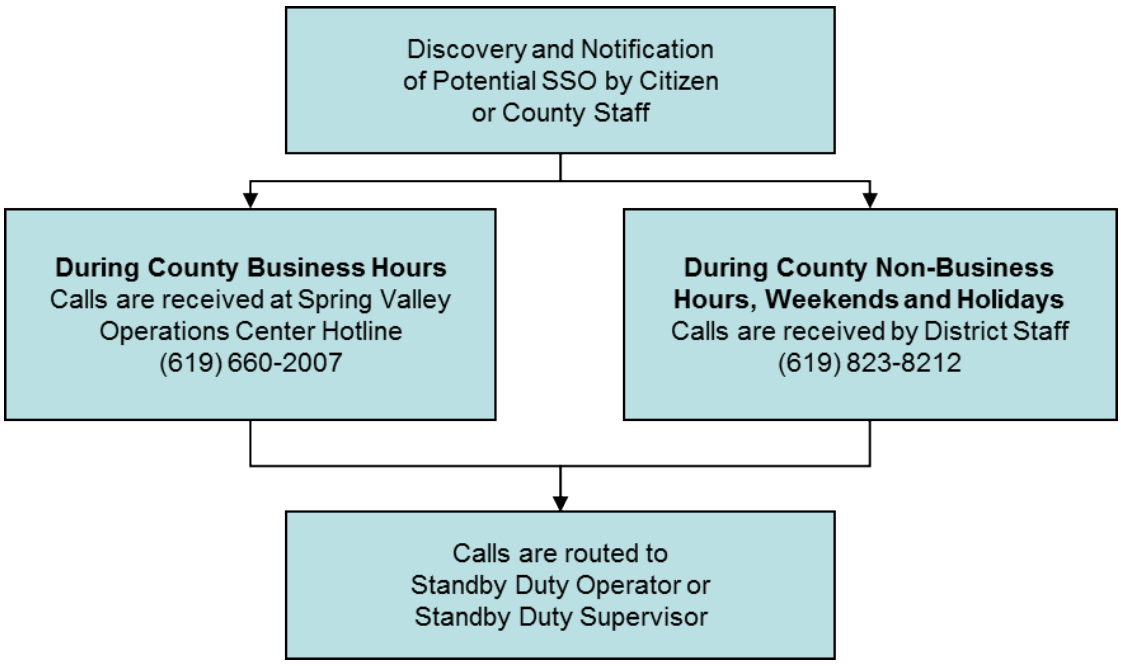


Figure 2.2 Process for Alerting Staff of a Possible Sanitary Sewer Overflow

Upon receipt of a notification of a potential SSO, the Standby Duty Operator or Standby Duty Supervisor or will obtain as much information as possible from the reporting entity. The relevant information that should be collected includes:

- Time and date the call/SSO report was received;
- Specific location (address, cross streets, etc.);
- Description of problem;
- Time the possible SSO was noticed by the caller;
- Caller's name and telephone number;
- Observations of the caller (e.g., odor, duration, back or front of property, etc.); and
- Other relevant information that will enable the responding County staff, personnel, and crews, if required, to quickly locate, assess, contain, and relieve the SSO.

The *Sanitary Sewer Overflow Field Report* form in Attachment A can be used by the Standby Duty Operator or the Standby Duty Supervisor to capture the relevant information needed to respond to a report of a possible SSO as well as be useful for initiating the work order assignment. Either the Standby Duty Operator or Standby Duty Supervisor will create a work order for the SSO in Cityworks.

2.1.2 Sewer Maintenance Division Personnel Notifications of Possible SSOs

Possible and actual SSOs detected by maintenance personnel in the course of their normal duties are reported immediately to the Supervisor. For incidents that occur during County business hours, staff closest to the location of the incident will be dispatched to the reported SSO location. Personnel on-site observing the SSO should begin efforts to contain and minimize the effects of the SSO as further described in Section 2.5.

2.1.3 Lift Station Alarm Notifications of Possible SSOs

The County's lift stations are located throughout the County and are also operated and maintained by District Engineering staff. The County's Collections Engineering and Operations staff is also responsible for responding to any possible or actual SSO reported at any of the eight (8) lift stations.

Table 2.1 shows the alarms for each lift station that transmit signals directly to District Facilities Operations staff during business and non-business hours. The alarms listed in Table 2.1 generally exist and are typically incorporated in lift stations. When the alarms are transmitted to the County Operations Center, the Standby Duty Operator or the Standby Duty Supervisor is alerted according to the process illustrated on Figure 2.2 for potential SSOs that are reported during non-business hours, weekends, and County holidays.

After receiving notification of an alarm activation at a lift station, the Standby Duty Operator or the Standby Duty Supervisor will proceed to the lift station to assess and resolve the situation. If the First Responder requires assistance, he will contact the appropriate personnel for assistance.

Table 2.1 Lift Station Alarms

Lift Stations	Alarms				
	Pump Control Failure	Power Failure	High Water Level in Wet Well	Low Water Level in Wet Well	Communications
Spring Valley					
Jamacha	*	Y	Y	Y	Radio
Ramona Avenue	*	Y	Y	Y	Radio
Vista Del Lago	*	Y	Y	Y	Radio
Rancho San Diego	*	Y	Y	Y	Radio
Alpine					
Galloway	*	Y	Y	Y	Radio
Harbison Canyon	*	Y	Y	Y	Radio
Lakeside					
Moreno Avenue	*	Y	Y	Y	Radio
Woodcreek	*	Y	Y	Y	Radio
Julian					
Julian High School	N	Y	Y	Y	Radio
Additional Locations					
San Pasqual Academy	N	Y	Y	Y	Autodialer
Ramona Airport	N	Y	Y	Y	Radio

Notes:
(1) *These stations are equipped with a "float over-ride" system that takes over if the water level in the wet well rises due to pump control failure. The alarm is transmitted indicating the system was activated.

2.2 First Responder Responsibilities

Based on the information provided during the initial notification of a possible SSO, the Standby Duty Operator or Standby Duty Supervisor shall proceed to the SSO location to assess the cause and extent of the SSO. The County staff member to arrive first at the location is considered the First Responder. The First Responder will determine whether to direct sewer maintenance crews, other County personnel, and/or approved contractors to the SSO location if the SSO cannot be fully contained or recovered or if it has reached public waters. If the First Responder is the Standby Duty Operator, the Standby Duty Operator will promptly notify the Standby Duty Supervisor of the type, level, and extent of the incident. The information obtained by the First Responder during the initial notification of a possible SSO may warrant the First Responder, in his best professional judgment, to immediately dispatch crews or other County personnel to the SSO location prior to proceeding to the reported SSO location.

It is the responsibility of the First Responder to protect the health and safety of the public by mitigating the impacts of the SSO to the extent possible. Areas where public contact with sewage is possible shall be isolated using barricades, signs, or other effective means. Upon determining the SSO originated in County's jurisdiction, the First Responder will perform the following:

- Document SSO source and discharge with a timestamp photo;
- Determine the cause of the SSO, e.g., sewer line blockage, or pipeline break, etc.;
- Identify and request, if necessary, additional personnel, materials, and equipment necessary to minimize, contain, or isolate the impact of the SSO;
- Control public access to affected area;
- Implement efforts to stop the overflow; and
- Notify the Senior Civil Engineer.

If the First Responder determines the SSO is not within County's jurisdiction, the First Responder should notify the responsible agency to respond to the overflow. If the SSO poses an imminent danger to the public, public health, property, or to public waterways of the United States, then the First Responder should take prudent emergency actions to mitigate the SSO until staff of the responsible agency arrives.

If the First Responder cannot locate the SSO or the reported problem, he shall attempt to obtain additional information from the initial caller to clarify reported data and to locate the problem. If the SSO or reported problem still cannot be located, the First Responder shall check the system for normal flows and prepare the final field report.

2.3 Dispatch of Crew(s) to SSO Location

Failure of any element within the wastewater collection system that threatens to cause or causes an SSO triggers an immediate response to isolate and correct the problem. County sewer maintenance crews and equipment are stationed at the County's Spring Valley Operations Yard, from where they are dispatched. The equipment is available 24-hours a day and staff is placed on "standby" on a rotational schedule to respond to any site of a reported SSO. Also, additional County maintenance personnel are also on "standby" if additional crews are necessary. Attachment B contains the names and contact information for County staff that may be placed on standby.

All County staff dispatched to an SSO location shall proceed immediately to the site. All necessary precautionary measures to ensure staff safety shall be in place. Overflows within the County's jurisdiction that enter into areas outside the County's authority will continue to be contained and the affected agency will be notified of the SSO to ensure proper cleaning and notifications are completed.

2.4 Requesting Additional Resources

If the First Responder determines that notification of additional staff beyond the "standby" SSO response crew is required and/or County approved contractors are necessary to fully contain and recover the overflow, the Standby Duty Operator or Standby Duty Supervisor will mobilize the additional resources necessary.

County staff has access to additional resources from its own staff as well as outside on-call contractors that can be mobilized in case of an emergency or major SSOs. The list of County approved contractors and equipment rental vendors are provided in Attachment C.

2.5 Overflow Containment, Correction, and Clean-up

This section describes specific actions to be performed by the District Engineering staff and additional necessary crews responding to an SSO. The objectives of actions described in this section include:

- Protect public health, the environment, and property from SSOs and restore the surrounding area back to its original condition;
- Contain the sewage discharged to the maximum extent possible and prevent the discharge of sewage into surface waters;
- Control traffic and crowds to limit public access by establishing perimeters and control zones with cones, barricades, sign postings, caution tape, vehicles, and/or terrain;
- When appropriate, promptly notify regulatory agencies of preliminary SSO information and potential impacts;
- Minimize the County's exposure to any regulatory agency penalties and fines; and
- Detailed documentation, including photos, of all above actions.

The County shall respond with its staff, equipment, and/or contractors and, under most circumstances, the County will oversee, manage, and perform the tasks necessary to properly and effectively correct, contain, and clean up SSOs. County wastewater maintenance staff has the skill and experience to respond rapidly and in the most appropriate manner. Of critical importance with respect to an emergency response is to ensure that the temporary actions necessary to divert flows and fix the problem do not produce a problem elsewhere in the system. If the matter is not handled properly, subsequent sewer system back-ups may occur and create other SSOs.

The SSO Response Flowchart shown on Figure 2.1 illustrates emergency response procedures including notification and request of additional resources as required in the event of a large SSO.

2.5.1 Initial Containment Measures

The following are initial measures to contain the SSO and recover, where possible, sewage that has already spilled to minimize impact to the public or environment. County crews responding to the incident shall:

1. Determine the immediate destination of the overflow (e.g., street curb gutter, storm drain, drainage channel, creek bed, body of water, etc.).
2. Take immediate steps to contain and recover the overflow (e.g., block storm drain, recover sewage with a vactor truck, dig or construct a containment pond, divert flow into a downstream maintenance hole, etc.).
3. Identify and request, if necessary, assistance or additional County and/or Contractor resources (materials and equipment) to contain or isolate the overflow.
4. Large spills greater than 10,000 gallons include all of the above, a requirement to build additional emergency containment areas downstream of the SSO, if possible, and the initiation of an access plan into storm or flood control channels to contain SSOs that enter the storm drain system.

2.5.2 Additional Measures for Prolonged Overflow Conditions

In the event of a prolonged sewer line blockage or sewer line collapse, responding County crews shall establish a portable by-pass pumping operation around the obstruction, continuously or periodically monitor the by-pass pumping operation, and perform emergency repairs to stop the overflow. Detailed documentation including time stamped photos of all of the above steps should be included. Table 2.2 can be used as a guide to select the appropriate pump.

Table 2.2 Pump Capacity Estimating Table

Pump Size (inches)	Estimated Capacity (gpm)	Equivalent Gravity Sewer Flow (half full sewer)
2 x 2	200	6-inch diameter
3 x 3	450	8-inch diameter
4 x 4	600	10-inch diameter
6 x 6	1,000	12-inch diameter
8 x 8	1,600	15-inch diameter
10 x 10	2,800	18-inch diameter

2.5.3 Correction of SSO Cause

Once the SSO has been contained and the cause determined, efforts to correct the cause of the SSO should commence. These efforts may involve, but not be limited to, removing the pipe blockage by flushing or rodding and repairing a damaged pipeline or maintenance hole. Care must be taken to prevent additional SSOs from occurring as a result of the corrective action taken to resolve the identified problem.

2.5.4 Clean-up

All SSO sites must be thoroughly cleaned as soon as possible after an overflow. No readily identifiable residue (e.g., sewage solids, papers, plastics, etc.) is to remain. Clean-up of all SSOs will be handled according to the following procedures:

- The SSO site must be secured to prevent contact by members of the public until the site has been thoroughly cleaned.
- Where practical, the area shall be thoroughly flushed and cleaned of any sewage or wash-down water using a high-pressure water hose or vactor truck; wash-down water shall be contained and recovered; solids and debris shall be flushed, swept, raked, or manually removed, and hauled away for proper disposal.
- Where appropriate (typically in areas with hard surfaces), areas that were in contact with the sewage shall be cleaned using an approved sanitizing agent and deodorizer.
- If sewage discharged into a body of water that may contain fish or other aquatic life, only environmentally approve sanitizing agents will be applied and the appropriate agency will be contacted.
- Where sanitizing agents are utilized, all contaminants shall be contained and collected for proper disposal.
- Where sewage resulted in ponding, the pond must be pumped dry and the residue removed and disposed of properly.

2.6 Traffic and Crowd Control

The purpose of traffic and crowd control is to limit public access to areas potentially impacted by un-permitted discharges of sewage. The following traffic and crowd control recommendations may be used as a guide for the various types of SSOs.

- Small SSO (Up to 1,000 gallons):
  - Set up cones to direct traffic away from spill area; and
  - Use County personnel to control traffic and pedestrians.
- Medium SSO (1,000 to 10,000 gallons):
  - Perform lane closures as necessary;
  - Place proper signage for any lane closures and contaminated area signs;
  - Close affected entrances or exits from public and private facilities; and
  - Place caution tape and barricades to protect pedestrians from contaminated area.
- Large SSO (greater than 10,000 gallons):
  - Assess spill situation;
  - Inform County of San Diego Sheriff's Department of any law enforcement assistance necessary for roadway closures and traffic control;
  - Delegate responsibility to County DEH of informing public of hazards;
  - Place signage to inform public of potential hazards to public health and safety; and
  - Block public access to hazard using barricades, cones, and caution tape.

2.7 Preliminary Assessment of Damage to Private and Public Property

Initial assessment of the SSO site is performed by the Standby Duty Operator or designated back-up. If it is determined that the SSO has reached a private residence or business, the SSO is reported to the County's Risk Management Division personnel prior to responding County personnel leaving the site. A *Right of Entry* form (see Attachment D) is completed to document County staff's permitted access to the affected site for assessment. The Standby Duty Operator will determine whether the SSO originated from the County's collection system or a private business or residence. Once the source of the SSO is determined, containment and cleanup procedures are executed, and a *Sanitary Sewer Overflow Field Report* (Attachment A) will be completed. The first responder will attempt to document the private property damage through interviews with residents, photo journaling and documenting all damage.

2.7.1 Public Source SSO

If it is determined that the source of the SSO is from the County's wastewater collection system, containment and cleanup procedures are executed to prevent the SSO from reaching adjacent private properties, local water bodies, and the storm drain system. Once the SSO is contained and cleaned, proper documentation utilizing the appropriate forms will be completed.

If it is determined that the SSO has reached a private residence or business, the SSO is reported to the County's Risk Management Division personnel prior to responding County personnel leaving the site. An *Initial Damage Assessment to Private Property* form (see Attachment E) is completed and forwarded with the *Sanitary Sewer Overflow Field Report* to the County's Risk Management Division. Photographs and/or video footage should be taken of the overflow and the area impacted by the SSO, and should be filed with the *Sanitary Sewer Overflow Field Report*.

2.7.2 Private Source SSO

If it is determined that the source of the SSO is from a private property, the First Responder and crews will use discretion in assisting the property owner/occupant as reasonably as they can. County staff is cautioned that County and responding maintenance crews may be liable for further damages inflicted to private property during such assistance. If County wastewater maintenance crews enter private property it should be with the express permission of the owner/occupant of the property. County sewer maintenance crews should not enter private property for the purpose of assessing damage. While on public property, crews are directed to take appropriate still photographs and video footage, if possible, of the surrounding and impacted area in order to thoroughly document the nature and extent of the impacts. Photographs and/or video footage should be filed with the *Sanitary Sewer Overflow Field Report*.

2.8 Notification Requirements

The volume, impact, and location of an SSO determine the level of notifications required to comply with County and regulatory requirements. Table 2.3 provides a summary of the agencies that should be notified of an SSO as soon as practicable without impeding containment or other emergency response measures. Attachment F lists the various agencies to be contacted. The County is not required to send reports to the SDRWQCB; this reporting is now achieved using the web-based on-line SSO reporting system, CIWQS, which is further described in Chapter 4.0.

2.9 Regulatory Agency Notification Plan

The Regulatory Agency Notification Plan establishes procedures that the County will follow to provide formal notice to the SDRWQCB, Environmental Protection Agency (EPA), County DEH, and other agencies as necessary in the event of an SSO. Written notification, when required, shall be made within three (3) business days.

2.9.1 Initial Notification

In the event of an overflow, the County must notify Federal and State Agency representatives as soon as possible, but no later than two (2) hours, after the overflow. Table 2.3 identifies the agencies to be notified and when they are to be notified based on the type and volume of SSO.

The initial, and any updated overflow reports will then be faxed or mailed to the various agencies as necessary and as identified in the Regulatory Agency Notification List, provided as Attachment F. The Standby Duty Supervisor in charge will contact the regulatory agencies.

Additionally, the SWRCB adopted Order No. WQ 2013-0058-EXEC, which amends the Monitoring and Reporting Program No. 2006-0003-DWQ of the Statewide General WDRs for Sanitary Sewer Systems requires that for any discharge of sewage that results in a discharge to a drainage channel or a surface water, the responsible agency shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the California Office of Emergency Services (Cal OES), and the local health officer or directors of environmental health with jurisdiction over the affected water bodies, and the appropriate Regional Water Quality Control Board as soon as practicable.

2.9.2 Secondary Notification

After the appropriate parties on the SSO notification list (Table 2.3) have been contacted, the County will contact all other regulatory agencies (Attachment F) as required, as well as other impacted parties if there has been an overflow.

Table 2.3 SSO Notification Requirements for Regulatory Agencies

Agency/Official	Reasons to Notify	When to Notify
California Office of Emergency Services (Cal OES)	Category 1 SSO ≥ 1,000 gallons	Within 2 hours of becoming aware of discharge
	A sewage discharge reaches or is likely to reach surface water and/or drainage channel tributary to a surface water OR enters a storm drain system and is not fully recovered	
	Private Lateral Sewage Discharge (PLSD) ≥ 1,000 gallons	As soon as practicable
	A sewage discharge reaches or is likely to reach surface water and/or drainage channel tributary to a surface water OR enters a storm drain system and is not fully recovered	
San Diego Regional Water Quality Control Board (SDRWQCB)	Category 1 SSO ≥ 1,000 gallons	As soon as practicable
	A sewage discharge to a drainage channel and/or surface water, or a discharge to a storm drain pipe that is not fully recovered	
	Private Lateral Sewage Discharge (PLSD) ≥ 1,000 gallons	Within 24 hours of becoming aware of discharge
	A sewage discharge reaches or is likely to reach surface water and/or drainage channel tributary to a surface water OR enters a storm drain system and is not fully recovered	

Agency/Official	Reasons to Notify	When to Notify
County of San Diego Department of Environmental Health	A sewage discharge to a drainage channel and/or surface water, or a discharge to a storm drain pipe that is not fully recovered	As soon as practicable
San Diego County Flood Control District	A sewage discharge to a drainage channel and/or surface water, or a discharge to a storm drain pipe that is not fully recovered	As soon as practicable
City of San Diego Police Department, Emergency Services	Public Safety concerns, such as assistance with traffic control	As soon as practicable
California Department of Fish and Game-South Coast Region	A sewage discharge to a drainage channel and/or surface water, or a discharge to a storm drain pipe that is not fully recovered	As soon as practicable
Downstream Receiving Agency	A discharge has entered storm water system maintained by another agency	As soon as practicable

2.10 Monitoring and Mitigation

The First Responder who confirmed the SSO must ensure that the provisions of this SSOERP and other directives are met. County staff shall conduct an assessment of the impacts following an SSO. County staff shall appropriately mitigate and monitor the site for potential future SSOs and to prevent SSOs from re-occurring.

The SWRCB adopted Order No. WQ 2013-0058-EXEC requires that an SSO Water Quality Monitoring Program be developed to assess the impacts of SSOs in which 50,000 gallons or greater are spilled to surface waters. The SDRWQCB, in conjunction with the County DEH, will determine the extent of the water quality testing that is required to be conducted based on the volume and location of the SSO. The types and frequency of the testing to be performed is generally based on the estimated volume of the SSO and the affected or potentially affected body of water. The SSO Water Quality Monitoring Program shall, at a minimum:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g., safety, access restrictions, etc.)
3. Require water quality analysis for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
    a. Ammonia.
    b. Appropriate bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform enterococcus, and e-coli.

2.11 SSO Documentation

Documenting SSOs and the causes provides information for:

- Management for performance measurement and decision-making.
- Regulators to meet established reporting requirements.
- Planning future maintenance and repair activities.
- Engineering determinations regarding capacity, rehabilitation, or replacement.
- Reference for historical performance or claims.

It is the responsibility of the Standby Duty Supervisor to confirm that the SSO is properly investigated and documented. The Standby Supervisor shall create a work order in Cityworks documenting the equipment, labor, material, location, and specifics for each SSO. Information compiled during the investigation of the SSO shall be recorded on the *Sanitary Sewer Overflow Report* as shown in Attachment G. Copies of supporting information shall be compiled. The minimum information required from the investigation is:

- Cause of SSO.
- Volume of SSO including volume released and volume recovered.
- Location of point of discharge, including Thomas Guide map page.
- Ultimate destination of the SSO.
- Impact and extent of impact.
- Estimated start time of SSO.
- Time County received notification of SSO.
- Arrival time of crew(s) and time to correct the SSO.
- End time of SSO.
- Water body impacted and results of bacteriological monitoring, if applicable.
- Actions taken to mitigate the SSO.
- Notifications to regulators and others.
- Timestamped photo documentation of the SSO discharge through mitigation effort as well as containment, traffic control, mitigation, and cleanup.

A variety of approaches exist for estimating SSO volumes. Attachment H provides guidance on estimating the volume of sewage that escaped from the wastewater collection system and the amount of sewage recovered.

The First Responder shall follow up, in person or by telephone, with the person(s) initially reporting the SSO. The cause of the SSO and its resolution should be disclosed.

Chapter 3

PUBLIC ADVISORY OF SEWAGE CONTAMINATION PROCEDURES

This chapter describes the action that the County must take to limit public access to surface waters and other areas potentially impacted by SSOs from the wastewater collection system.

The County DEH has primary responsibility for determining when to post notices of polluted surface waters or ground surfaces that resulted from uncontrolled wastewater discharges from its facilities. The County DEH may also make a determination and direct the County to post notices. The postings do not necessarily prohibit the use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination.

The posting of notices shall be done as soon as practicable following the initial response to the overflow. Signs should be posted on either side of the point of entry where sewage entered the body of water or public facility and the nearest public access point to that body of water or public facility. Examples of signs are included in Attachment I.

Staff shall regularly inspect the posted notices and replace any missing or damaged warning signs. Posted notices shall not be removed until it is determined that the threat to public health and safety is eliminated or at the direction of the County DEH.

Should additional notification of sewage contamination be deemed necessary, County staff shall, in cooperation with the County's Communications Officer, provide further notices through the use of pre-scripted notices made available to the printed or electronic news media for immediate publication or airing, or by other measures, such as door hangers. Examples of pre-scripted notices, which are included in Attachment J, should be modified to accurately reflect the conditions at the time of publication and/or airing. Information specific to the SSO occurrence may be included where text is underlined or in parenthesis.

Chapter 4

SSO MONITORING AND REPORTING REQUIREMENTS

County staff shall monitor and report SSOs regardless of size and recovery that originate from the County's wastewater collection system. The County is also required to report any known SSOs that occur on private property from private laterals. This chapter details the reporting procedures necessary to comply with SWRCB and County requirements.

4.1 SSO Identification, Tracking, and Logging

A Cityworks' work order must be created to track and monitor each SSO event. Using a completed Sanitary Sewer Overflow Field Report form (Attachment A) and a completed Sanitary Sewer Overflow Report form (Attachment G), the Sanitation Regional Supervisor can create or update the work order and enter the necessary data from the forms. All forms, documentation, and monitoring results should be kept with the work order.

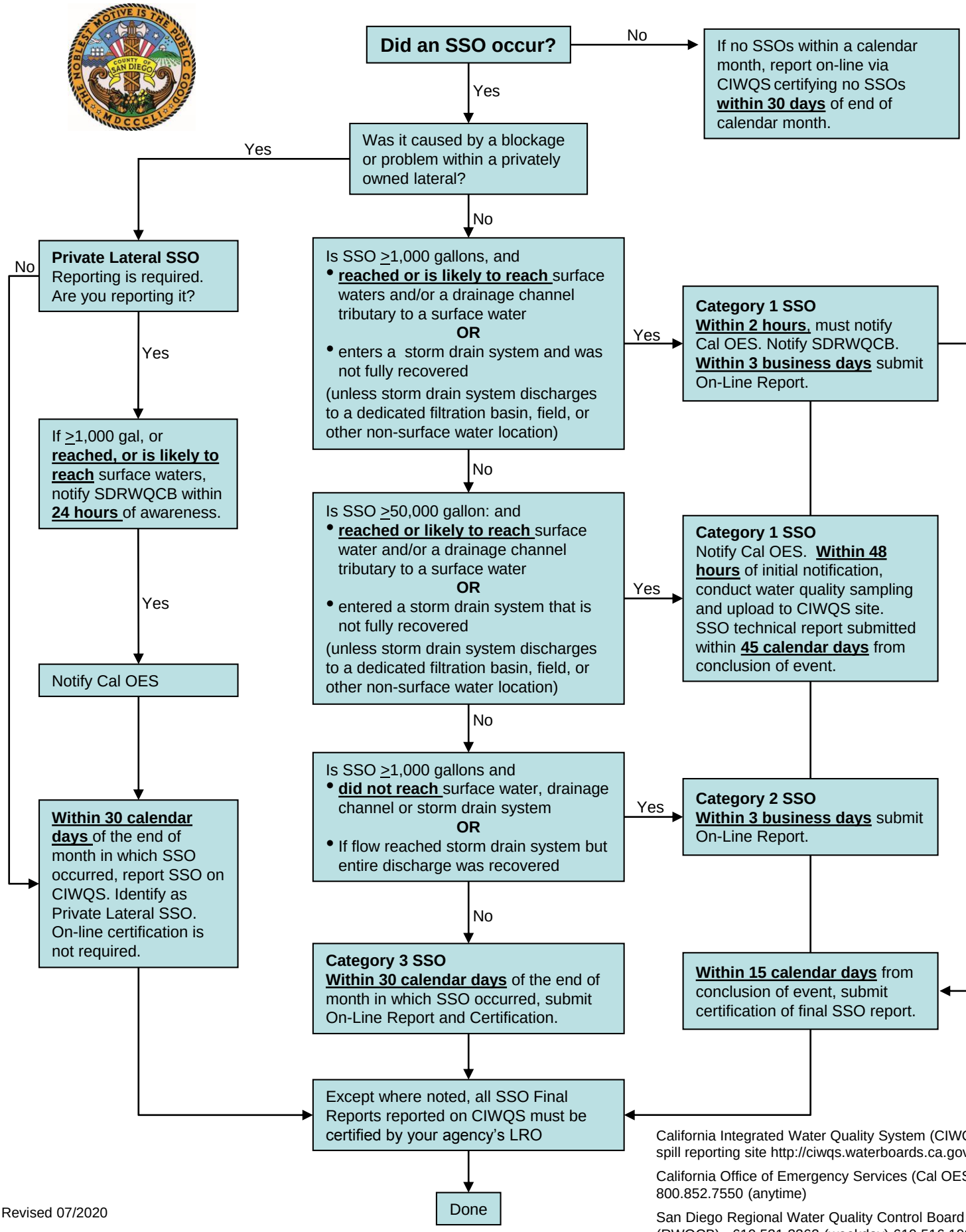
4.2 SSO Category Classification

SSOs are divided into four categories:

- Category 1 Sanitary Sewer Overflow: All discharges of sewage resulting from a failure in the County's wastewater collection system that:
  - Results in a surface water and/or reaches a drainage channel tributary to a surface water; or
  - Reaches the storm drain system and is not fully captured and returned to the sewer system or not otherwise captured and disposed of property.
  - Results in any volume of wastewater not recovered from the storm drain system unless the storm drain system discharges to a dedicated groundwater infiltration basin.
- Category 2 Sanitary Sewer Overflow: All non-Category 1 SSO discharges of sewage resulting from a failure in the County's wastewater collection system that:
  - Equals or exceeds 1,000 gallons; or
  - Reaches the storm drain system and is fully captured and returned to the sewer system or disposed of property.
- Category 3 Sanitary Sewer Overflow: All other discharges of untreated or partially treated wastewater resulting from an enrollee's sewer system failure or flow condition.
- Private Lateral Sewage Discharge: Sewage discharges that are caused by blockages or other problems within a privately owned lateral.

Figure 4.1 shows a flow chart that will guide County staff in determining the category classification of an SSO, and the reporting requirements that are necessary.

Sanitary Sewer Overflow Reporting Requirements



California Integrated Water Quality System (CIWQS) - spill reporting site http://ciwqs.waterboards.ca.gov

California Office of Emergency Services (Cal OES) - 800.852.7550 (anytime)

San Diego Regional Water Quality Control Board (RWQCB) - 619.521.3362 (weekday) 619.516.1990 (weekend) 858.571.6972 (fax)

Revised 07/2020

Figure 4.1 Sanitary Sewer Overflow Reporting Requirements

4.3 On-Line Reporting Requirements

As of January 2, 2007, the WDRs require that County report SSOs using the CIWQS, an internet-based reporting system. This section describes the reporting procedures.

4.3.1 Reporting Authority and Access

At a minimum, the County is required to have one (1) Legally Responsible Official (LRO) who is registered with the State of California to officially sign and certify SSO reports submitted via the CIWQS web-site. Currently, the Director of Public Works is identified as the County's LRO. The County has identified the Wastewater Facilities LUEG Program Manager within the Engineering Services Division's WWM Section as an additional LRO to act as a backup.

The County must also identify Data Submitters. These are individuals registered with the State to enter SSO data, create and edit SSO reports, and review data. Data Submitters cannot certify reports. Data Submitters are typically the First Responders to an SSO location, or the person who collects the SSO data for reporting. The County can identify and register as many Data Submitters as deemed necessary.

The County obtained a unique Waste Discharge Identification Number (WDID) for several of its Service Areas, collection systems and facilities. Table 4.1 includes the various WDID numbers issued to the County.

Table 4.1 County of San Diego Service Areas and WDID Numbers

County Service Areas	WDID No.
County of San Diego Collection System Alpine Service Area Lakeside Service Area Spring Valley Service Area Winter Gardens Maintenance District East Otay Mesa Service Area	9SSO10662
Campo Water & Sewer Service Area (Rancho Del Campo CS)	9SSO10689
Julian Service Area (Julian Water Pollution Facility)	9SSO10673

All LROs and Data Submitters receive a unique logon and password. This information should be guarded and protected. If an authorized user suspects his or her logon and password has been lost, stolen, or otherwise compromised, that person shall contact the SWRCB via the CIWQS help desk at 866-792-4977.

4.3.2 Mandatory Information to Report via CIWQS

Specific mandatory information must be included for each SSO report submitted via CIWQS, prior to finalizing and certifying an SSO report.

The following information is required for all Category 2 SSOs:

1. Name of person notifying Cal EMA and direct return phone number.
2. Location of SSO using Global Positioning System (GPS) coordinates.
3. Regional Water Quality Control Board (County of San Diego is in Region 9).
4. County in which SSO occurred (San Diego County).

5. Whether the SSO entered a drainage channel and/or surface water.
6. Whether the SSO was discharged into a storm drain pipe that was not fully captured and returned to the wastewater collection system.
7. Estimated SSO volume and determination for calculating estimated volume in gallons.
8. SSO source (e.g., maintenance hole, cleanout, pipeline, etc.).
9. SSO cause (e.g., mainline blockage, roots, grease, etc.).
10. Time of SSO notification or discovery.
11. Estimated operator arrival time.
12. SSO destination.
13. Estimated SSO end time.

The following information is required for all Category 1 SSOs:

1. All information listed for Category 2 SSOs.
2. Estimated SSO volume and determination for calculating estimated volume that reached surface water, drainage channel, or not recovered from a storm drain.
3. Estimated SSO volume recovered.
4. Response and corrective action taken.
5. If bacteriological samples were taken identify which regulatory agencies received sample results; if no samples were taken then N/A must be selected.
6. The parameters that samples were analyzed for (if applicable).
7. Whether health warning signs were posted.
8. Beach(es) impacted, if none then N/A must be selected.
9. Whether there is an ongoing investigation.
10. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO and a schedule of major milestones for those steps.
11. OES control number (if applicable).
12. Date OES was initially called (if applicable).
13. Time OES was initially called (if applicable).
14. Identification of whether County DEH Officers were called.
15. Date County DEH Officers were initially called (if applicable).
16. Time County DEH Officers were initially called (if applicable).

SDRWQCB requires that all private lateral SSOs brought to the attention of the County must be reported. The following information is required for Private Lateral Sewage Discharges:

1. All information listed for Category 2 SSOs.
2. Identification of sewage discharge as a private lateral sewage discharge.
3. Responsible party contact information, if known.

The CIWQS reporting requirements are not in lieu of other reporting requirements. The County must also perform Regional Board reporting requirements, the Governor's OES reporting, and notifications to the County DEH.

Once the data is properly entered into the CIWQS database, and the SSO investigation is complete, the SSO report must be certified by the LRO based on the reporting requirements summarized in Table 4.2.

Table 4.2 CIWQS Reporting Time Requirements

SSO Type	Initial CIWQS Report	Certification Requirements
Category I SSO	Within 3 business days	Within 15 calendar days of the conclusion of the SSO response and remediation
Category II SSO	Within 3 business days	Within 15 calendar days of the conclusion of the SSO response and remediation
Category III SSO	Within 30 calendar days of the end of the month in which SSO occurred	Within 30 calendar days of the end of the month in which SSO occurred
Private Lateral SSO		
No Monthly SSOs		

4.3.3 Monthly Reporting Requirement if no SSOs

For each month that no SSOs are identified and reported via CIWQS, the County's LRO must prepare and submit a statement in the CIWQS SSO Database, certifying that there were no SSOs for the designated month. This report must be submitted within 30 days after the end of each calendar month with no SSOs, as noted in Table 4.2.

4.3.4 Alternative Reporting Procedures when On-Line Reporting is Unavailable

In the event that the CIWQS SSO On-line Database is not available to submit required reports or certify reports, County staff must fax all required information to the SDRWQCB office in accordance with the time schedules identified in Table 4.2. The County is also obligated to enter all required information into the On-line SSO Database as soon as practicable.

4.4 Record Keeping and Document Retention

The County must retain individual SSO records for a minimum of five (5) years from the date of the SSO occurrence. This period may be extended when requested by a SDRWQCB Executive Officer. All records shall be made available for review upon State or Regional Board staff's request.

Per Order No. WQ 2013-0058-EXEC, specific records that must be retained include, but are not limited to:

1. General Records to document compliance with all provisions of the SSS WDRs and the Monitoring and Reporting Program for each sanitary sewer system owned including any required records generated by the County's sanitary sewer system contractors;
2. SSO Records for each SSO event including, but not limited to:
    a. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not resulting in SSOS.
        i. Date, time, and method of notification.
        ii. Date and time of complainant or information first noticed the SSO.
        iii. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the

potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.

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

v. Final resolution of the complaint.

b. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with Section D.7 pf the WDRs.

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

4. Records documenting all changes made to the Sewer System Management Plan (SSMP) since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized change or update.

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

   a. SCADA system.

   b. Alarm System.

   c. Flow monitoring devices.

To facilitate the County's ability to report regularly on SSOs, the Sanitation Regional Supervisor should track information pertaining to each SSO. The Sanitation Regional Supervisor should document data as soon practicable after an SSO event. This data can be queried for trends and used as a cross reference for the on-line SSO reporting requirements.

Chapter 5

TRAINING

Appropriate staff will participate in regularly scheduled training sessions to assist response crews in awareness of their responsibilities and executing their duties. These training sessions will be organized based on the latest SSOERP, as well as other reference materials. Training sessions shall also incorporate hands-on field demonstrations to insure the preparedness of all response personnel to all anticipated situations.

An overview of the SSMP and the SSOERP should be provided to County staff. This will serve as a mode of instructing staff on the SSMP, SSOs, and required documentation. Field demonstrations will be performed to test equipment, response time, training effectiveness, resources, and manpower capabilities.

Training and event participation will be documented and maintained. Currently, District Engineering staff is encouraged to receive training through various vendors and to participate in Collection System Maintenance classes, and obtain Wastewater Treatment Certification through the California Water Environment Association. Additional certification requirements may be imposed in the future if deemed necessary by the SDRWQCB.

Chapter 6

UPDATING THIS SSOERP

This SSOERP reflects the County's established procedures for responding to reports of possible and confirmed SSOs originating from its wastewater collection system. As policies change and response procedures are refined, the SSOERP will be reviewed and modified to reflect all necessary changes.

6.1 SSOERP Availability

The SSOERP will be reviewed annually to ensure that all information is updated. The amended SSOERP will be distributed to the appropriate staff, County Departments, SDRWQCB, and be made available to the public for review. Staff shall ensure that this SSOERP is readily available to wastewater maintenance personnel, and that said personnel are familiar with the plan and comply with it at all times.

6.2 Review and Update of the SSOERP

County staff shall maintain this SSOERP, and amend or update it as necessary by the addition of new facilities, or changes in the operation or maintenance of the wastewater collection system that may materially affect the potential for SSOs. At a minimum, the plan will be reviewed annually and will include updating telephone numbers and forms in the appendices and a review of procedures. The annual review of the plan will also ensure all provisions of the plan are being met and implemented. County staff shall also review and amend this SSOERP as appropriate after any SSO occurrence. SSOERP deficiencies and updates will be addressed and modified accordingly. The plan performance will be routinely evaluated, reviewed and updated.

Attachment A

SANITARY SEWER OVERFLOW FIELD REPORT FORM

COUNTY OF SAN DIEGO
SANITARY SEWER OVERFLOW FIELD REPORT

PART A: INITIAL NOTIFICATION

Tracking # _____

Date Reported: _____ Time Reported: _____ (00:00)

Reported by – Name: _____ Phone Number: _____

Address or Agency: _____

Location of Overflow: _____

Cross Street: _____ Thomas Brothers Grid: _____

Reason for call-out: ☐ Stoppage/Overflow ☐ Pump Station Alarm ☐ Other: _____

Stoppage in: ☐ Mainline ☐ Private Lateral Sewer Overflow Structure ID: _____

Cause of Stoppage: _____

Responsible Party: ☐ County ☐ Private ☐ Other: _____

PART B: INITIAL RESPONSE

Time Arrived at Site: _____ Responding Supervisor: _____

Crew Members: _____

Date Overflow Started: _____ Date Overflow Stopped: _____

Time Overflow Started: _____ Time Overflow Stopped: _____

Est. Overflow Rate (gpm): _____ Est. Overflow Volume (gal): _____

Duration of Flow: _____ Overflow Volume Recovered (gal): _____

Reach Storm Drain: ☐ Yes ☐ No Final Destination of Overflow: _____

Reach Surface Water: ☐ Yes ☐ No If YES, Name of Surface Water: _____

Pictures/Video Taken: ☐ Yes ☐ No Samples Taken: ☐ Yes ☐ No

Location of Blockage: MH MH Overflow Maintenance Hole MH _____

Signs Posted: ☐ Yes ☐ No Sewer Main or Private Lateral: _____

Barricade: ☐ Yes ☐ No County Health Dept. Notified: ☐ Yes ☐ No

Cause of Overflow: (Check All that Apply)

☐ Blockage	☐ Roots	☐ Grease
☐ Flood/Rain	☐ Infiltration	☐ Line Break
☐ Construction	☐ Private Property	☐ Vandalism
☐ Rocks	☐ Debris	☐ Power Failure
☐ Pump Station	☐ Manhole	☐ Unknown

☐ Other: _____

Containment Materials: _____ Responsible Agency: _____

Cleanup Method: _____

*Sketch Area on Back of Sheet

SKETCH OF AREA: (Include time-stamped photo documentation, manholes, intersections, location of blockage, etc.)

Completed by:_____ **Agency:**_____ **Date:**_____

Attachment B

STANDBY COUNTY STAFF

STANDBY STAFF CONTACT INFORMATION

County of San Diego

Wastewater Management Staff	Contact Name	Telephone Number	Cell Number
Sanitation Regional Supervisor	Gary Harris	619-660-2007	619-496-7110
Senior Equipment Operator	Allen Williams	619-660-2007	*619-823-8212
Senior Equipment Operator	Ricardo Mendoza	619-660-2007	*619-823-8212
Equipment Operator	Steve Williamson	619-660-2007	*619-823-8212
Equipment Operator	Bertram Cordova	619-660-2007	*619-823-8212
Equipment Operator	Alfonzo Vargas	619-660-2007	*619-823-8212
Equipment Operator	Michael Sherman	619-660-2007	*619-823-8212
Equipment Operator	Misael Sanchez	619-660-2007	*619-823-8212
Equipment Operator	George Irons	619-660-2007	*619-823-8212
Equipment Operator	Marco Burciaga	619-660-2007	*619-823-8212
Equipment Operator	Carlos Gallardo	619-660-2007	*619-823-8212
Wastewater Facilities Supervisor	Lance Gayer	619-660-2008	858-248-5237
Wastewater Plant Operator III	Keith Kelly	619-660-2008	619-851-4202
Wastewater Plant Operator III	Brandon Asoro	619-660-2008	619-226-9419
Wastewater Plant Operator III	Del Bunselmeier	619-660-2008	619-204-1607
Wastewater Plant Operator II	Gary Henry	619-660-2008	619-538-1347
Wastewater Facilities Supervisor	Jim Dohrer	760-756-0273	858-204-1648
Wastewater Plant Operator II	Christine Lavoie	760-756-0273	619-823-8478
Wastewater Plant Operator II	Randy Rush	-	858-472-0167
Wastewater Plant Operator II	Matthew Earnhart	619-985-7539	-
Collections Engineering and Operations, Senior Civil Engineer	Ted Kautzman	858-694-2919	858-805-1200
Facility Engineering & Operations, Unit Manager	Kay Kim	858-694-3921	858-602-9730
LUEG Program Manager	Dan Brogadir	858-694-2714	858-822-8856
Deputy Director	Bill Morgan	858-694-3087	--
Administrative Unit Manager	Peejay Tubongbanua	858-694-2659	619-417-5625

* Revolving Stand-by Cell Number

Attachment C

COUNTY APPROVED CONTRACTORS AND EQUIPMENT RENTAL VENDORS

COUNTY APPROVED CONTRACTORS AND EQUIPMENT RENTAL VENDORS

County of San Diego

Contractors:

Contractor Name	Address	Telephone No.	Contact Name	Services Provided
Liquid Environmental Solutions	12740 Vigilante Rd. Lakeside, CA 92040	800-491-7867 619-443-7867	Main Line – Peter Crane	Pumping, transportation and disposal of sludge, grease, scum and related liquid wastes
Sludge Busters	321 B St. Ramona, CA 92065	760-789-9973	Main Line – Ed Kapelczak	Pumping, transportation and disposal of sludge, grease, scum, and related liquid wastes
Bonita Pipeline, Inc.	2209 Highland Avenue National City, CA 91950	619-434-9801 619-520-3350	Main Line - Frank Marquez	General Engineering Contractor, Plumbing and pipe repairs, excavation, concrete, structural. (Class A)
Underground Utilities Incorporated	9102 Harness Street, Suite B, Spring Valley, CA 91977	619-461-9500 619-654-1301	Main Line - Michael Harness	General Engineering Contractor, Plumbing and pipe repairs, excavation, concrete, structural. (Class A)
C.E. Wilson	662 Grand Ave, Spring Valley, CA 91977	619-464-6721 619-520-6564	Main Line – Brian Wilson	General Engineering Contractor, Plumbing and pipe repairs, excavation, concrete, structural. (Class A)

Equipment Vendors:

Vendor Name	Address	Telephone No.	Contact Name	Available Equipment
Godwin Pumps	11161 Harrel St. Mira Loma, CA 91752	951-681-3636 951-790-6264	Main Line – Eric Burleigh	Various portable pumps for as- needed emergency and/or back-up services for sewage lift stations

Attachment D

OWNER/RESIDENT INFORMATION AND RIGHT-OF-ENTRY FORM

County of San Diego

JEFF C. MONEDA
DIRECTOR

DEPARTMENT OF PUBLIC WORKS
5510 OVERLAND AVENUE, SUITE 410
SAN DIEGO, CA 92123-1237
(858) 694-2212
www.sdcounty.ca.gov/dpw/

c/o SAN DIEGO COUNTY SANITATION DISTRICT
SEWAGE SYSTEM FAILURE INCIDENT
OWNER/RESIDENT INFORMATION AND RIGHT-OF-ENTRY

Property:_____
(Street address)

Resident:_____Tel.No._____
(Full name(s))

Owner (if different from Resident):_____Tel. No._____
(Full name(s))

Address of Owner (if different from Resident):_____

As an Owner/Resident of a building served by the San Diego County Sanitation District, 5500 Overland Avenue, Suite 315, San Diego, CA 92123, (858) 514-4990 ("District"), it is the District's goal to at all times provide quality and functional sewer service.

In order for the District to assess and potentially take action to remediate a sewer system back-up or other sewer service failure ("Sewer System Failure"), it is necessary for the Owner/Resident to grant the District the right to enter the impacted private property. Owner/Resident hereby

❑ Authorizes ❑ Does not authorize

the District the right to enter the above identified Property under the following terms and conditions:

Right-of-Entry: Owner/Resident hereby grants the District, and the District's officers, employees, agents, and contractors (collectively "District Staff"), the right to enter onto the Property and into any structures on the Property to ascertain the cause and extent of the Sewer System Failure. District Staff may take photographs and perform non-destructive tests or inspection activities to attempt to ascertain the cause and extent of the Sewer System Failure. Following the inspection, District Staff shall promptly inform

the Owner/Resident if the District is able to perform any work to address the Sewer System Failure. Owner/Resident grants District Staff the right to enter onto the Property to stop the overflow of sewage by any reasonable means; remove wastewater liquids, particulates and other material; conduct disinfection activities; and perform remediation and repair work.

Denial/Termination: Owner/Resident may request that District Staff cease all or some inspection or other activities and leave the Property or any portion of the Property or structure on the Property at any time. District Staff shall promptly cease activities and leave the Property or portion of the Property or structure as requested by the Owner/Resident.

Self-Repair/Contractor of Choice: Owner/Resident may at any time refuse to allow District Staff to perform damage assessment, clean-up, disinfection, remediation work repairs or other work on the Property. Upon the passage of a reasonable time following Owner/Resident notifying District of the refusal, the Owner/Resident shall allow District to remove any equipment, supplies or tools on the Property. Upon removal of the equipment, supplies or tools, District Staff's right of entry to perform clean-up and remediation work shall terminate.

Claims: Owner/Resident may file a claim pursuant to the Government Claims Act, Government Code Section 810 et seq., against the District for personal injury, property damage, temporary lodging, and other expenses Owner/Resident feels should be paid by District as a result of the Sewer System Failure. All claims should be submitted with receipts, invoices, cancelled checks and other documents evidencing the expense and payment(s) made by Owner/Resident. Claim forms are available on the County of San Diego website at https://www.sandiegocounty.gov/content/sdc/dpw/wasteh2o/blockages-spills/sanitary-sewer-overflows-sso-.html.

Not an Admission of Fault: Any offer by District Staff to enter onto the Property and any structure located within the property, to perform any testing or inspections, or to perform any clean-up, remediation or other work, shall not be construed as an admission of fault or liability by the District nor be understood or interpreted as a reason for Owner/Resident to fail to take reasonable steps to limit loss or harm from the Sewer System Failure. Owner/Resident should take reasonable action to protect persons and property from injury as a result of any Sewer System Failure regardless of any action taken by District Staff.

Resident:_____
Signature

Owner:_____
Signature (if available and different from Resident)

Attachment E

INITIAL DAMAGE ASSESSMENT FORM FOR PRIVATE PROPERTY

Attachment E
Initial Damage Assessment Form for Private Property

Private Property
Initial Damage Assessment Form

The information requested on this form is for the purpose of documenting the possible impacts and extent of damage caused by a sanitary sewer overflow at, or as close to, the time of the event. By using this form, the County, its employees, elected officials, contract staff, and volunteers do not admit liability or culpability for the damage being documented.

INSTRUCTIONS: County staff at the SSO location are instructed to write notes, take photographs, and, if possible, video record the visible area without entering the private property. Please complete as much of this form a possible. Keep a copy and submit this form to Risk Management.

SSO INFORMATION

Date of SSO event: _____ Tracking #: _____

Location of SSO Event: _____
(ADDRESS)

Cross Street: _____ Thomas Brothers Grid: _____

AFFECTED PROPERTY

Address of Private Property: _____

_____ Zip Code:_____

Owner/Occupant Name(s): _____

Owner/Occupant Telephone Number(s): _____

INITIAL DAMAGE ASSESSMENT

Brief Description of Damage: _____

_____

_____

_____

_____

Reported by (name and title): _____

Dated: _____

(attach sketches, photographs, and other items documenting the extent and impact of damage)

Attachment F

SANITARY SEWER OVERFLOW NOTIFICATION LIST

SANITARY SEWER OVERFLOW NOTIFICATION LIST

County of San Diego

Contact List	Contact Name	Telephone No.	Non-Business Hours
San Diego Regional Water Quality Control Board (RWQCB)	Keith Yeager or Casey Eggert	619-521-3362	619-516-1990 and 619-521-5899
California Emergency Management Agency (Cal OES)	-	916-845-8911	800-852-7550
San Diego County Department of Environmental Health	Joseph Palmer	858-495-5579	858-505-6657 or 858-505-6640
San Diego County Flood Control District	-	858-565-5262	858-565-5262
San Diego County Storm Water Management Program	-	858-495-5318	888-846-0800
County of San Diego Sheriff's Department - Emergency Services	-	858-565-5200	-
County San Diego Fire Department			
Alpine	-	619-445-2635	-
East Otay Mesa	-	-	-
Julian - Cuyamaca	-	760-765-1510	-
Lakeside	-	619-390-2350 ext. 306	-
Pine Valley	-	619-473-8445	-
Spring Valley	-	-	-
Winter Gardens	-	619-590-3100	
Campo	-	-	-
California Highway Patrol (CHP)	-	800-835-5247	-
Caltrans District 11	-	619-688-6699	-
Hazardous Incident Response Team (HIRT)	Nick Vent	619-338-2217	Station M: 858-565-5255

SSO that may enter the Sweetwater Reservoir

Contact Name	Title	E-mail Address	Office Phone	Cell Phone
Justin Brazil	Interim Director of Water Quality	jbrazil@sweetwater.org	619-409-6812	619-729-7346
Plant Operator	Water Treatment Plant Operators		619-409-6800	
Giovanni Outlaw	Water Treatment Plant Operator Supervisor	goutlaw@sweetwater.org	619-409-6803	619-980-6829
Davis Doane	Plant Maintenance Supervisor	ddoane@sweetwater.org	619-409-6807	619-322-4758
Mark Hatcher	Laboratory Supervisor/Regulatory Analyst	mhatcher@sweetwater.org	619-409-6813	619-797-0630

24-hour Emergency Contact

Contact	Phone Number
Sweetwater Reservoir	619-420-1413
Padre Dam	619-448-3111
El Cajon	619-579-3311
Helix Water	619-466-0585

Attachment G

SANITARY SEWER OVERFLOW REPORT FORM

Attachment G
Sanitary Sewer Overflow Report Form

COUNTY OF SAN DIEGO
SANITARY SEWER OVERFLOW REPORT

CIWQS Identifier: _____ **Tracking #**_____

This report is: ☐ Preliminary ☐ Final ☐ Revised

Reporting Details

Name & Title of Person Completing this Report:_____

Phone #_____ Date:_____ Time:_____(00:00)
(24-hour clock)

Name of Person/Agency First Reporting SSO:_____

Phone #_____ Date:_____ Time:_____(00:00)
(24-hour clock)

Location of Overflow

Street Address: _____Nearest Cross Street:_____

Thomas Brothers Grid:_____ Latitude of SSO:_____Longitude of SSO:_____

City: _____ County: _____ Zip:_____

Location of Potential Blockage or Problem Point: From MH#: _____ To MH#:_____

SSO Appearance Point: ☐Building ☐Force Main ☐MH ☐Sewer ☐Pump Station

☐Other:_____

Terrain at SSO Location: ☐Flat ☐Mixed ☐Steep

Diameter of Sewer:_____in Material of Sewer:_____ Estimated Age:_____yrs

SSO Details

Estimated Overflow **START**: Date:_____ Time:_____(00:00)
(24-hour clock)

Estimated **ARRIVAL** of Operator: Date:_____ Time:_____(00:00)
(24-hour clock)

Estimated Overflow **STOP**: Date:_____ Time:_____(00:00)
(24-hour clock)

Duration of Spill (in minutes) = _____ Minutes

Estimated Overflow Rate: _____gpm Total Volume of SSO: _____gal

SSO Volume Recovered: _____gal SSO Volume Lost: _____gal

SSO Cause: ☐Debris ☐Flow Exceeded Capacity ☐FOG ☐Blockage ☐Roots ☐Infiltration

☐Operator Error ☐Structural Problem ☐Pump Station Failure ☐Vandalism ☐Power Failure

☐Construction ☐Rainfall ☐Other:_____

If wet weather caused the SSO, chose storm size:

☐1yr ☐2yr ☐5yr ☐10yr ☐50yr ☐100yr ☐>100yr ☐Unknown

SSO Destination Details

SSO Final Destination: ☐Beach ☐Building ☐Paved Surface ☐Unpaved Surface ☐Storm Drain

☐Curb & Gutter ☐Surface Water ☐Other:_____

If SSO reached a storm drain, give street location (Specify N/S/E/W side):_____

Describe distance (feet) and path taken from SSO to storm drain inlet:_____

_____

If SSO reached surface waters, describe Receiving Waters:_____

If applicable, name and/or describe Secondary Receiving Water:_____

Response

Response Activities (Check ALL that Apply): ☐Contained All or Part of SSO ☐Restored Flow

☐Returned All or Part of SSO to Sewer ☐Cleaned Up ☐CCTV

☐Other:_____

Responding County Personnel:	Time Arrived:	Time Departed:
_____	_____	_____
_____	_____	_____
_____	_____	_____

Equipment Used:_____

Other Responding Agency/Contractor:_____

_____

SSO Clean-up Details

Materials Used for Containment:_____

Washwater Disposal Method:_____

Volume of Washwater Used: _____gal

Combined Volume of Recovered Washwater and Sewage-Contaminated Water: _____gal

Combined Volume of Lost Washwater and Sewage-Contaminated Water: _____gal

Miscellaneous (*Attach photos, correspondence, or follow-up reports that provide detailed information.*)

Remarks:_____

_____

_____

_____

Prevention Plan

Steps, taken or planned, to reduce or eliminate re-occurrence of SSO:_____

_____

_____

Schedule of any MAJOR milestones or improvements:_____

_____

Steps, taken or planned, to mitigate the impacts of the SSO:_____

_____

_____

Schedule of any MAJOR milestones or improvements:_____

_____

Notification Contact List (C*heck all who were notified.*)

Name/Agency	Phone #	Time	Date
☐ Regional Board (SDRWQCB)	(858) 467-2952		
☐ Office of Emergency Services (OES)	(800) 852-7550		
☐ Department of Environmental Health	(858) 495-5579		
☐ Risk Management Office	(619) 578-5756		
☐ Sheriff Dept-Emergency Services	(858) 565-5200		
☐ Local Fire Department			
☐ San Diego Flood Control District	(858) 565-5262		
☐ Contracting Agencies			
☐ California Department of Fish &Game	(916) 445-0411		
☐ Other_____			

MUST notify OES, County of San Diego Department of Environmental Health, and SDRWQCB within **2 HOURS** of becoming aware of an SSO reaching storm pipes, drainage channels, and/or surface waters

OES Control #_____

Report faxed to RWQCB? ☐Yes ☐No If yes, date and time of fax:_____

Public Use Closures

Were signs posted warning of contaminants? ☐Yes ☐No Dates Posted:_____

Location of Postings:_____

Were samples obtained of contaminated water? ☐Yes ☐No (Attach any and all results.)

Attachment H

POSSIBLE METHODS FOR ESTIMATING SPILL VOLUME

Attachment H
Possible Methods for Estimating Spill Volume

Possible Methods for Estimating Spill Volume

A variety of approaches exist for estimating the volume of a sanitary sewer overflow. This attachment documents four methods that are most often employed. Other methods are also possible. The person preparing the estimate shall use the method most appropriate to the SSO in question using his/her judgment. Every effort shall be made to make the best possible estimate of the volume.

Method 1 Eyeball Estimate

The volume of very small SSOs can be estimated using an "eyeball estimate." To use this method, imagine the amount of water that would spill from a bucket or a barrel. A bucket contains 5 gallons and a barrel contains 50 gallons. If the SSO is larger than 50 gallons, try to break the standing water into barrels and then multiply by 50 gallons. This method is useful for contained spills up to 100 gallons.

Method 2 Measured Volume

The volume of some small SSOs can be estimated using this method if it is not raining. In addition, the shape, dimensions, and depth of the spilled sewage are needed. The shape and dimensions are used to calculate the area of the spill and the depth is used to calculate the volume.

Step 1: Sketch the shape of the contained sewage

Step 2: Measure or pace off the dimensions

Step 3: Measure the depth in several locations

Step 4: Convert the dimensions, including depth to feet

Step 5: Calculate the area using the following formulas:

Rectangle	Area = length x width
Circle	Area = diameter x diameter x 0.785
Triangle	Area = base x height x 0.5

Step 6: Multiply the area times the depth

Step 7: Multiply the volume by 7.5 to convert it to gallons

Method 3 Duration and Flow Rate

Calculating the volume of SSOs where it is difficult or impossible to measure the area and depth requires a different approach. In this method separate estimates are made of the duration of the SSO and the flow rate. The methods of estimating duration and flow rate are:

Duration: The duration is the elapsed time from the start time to the end time, when the SSO stopped.

Start time is sometimes difficult to establish. Here are two approaches:

- For very large overflows, changes in flow on a downstream flow meter can be used to establish the start time. Typically the daily flow peaks are “cut off” or flattened by the loss of flow. This can be identified by comparing hourly flow data.
- Conditions at the SSO site change with time. Initially there will be limited deposits of grease and toilet paper. After a few days to a week, the grease forms a light colored residue. After a few weeks to a month the grease turns dark. In both cases the quantity of toilet paper and other materials of sewage origin increase in amount. These changes with time can be used to estimate the start time in the absence of other information.
- Sometimes it is simply not possible to estimate the start time.

End time is usually much easier to establish. Field crews on-site observe the “blow down” that occurs when the blockage has been removed. The “blow down” can also be observed in downstream flow meters.

Flow Rate: The flow rate is the average flow left in the sewer system during the time the SSO stopped. There are three ways to estimate the flow rate:

- San Diego Manhole Flow Rate Reference Sheet: This sheet, presented on the following page, shows the sewage flowing from a manhole cover for a variety of flow rates. The observations of the field crew are used to select the approximate flow rate from the chart.
- Flow meter: Changes in flows in the downstream flow meters can be used to estimate the flow rate during the spill (better for large SSOs)
- Estimate based on up-stream connections: Once the location of the SSO is known, the number of upstream connections can be determined from system maps. Multiply the number of connections by 200 to 250 gallons per day per connection, or 8 to 10 gallons per hour per connection, or other flow rates that are consistent with the City’s data for its connections.

Once duration and flow rate have been estimated, the volume of the SSO is the product of the duration in hours or days times the flow rate in gallons per hour or gallons per day.

City of San Diego
Metropolitan Wastewater Department

Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes

All estimates are calculated in gallons per minute (gpm)

Wastewater Collection Division
(619) 654-4160

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

rev. 4/99

Attachment I

WARNING SIGN SAMPLES

Attachment I
Warning Sign Samples

DANGER!

CONTAMINATED WATER

KEEP OUT

AGUA CONTAMINADA

ALEJESE

PELIGRO!

County of San Diego Department of Public Works

(619) 660-2007

WARNING!

RAW

SEWAGE

COUNTY OF SAN DIEGO

(619) 660-2007

Attachment J

EXAMPLES OF PRE-SCRIPTED NOTICES

SAMPLE PRE -SCRIPTED NEWS RELEASE – INITIAL NOTIFICATION

(County of San Diego, Department of Public Works Letterhead)

For Immediate Release

Date and Time

Cause of failure, such as mechanical breakdown or natural cause (lightning or local flooding) damage at sewage facility located near the intersection of street name and street name has caused sewage overflow into the surface water name in area name. A map showing the location of the sewage facility and areas impacted by the overflow is attached.

Although County Wastewater Management Department crews have begun to make temporary repairs and divert some of the flows to which plant and/or interim bypass pumping has begun, backups may occur in portions of the system. Consequently, residents (reference area or location on map) are urged to reduce water usage inside their homes as much as possible and to avoid coming into physical contact with standing waters in the street or using receiving surface water for any purpose until further notice.

Please note that the drinking water supply is not affected; however, the cooperation of residents to minimize water usage in order to reduce sewage flows is of the utmost importance.

CONTACT: DPW Communications Officer
Donna Durckel
619.531.5186

Senior Civil Engineer
Ted Kautzma
858.694.2919

SAMPLE PRE -SCRIPTED NEWS RELEASE – REPAIR UPDATE

(County of San Diego, Department of Public Works Letterhead)

For Immediate Release

Date and Time

Cause of failure, such as mechanical breakdown or natural cause (lightning or local flooding) damage at sewage facility located near the intersection of street name and street name has caused sewage overflow into the surface water name in area name. Repair crews were dispatched to assess the extent of the damage and to initiate repairs. To date, the following actions have been taken:

[Description of work accomplished.]

It is anticipated that the repair work will be complete by day, date, and time. Additional advisories will be issued if the status of the repairs should change.

Residents are cautioned to refrain from visiting the area where the repair efforts are being conducted.

CONTACT: DPW Communications Officer
Donna Durckel
619.531.5186

Senior Civil Engineer
Ted Kautzma
858.694.2919

SAMPLE PRE-SCRIPTED NEWS RELEASE – CLOSING STATEMENTS

(County of San Diego, Department of Public Works Letterhead)

For Immediate Release

Date and Time

Cause of failure, such as mechanical breakdown or natural cause (lightning or local flooding) damage at sewage facility located near the intersection of street name and street name has caused sewage overflow into the surface water name in area name. The leak caused the discharge of approximately number of thousand or million gallons of sewage into name of surface water, resulting in restricted public access to the area.

A specially trained team of repair experts was mobilized to take immediate and effective action. The repairs were complete in time in hours and/or days and involved around-the-clock operations.

The County's Wastewater Management Division worked in cooperation with the San Diego County Department of Environmental Health in monitoring the environmental effects of the sewage discharge on name of surface water. The media assisted in issuing advisories to keep the public informed of the status of remedial actions. As a result, the impacts of accidental sewage discharged were minimized. The water quality in name of surface water is continuing to be monitored to ensure there are no threats to public health and the environment.

CONTACT: DPW Communications Officer
Donna Durckel
619.531.5186

Senior Civil Engineer
Ted Kautzman
858.694.2919

SAMPLE PRE -SCRIPTED NEWS RELEASE – WATER CONSERVATION

(County of San Diego, Department of Public Works Letterhead)

For Immediate Release

Date and Time

Cause of failure, such as mechanical breakdown or natural cause (lightning or local flooding) damage at sewage facility located near the intersection of street name and street name has caused sewage overflow into the surface water name in area name. The leak has caused portions of surface water name to become polluted and necessitates reducing the discharge of sewage to the sewer system.

In order to prevent backups in the sewer system and sewage spills, residents are urged to reduce household water use. Residents should take the following actions:

1. Limit clothes washing

2. Limit showers and baths

3. Limit toilet flushing

It is necessary to restrict water use only for the period required to fix the leak. The County of San Diego's Wastewater Management Division crews have already begun to make repairs. Advisories will be issued when the repairs are completed so normal water use may resume.

The break does not affect the water supply. The water is safe to drink, but please limit water use to reduce sewage flow as much as possible.

CONTACT: DPW Communications Officer
Donna Durckel
619.531.5186

Senior Civil Engineer
Ted Kautzman
858.694.2919

Appendix D

SAN DIEGO COUNTY STANDARDS FOR SEWER CONSTRUCTION

SAN DIEGO COUNTY STANDARDS FOR SEWER CONSTRUCTION

DESIGN STANDARDS

STANDARD PLANS AND SPECIFICATIONS: All construction of sanitary sewers and appurtenances is to be governed insofar as possible by the San Diego County Standards for Sewer Construction, the current edition of the Standard Specifications for Public Works Construction ("Greenbook") and the current edition of San Diego Standard Special Provisions to the Standard Specifications for Public Works Construction as adopted by the San Diego Regional Standards Committee. Project plans and specifications shall be prepared so as to supplement and amplify the Standard Plans and Specifications and not to supersede them, except where required by the nature of the work. Project specifications shall be written so as to incorporate the Standard Plans and Specifications.

1. DETAILED PLANS

1.1 General: Project plans and specifications shall be prepared under the supervision of a professional civil engineer duly registered in the State of California.

Each sheet of the plans and the title sheet of specifications shall bear the approval signature and registration stamp and number of the civil engineer. In addition, the first sheet of plans shall carry the business address and telephone number of said engineer. The latest version of the standard Sewer Notes shall be on all plans, preferably on the first sheet.

1.2 Plan Check Application: With an application for plan check under the Sanitary Sewer Ordinance, the applicant shall submit the appropriate deposit fee for plan check and two blueline prints of each of the project plans together with two copies of the specifications. Projects to be bonded shall provide a construction cost estimate for the proposed sewer. One set of plans will be returned to the applicant with any requested changes indicated in red. Additionally, if the submitted plan requires the granting of an easement, the appropriate deposit fee and necessary documents for easement processing will be submitted with the application.

1.3 Construction Permit Application: With an application for a Construction Permit under the Sanitary Sewer Ordinance, the applicant shall submit the appropriate deposit fee for construction inspection and television inspection services and three prints of each of the approved project plans together with three copies of the approved specifications.

Prior to the acceptance of the work by the County Engineer, the original drawings or permanent transparency copies, delineating field changes and signed by the engineer of work, together with two prints of each sheet shall

be delivered to the County Engineer for filing as a permanent record (As-built or Record Plans).

1.4 **Standard Size of Plans:** All plans shall be prepared on sheets 24 inches wide by 36 inches long including margins.

1.5 **Drawings:** Original drawings shall be ink and/or sticky backs on drafting film.

1.6 **Signature Block:** A block approximately 2 inches high by 4 inches long shall be provided immediately adjacent to the bottom margin of the first sheet of the plan. It shall provide the name of the appropriate sewer district. The district approval shall have a statement on the plans that the signature is valid for two years.

1.7 **Plan and Profile:** The detail plans shall show a plan and profile along the line of all sewers to be constructed. Preferably, the plan and profile of given segment of sewer shall be shown on the same sheet. Such plan and profile shall show all special features such as inverted siphons, concrete encasements and sewer bridges. All stream crossings and sewer outlets must be shown on the profile with elevations of the stream bed. Horizontal and vertical scales must be clearly shown on each sheet of the plans and must be adequate to detail the work, particularly the vertical scale which should not exceed a scale of 1 inch equals 10 feet. The plan shall show all known existing structures both above and below ground which might interfere with the proposed construction, particularly water mains, gas mains, storm drains and the nature of street surface.

1.8 **Sewer Detail:** Sewer invert and rim elevations shall be shown at the centerline of manholes. Figures showing the size and grade of all sewers between all adjacent manholes shall be shown on the profile.

1.9 **Location and Alignment of Main Line Sewer:** Main line sewers shall be located on the centerline of streets or alleys if possible, except on major highways where sewers shall be located as required by the County Engineer. Where the street or alley centerline is a curve, the sewer centerline shall be a series of straight lines intersecting at manholes. A horizontal curve conforming to the centerline of the street or alley may be permitted only with the express consent of the County Engineer. In profile, the sewer grade shall be constant between manholes. If necessary, due to obstructions or unusual topography, a vertical curve may be used only with the express consent of the County Engineer. Vertical curves shall not be permitted merely to have sewer grade parallel the surface elevation. The utilization of both a horizontal and vertical curve in the same segment between manholes is prohibited. A reverse curve, either horizontal or vertical, in the same segment between manholes, is likewise prohibited. All curves, vertical and horizontal must have a 200 feet, or greater, radius.

1.10 Sewer Appurtenances: Details of all sewer appurtenances, such as manholes or inverted siphons as well as any special appurtenances or structures, must be submitted. These details must be drawn to such a scale as will clearly show the nature of the design of each of the structures referred to. They shall have marked upon them all dimensions, elevations, capacity and explanatory notes necessary to make them intelligible for examination and construction. To avoid turbulent flow, the use of vertical drops may be used only with the express consent of the County Engineer. Channel diagrams must be provided for all manholes with more than one inflow line. Regional Standard Drawing (SDRSD) S-17 covers those lines meeting manholes at 90 degree angles. The construction of cut-off walls shall be per SDRSD S-10, Type 'A' on all segments having a slope of 35% or greater. The maximum distance required between walls shall be as follows:

SLOPE	WALL SPACING
35% - 45%	every 40 feet
45% - 55%	every 30 feet
55% - 65%	every 20 feet
over 65%	Special Design

1.11 Locations of Manholes: Manholes shall be installed at all changes in grade, size or alignment; at all intersections, and at distances not greater than 500 feet. A manhole with stub shall be placed at the end of all sewers. A plug may be used at the end of a branch collector line less than 20 feet in length and serving no more than four parcels. A manhole must be installed at the end of a mainline more than 100 feet in length. A cleanout may be used if the end segment is between 20 and 100 feet in length.

Manholes, cleanouts and plug structures shall be located ten feet upgrade from the downgrade lot line of the last lot served, unless greater length is necessary to serve the property. All manholes not located within the traveled way of a public or private street shall be provided with locking covers. When a new manhole is installed into an existing sewer line, the location shall be shown on the plans with a distance measured from the nearest existing manhole.

1.12 Flow Channel: The flow channel through manholes should be made to conform in shape to that of the sewers.

1.13 Diameter of Manholes: The diameter of the base ring of S-2 manholes shall be 60 inches, S-17 manholes shall be 48 inches. The minimum

diameter of the upper manhole rings shall be 36 inches. Double lid manhole covers and approved steel reinforced poly-propylene steps shall be used.

1.14 **Grade and Alignment of Laterals:** Grade and alignments of laterals shall be shown on the record plan, preferably in a lateral table. Laterals shall be dimensioned in plan to the nearest downstream manhole, to the nearest lot corner or by stationing along centerline.

1.15 **Treatment Plant and Pump Stations:** All sewage treatment plants, sewage pumping plants, industrial liquid waste pretreatment plants and other sewer appurtenances and special structures shall be designed in accordance with good engineering practice.

1.16 **Easements:** When a plan requires the location of a sewer, et al, on private property, an easement for said location shall be granted to the sewer district. The easement shall be a minimum of ten feet in width, normally centered on the sewer centerline, and extending a minimum of ten feet further than construction. However, the County Engineer at his sole discretion, for purposes of further extension of the sewer, access for maintenance, etc., may require an easement of greater width, length, direction or combination thereof before acceptance of the work. Easement sewer lines will not be accepted unless access to said lines can be guaranteed.

1.17 **Special Conditions:** In the event of conflict between the Standard Specifications and any special conditions, the special conditions shall take precedence.

1.18 **Acceptance of Work:** Before final acceptance of the work, the sewer district will require all newly constructed sewer lines to be T.V. inspected by the district. The fee for such inspection shall be provided by the permittee at the time the sewer construction permit is issued (see 1.3).

2. SIZE, DEPTH AND VELOCITY OF FLOW

2.1 **Size:** No public sewer shall be less than eight inches in diameter, except as authorized by the County Engineer. The installation of a six-inch sewer may be authorized when the following conditions exist:

(a) A six-inch sewer will provide adequate capacity, as defined in Section 3, to serve the design area.

(b) The County Engineer is convinced that increased capacity will not be required to serve industrial, commercial, or apartment house connections.

2.2 **Size of Lateral:** A sewer service lateral of a minimum size of four inches shall be provided in the street or easement for each lot.

2.3 **Depth:** In general, sewers must be designed deep enough to serve the adjacent properties by gravity flow from the connected structure to the sewer main. Abutting properties not served or requiring the use of individual pump systems for service shall be noted on the plans. Where, for specific reasons, it is necessary to install a sewer with cover of less than 4 feet from top of pipe, the sewer shall be encased in concrete as shown on the standard detail (SDRSD S-7).

2.4 **Pipe Bedding:** All sewers shall be designed to prevent failure due to superimposed loads and the weight of backfill material. Standard bedding for various pipe material shall be shown on the standard sewer notes. Special bedding for extra-depth Vitrified Clay Pipe shall be as shown on the following table:

DEPTHS SHOWN FROM INVERT

PIPE SIZE	TYPE B (S-5) CRUSHED ROCK	TYPE A CRADLE	TYPE B CRADLE	MAXIMUM TRENCH WIDTH
8"	16-34'	34'+		2'-2"
10"	15-31'	31'+		2'-4"
12"	13-22'	22'+		2'-6"
15"	11-16'	16-22'	22-28'	3'-1"
18"	11.5-15.5'	15.5-20.5'	20.5-24.5'	3'-6"
21"	12.25-16.75'	16.75-21.25'	21.25'+	3'-10"
24"	13.5-19'	19-23'	23'+	4'-1"

2.5 **Velocity of Flow:** All sewers shall be designed and constructed with hydraulic slopes sufficient to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Kutter's or Manning's formula using an "n" value of 0.013. Use of other practical "n" values will be permitted by the County Engineer for the longer pipe sections if deemed justifiable on the basis of research or field data presented.

Under special conditions, if full and justifiable reasons are given, slopes slightly less than those required for the 2 feet per second velocity when full may be permitted. Such decreased slopes will only be considered when the average flow will be 0.3 of the diameter or greater for design average flow.

Whenever such decreased slopes are selected, the engineer must furnish with his report, his computations of the depths of flow in such pipes at minimum, average and peak rates of flow. It is recognized that such flatter grades may cause additional sewer maintenance expense.

The following are the minimum slopes which shall be provided:

SEWER SIZE	MINIMUM SLOPE IN FEET PER 100 FEET	SEWER SIZE	MINIMUM SLOPE IN FEET PER 100 FEET
6"	0.68	15"	0.15
8"	0.40	16"	0.14
10"	0.28	18"	0.12
12"	0.22	21"	0.10
14"	0.17	24"	0.08

Dead end lines shall be designed with a velocity of 2 to 2.5 feet per second at 1/4 full: 6" line - minimum slope of 1.0 feet per 100 feet and 8" line - minimum slope of 0.7' per 100 feet.

2.6 **Sewer Energy Gradient:** When sewers are increased in size along the main sewer alignment, the invert of the larger sewer shall be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

When a branch sewer line intersects a main line sewer, the invert of the branch line shall intersect at the 0.8 depth point of the main line regardless of sewer pipe size.

2.7 **Protection from Sulfides:** All sewer lines and manholes downstream from a force main connection, for a minimum distance of 1,000 feet or 3 manholes, whichever is the greater distance, shall be protected from sulfides. Additionally, the County Engineer may require sulfide protection in other parts of a system due to anticipated problems.

3. CAPACITIES

3.1 General: Sewerage systems should be designed for the estimated future population up to 50 years hence except in considering parts of the systems that can be readily increased in capacities. Similarly, consideration should be given to the maximum anticipated capacity of institutions, and industrial and military installations.

3.2 Flow: Sanitary sewers, through 15 inches diameter, shall be designed on the basis of peak dry weather flow (PDWF) with the pipe flow at ½ full. Pipes 18 inches and above shall be designed on the basis of PDWF at ¾ full. PDWF shall be determined using a per capita average flow of 80 GPCPD (Gallons per capita per day) and the peak to average flow as indicated on Table A following.

4. INVERTED SIPHONS

Inverted siphons shall have not less than two barrels, with a minimum pipe size not less than 6 inches and should be provided with necessary appurtenances for convenient flushing and maintenance; the manholes shall have adequate clearances for rodding; and, in general, sufficient head should be provided and pipe sizes selected to secure velocities of at least 3.0 feet per second for average flows. The inlet and outlet details must be arranged so that the normal flow is diverted to one barrel, and so that either barrel may be cut out of service for cleaning.

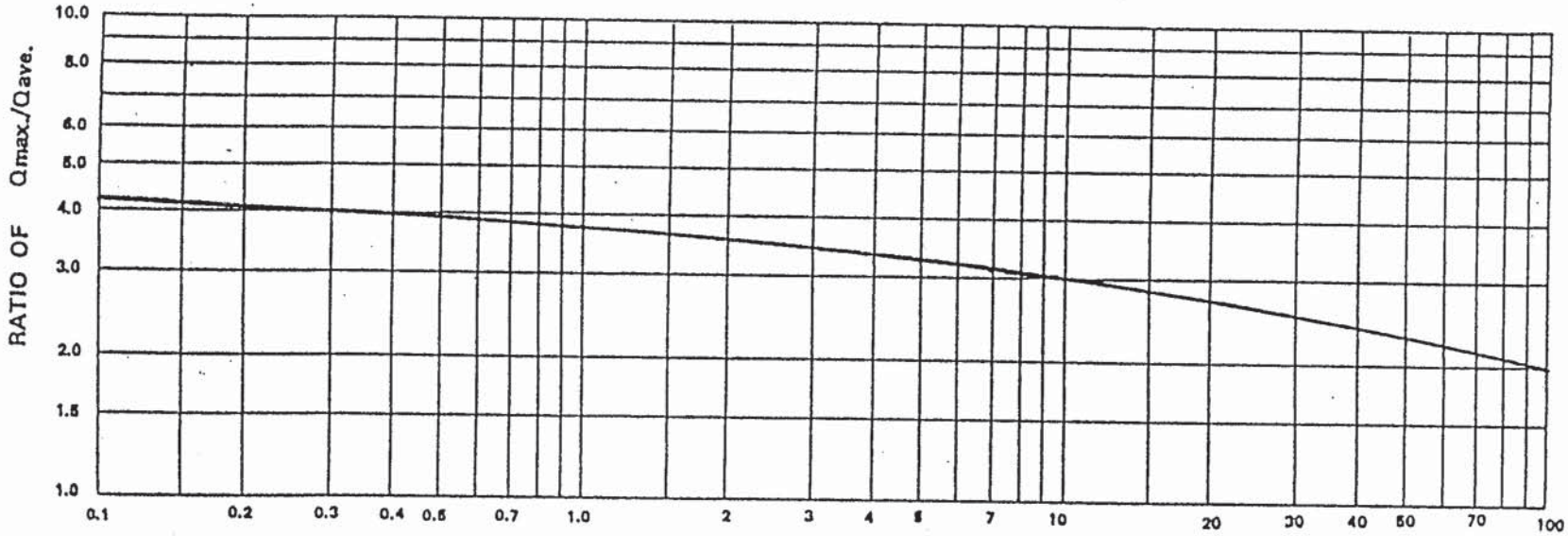
REVISED 2/22/99
(Date)

APPROVED _____
DOUGLAS M. ISBELL, County Engineer
Department of Public Works

(Design.std)

TABLE A

RATIO OF EXTREME FLOW TO DAILY AVERAGE FLOW



Qmax: Maximum Rate of Sewage Flow (Peak Hourly Flow)

Qave: Average Daily Sewage Flow

Source: $$\frac{Q_{max.}}{Q_{ave.}} = \frac{18 + \sqrt{P}}{4 + \sqrt{P}}$$ (P = population in thousands)

Fair, G.M. and Geyer, J.C. "Water Supply and Waste-Water Disposal" 1st Ed:, John Wiley & Sons, Inc., New York (1954), p. 136

CITY OF SAN DIEGO
METROPOLITAN WASTEWATER DEPARTMENT

PEAKING FACTOR FOR SEWER FLOWS
(Dry Weather)

Ratio of Peak to Average Flow*
Versus Tributary Population

Population	Ratio of Peak to Average Flow	Population	Ratio of Peak to Average Flow
200	4.00	4,800	2.01
500	3.00	5,000	2.00
800	2.75	5,200	1.99
900	2.60	5,500	1.97
1,000	2.50	6,000	1.95
1,100	2.47	6,200	1.94
1,200	2.45	6,400	1.93
1,300	2.43	6,900	1.91
1,400	2.40	7,300	1.90
1,500	2.38	7,500	1.89
1,600	2.36	8,100	1.87
1,700	2.34	8,400	1.86
1,750	2.33	9,100	1.84
1,800	2.32	9,600	1.83
1,850	2.31	10,000	1.82
1,900	2.30	11,500	1.80
2,000	2.29	13,000	1.78
2,150	2.27	14,500	1.76
2,225	2.25	15,000	1.75
2,300	2.24	16,000	1.74
2,375	2.23	16,700	1.73
2,425	2.22	17,400	1.72
2,500	2.21	18,000	1.71
2,600	2.20	18,900	1.70
2,625	2.19	19,800	1.69
2,675	2.18	21,500	1.68
2,775	2.17	22,600	1.67
2,850	2.16	25,000	1.65
3,000	2.14	26,500	1.64
3,100	2.13	28,000	1.63
3,200	2.12	32,000	1.61
3,500	2.10	36,000	1.59
3,600	2.09	38,000	1.58
3,700	2.08	42,000	1.57
3,800	2.07	49,000	1.55
3,900	2.06	54,000	1.54
4,000	2.05	60,000	1.53
4,200	2.04	70,000	1.52
4,400	2.03	90,000	1.51
4,600	2.02	100,000+	1.50

***Based on formula:** Peak Factor = $6.2945 \times (pop)^{-0.1342}$
(Holmes & Narver, 1960)

FIGURE 1-1

Appendix E

INITIAL DAMAGE ASSESSMENT FORM FOR PRIVATE PROPERTY

Appendix E
Public Outreach

A PUBLIC SERVICE ANNOUNCEMENT
FOR COUNTY OF SAN DIEGO RESIDENTS
From Your Department of Public Works

Help us protect our environment!

Grease, oil, and fat should go from

the Pan... 

...to the Can.

Never pour grease, cooking oil, or fat down the sink. They can clog drains and cause sewer pipes to back up. Cool down your cooking oil, grease, and fat - pour them into a container with a secure lid.

Trash the can – not your pipes!

Wipe out pots and pans with a paper towel before doing dishes – you will use less soap and decrease clogs.

Dispose of food scraps in the trash – not down garbage disposals, drains, or toilets.

UN ANUNCIO PUBLICO DE SERVICIO PARA
LOS RESIDENTES DE EL CONDADO DE SAN DIEGO
Departe de su Departamento de Servicos Publicos

Ayudenos a protejer nuestro medio ambiente!

La grasa y aceites van de

el Sarten... 

...a la Basura.

Nunca vacie por el fregadero la grasa y aceites para cocinar. Pueden obstruir el drenaje y causar el cano de desague que se estanque. Enfrie su aceite y grasa para cocinar y vacielos a una lata con tapa segura.

Tire la lata y no sus tuberias a la basura!

Limpie las cacerolas y los sartenes con una toalla de papel antes de lavar los platos – asi usando menos jabon y disminuir la posibilidad de que se tape la tuberia.

Tire pedasos de comida en la basura – no en el fregadero, drenaje, o tasa de bano.

The drain is not a dump.

Put fats, oils and grease where they belong.

Mix them in your trash with absorbent waste like paper, coffee grounds, or kitty litter.

Department of Public Works
Spring Valley Operations Center
11937 Campo Road: Spring Valley, CA 91978
(619) 660-2007

Dear Resident,

You are receiving this message because your neighborhood has recently experienced a sanitary sewer spill related to a build-up of fats, oils, and grease in the sewer pipes. Cooking grease coats pipelines much like fatty foods clog human arteries. The grease clings to the insides of the pipe, eventually causing blockage and potential sewer spills. By following a few simple steps, you can help prevent costly sewer spills in the future.

- Pour your cooking oil (this includes salad oil, frying oil and bacon fat) into an old milk carton, frozen juice container, or other non-recyclable package, and disposed of it in the garbage.
- Wipe dishes and pots that are coated with greasy leftovers (butter, peanut butter, etc.) with a disposable towel prior to washing or placing in the dishwasher.
- Place food scraps and fat trimmings from meat in a trashcan.

If you have questions, please contact us at 858.694.2919.

Sincerely,

Ted Kautzman
Senior Civil Engineer

Appendix F

AUDIT FOR SEWER SYSTEM MANAGEMENT PLAN

County of San Diego
Sewer System Management Plan

Appendix F
AUDIT OF THE SSMP

FINAL | August 2020

Contents

Tables

Figures

Abbreviations

CCTV	closed circuit television
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
County	County of San Diego
County Code	San Diego Code of Regulatory Ordinances
County Plumbing Code	San Diego County Plumbing Code
DEH	Department of Environmental Health
FOG	fats, oil, and grease
GIS	Geographic Information System
Greenbook	Standard Specifications for Public Works Construction
JWPCF	Julian Water Pollution Control Facility
NASSCO	National Association of Sewer Service Companies
O&M	Operations and Maintenance
PACP	Pipeline Assessment and Certification Program
PVWPCF	Pine Valley Water Pollution Control Facility
RDCWPCF	Ranch Del Campo Water Pollution Control Facility
SSMP	Sewer System Management Plan
SSOERP	Sanitary Sewer Overflow Emergency Response Plan
SSOs	Sanitary Sewer Overflows
SWRCB	State Water Resources Control Board
WDID	Waste Discharge Identification
WDRs	Waste Discharge Requirements
WWTP	wastewater treatment plant

Chapter 1

INTRODUCTION

1.1 Background

On May 2, 2006, the State Water Resources Control Board (SWRCB) adopted Order 2006- 0003, the Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems, which requires all federal and state agencies, municipalities, counties, districts, cities, and other public entities that own or operate a sanitary sewer system greater than one mile in length to comply with the elements of the WDRs. With the goal of providing a consistent statewide approach for reducing Sanitary Sewer Overflows (SSOs), the WDRs include directives for owners and operators of sanitary sewer systems to demonstrate adequate and efficient management, operation, and maintenance of the sanitary sewer system.

The County of San Diego (County) adopted its Sewer System Management Plan (SSMP) in June 2015 and subsequently prepared an audit in January 2018. The SSMP document is consistent with the SWRCB guidelines and includes the following mandatory elements:

(i) Goals
(ii) Organization
(iii) Legal Authority
(iv) Operations & Maintenance Program
(v) Design and Performance Provisions
(vi) Overflow Emergency Response Plan
(vii) Fats, Oils, and Grease Control Program
(viii) System Evaluation and Capacity Assurance Plan
(ix) Monitoring, Measurement and Plan Modifications
(x) SSMP Program Audits
(xi) Communication Program

1.2 Purpose

The WDRs and resulting SSMP outline the requirements for periodic internal audits of the SSMP document at least once every two years after adoption of the SSMP document. In compliance with the WDRs, this document serves to summarize the County's effort in performing the required audit of its SSMP and is based on available information.

1.3 System Description

The County serves a population of approximately 36,000 customers within the unincorporated communities of the County of San Diego. In 2010, the District Board of Directors consolidated the five sanitation districts and four maintenance districts into a single agency that is now referred to as the San Diego County Sanitation District.

Illustrated in Figure 1.1 are the District's eight service areas that make up the San Diego County Sanitation District. The County administers the diverse and geographically separated

communities. The service areas are geographically apportioned to facilitate implementation of effective and efficient Operations and Maintenance (O&M) efforts. Table 1.1 includes a summary of the sewer service areas.

Table 1.1 San Diego County Sanitation District Service Areas

Sewer Service Areas	
Alpine	Campo
Lakeside	East Otay Mesa
Spring Valley	Winter Gardens
Julian	Pine Valley

Collectively, the conveyance system includes approximately 432 miles of pipeline, 8,200 maintenance holes, and eight lift stations. Table 1.2 provides a summary of the approximate length of pipeline per service area, while Table 1.3 provides a summary of the lift stations operated and maintained by County Wastewater Management Program staff.

Table 1.2 Pipeline Length by Service Area

County Service Area	Pipeline* (linear feet)	Length of Pipeline (miles)
Alpine	111,848	21.2
Lakeside	542,043	102.7
Spring Valley	1,432,607	271.3
Pine Valley	2,726	0.5
Julian	14,996	2.8
Campo	34,883	6.6
East Otay Mesa	22,421	4.2
Winter Gardens	119,764	22.7
Total	**2,281,288**	**432**

Notes:
(1) Based on County of San Diego GIS System as of 12/2017.

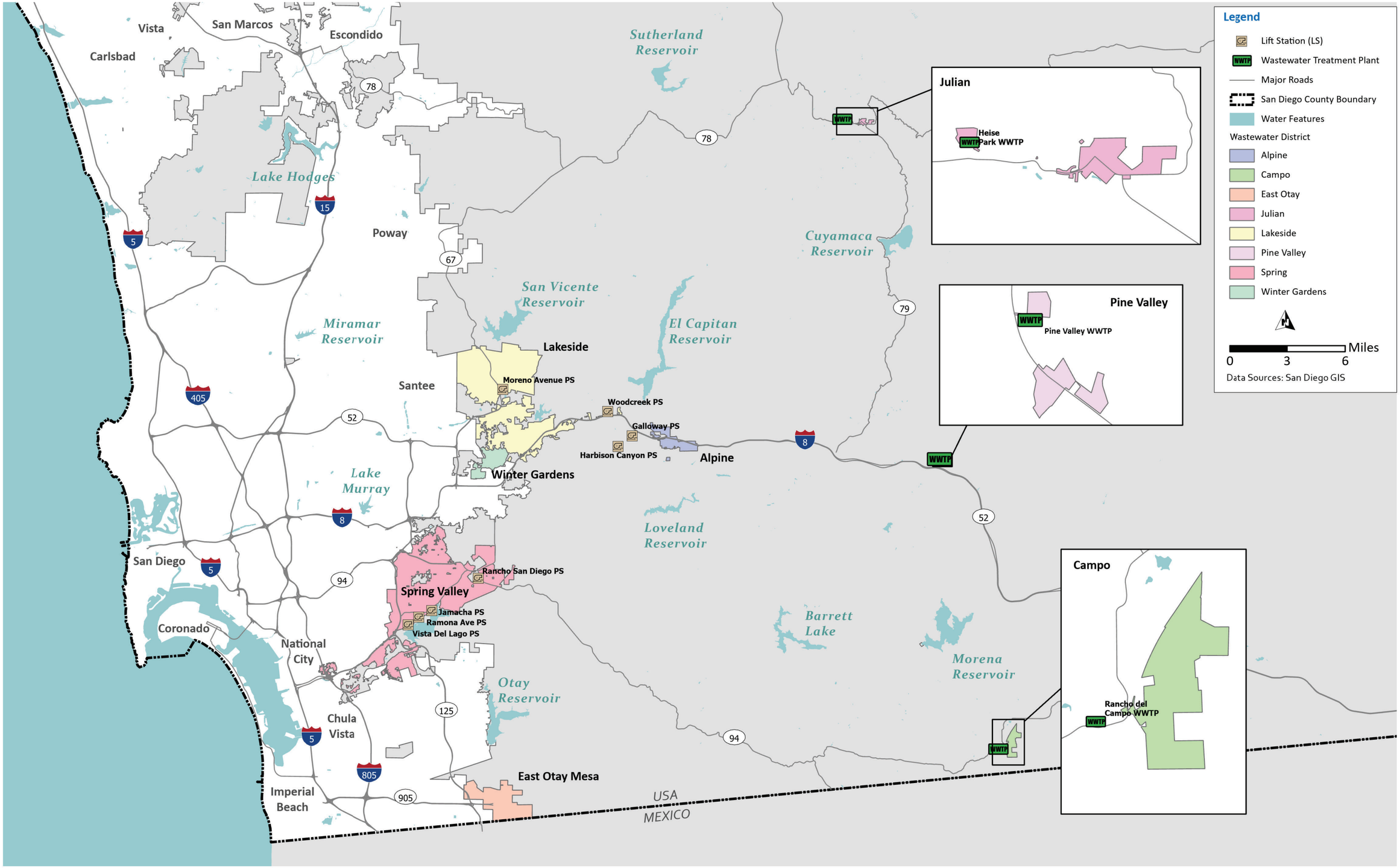


Figure 1.1 County of San Diego Sanitation District Service Areas

Table 1.3 County-Maintained Lift Stations by Service Area

Service Area	Lift Station	Address	City/State/Zip
Spring Valley	Jamacha	9903 Jamacha Blvd.	Spring Valley, CA 91978
	Ramona Avenue	411 Ramona Avenue	Spring Valley, CA 91978
	Vista Del Lago	9041 Camino Lago Vista	Spring Valley, CA 91978
	Rancho San Diego	11971 Singer Lane	Spring Valley, CA 91978
Alpine	Galloway	444 Arnold Way	Alpine, CA 92001
	Harbison Canyon	215 Bridle Court	Alpine, CA 92001
Lakeside	Moreno Avenue	10955 Moreno Ave.	Lakeside, CA 92040
	Woodcreek	15935 Spring Oak Rd.	El Cajon, CA 92021

Wastewater treatment is provided by either the City of San Diego's Metro system or one of several locally-based plants. Table 1.4 provides a summary of the treatment plants managed and operated by the County.

Table 1.4 County-Maintained Treatment Plants

Treatment Facility	Address	City/State/Zip
Rancho Del Campo WWTP	31035 Forrest Gate Rd.	Campo, CA 92006
Julian WWTP	2840 Highway 78	Julian, CA 92036
Pine Valley WWTP	Pine Valley County Park, Old Highway 80	Pine Valley, CA 91962

Since the certification of the SSMP and the consolidation of the County districts into one agency, the County has eliminated several of the Waste Discharge Identification (WDID) numbers originally associated with various service areas which were originally registered as separate sanitation systems and were less than the minimum 1.0 mile as required by the WDRs. Whereas previously, the County was registered for up to six WDIDs, it is now registered under three. The County's WDIDs and the respective service areas registered under each WDID are summarized in Table 1.5.

Table 1.5 County of San Diego Service Areas and WDID Numbers

County Service Areas	WDID Number
County of San Diego Collection System Alpine Service Area Lakeside Service Area Spring Valley Service Area Winter Gardens Maintenance District East Otay Mesa Service Area	9SSO10662
Campo Water & Sewer Service Area (Rancho Del Campo CS)	9SSO10689
Julian Service Area (Julian Water Pollution Facility)	9SSO10673

Chapter 2

GOALS

The County continues to work towards achieving its goal of providing the safe, effective, and efficient operation of the County's wastewater collection and conveyance system, minimizing the potential for SSOs, and quickly and effectively mitigating the impacts associated with an SSO if it were to occur so as to protect life, environment, and property while adhering to regulatory requirements through:

- Proper management, operation, and maintenance of all parts of the system.
- Employing procedures to reduce occurrences of, and potential for, SSOs.
- Implementing measures to minimize potential fats, oil, and grease (FOG) related issues in the system.
- Providing adequate capacity to convey peak wastewater flows.
- Development of a current long-range planning and improvement plan.
- Protection of the public's health and safety.
- Effective public information and education efforts.

Operations staff in the County's Wastewater Management Program is primarily responsible for confirming that the elements of the SSMP are implemented. Its mission statement is to:

- Preserve and enhance public safety and quality of life through reliable, cost effective infrastructure.
- Foster partnerships that strengthen relationships with communities and industry.
- Provide quality and responsive service through highly motivated, professional, and knowledgeable staff in a safe and fair work environment.
- Continually improve quality of service through optimal resource management.

The County's goal continues to be to provide safe, effective, and efficient operation of the County's wastewater collection and conveyance system through:

- Proper management, operation, and maintenance of the wastewater collection system.
- Reduced occurrences of and potential for SSOs.
- An effective FOG Control Program.
- Assurance of adequate capacity to convey peak wastewater flows.
- A current long-range planning and improvement plan.
- Compliance with all regulatory requirements.
- Protection of the public's health and safety.
- Effective public information and education efforts

The County's goal reflects the comprehensive efforts of County staff to be unified and effective stewards of their customer's assets by efficiently and economically operating, maintaining, and managing the County's wastewater collection system.

Chapter 3

ORGANIZATION AND COMMUNICATION

In compliance with the WDRs, the County's organizational chart includes the administrative, maintenance, and management positions responsible for implementing, managing, and updating the overall measures contained in the SSMP. However, recent changes in the County's organization and order of governance required revisions to the County's overall organizational chart. Figure 3.1 and Figure 3.2 illustrates the most current organizational chart for the County of San Diego and the Wastewater Management Program, respectively.

The SSMP contains organizational charts that illustrate the overall organization for the County. Also included is an organizational chart that includes the three primary sections in the Wastewater Management Program. The three major sections include:

- Facility Engineering and Operations
- Collections, Engineering and Operations
- District Administration

Figure 3.1, contained in Chapter 3 of the SSMP, and which illustrates the departments of the Public Works Program, has been updated to reflect the County's recent changes in department names. Figure 3.2, County of San Diego Engineering Services Division Wastewater Management Organization Chart, was also updated to reflect the changes in the area of responsibilities for the County staff.

The chart includes the key staff positions that support the activities performed by the Wastewater Management Program.

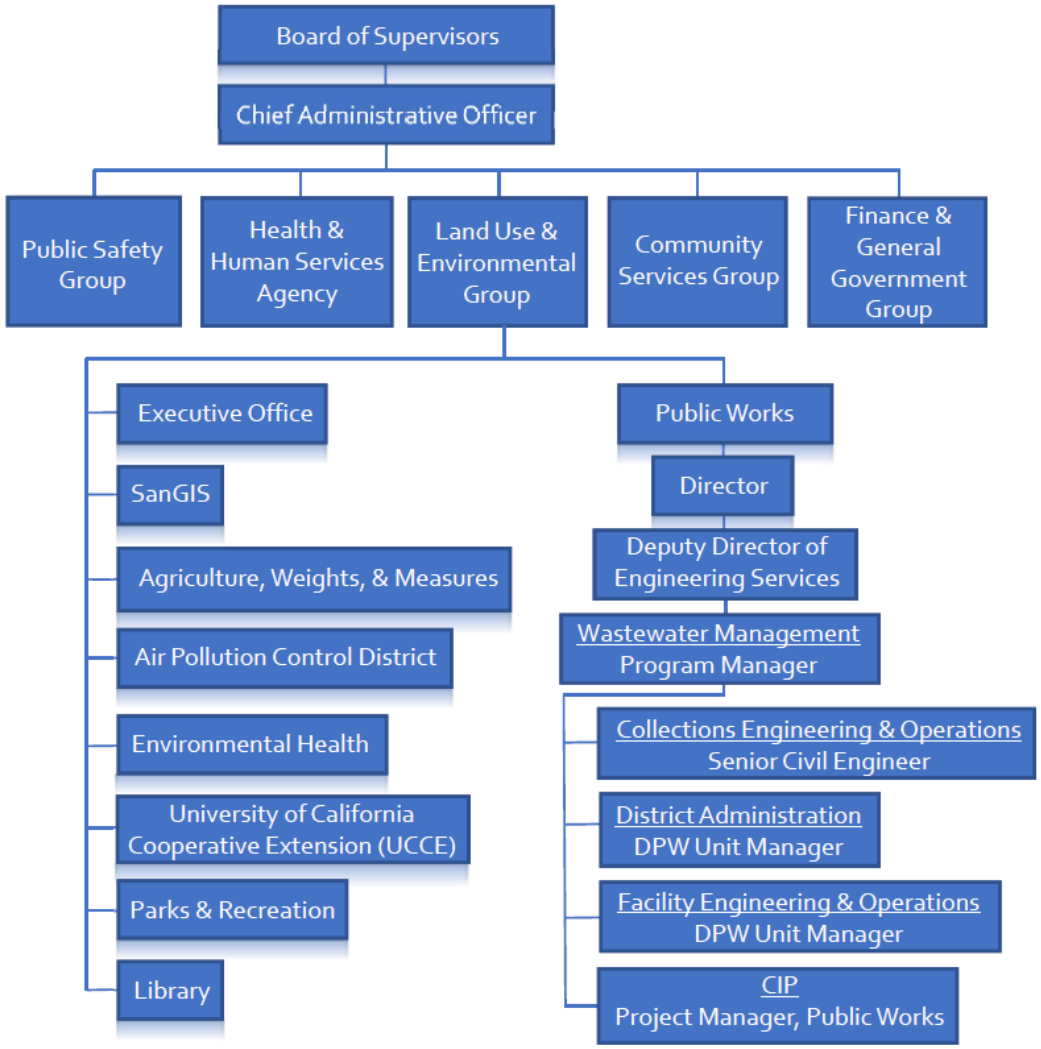


Figure 3.1 County of San Diego Overall Organization Chart

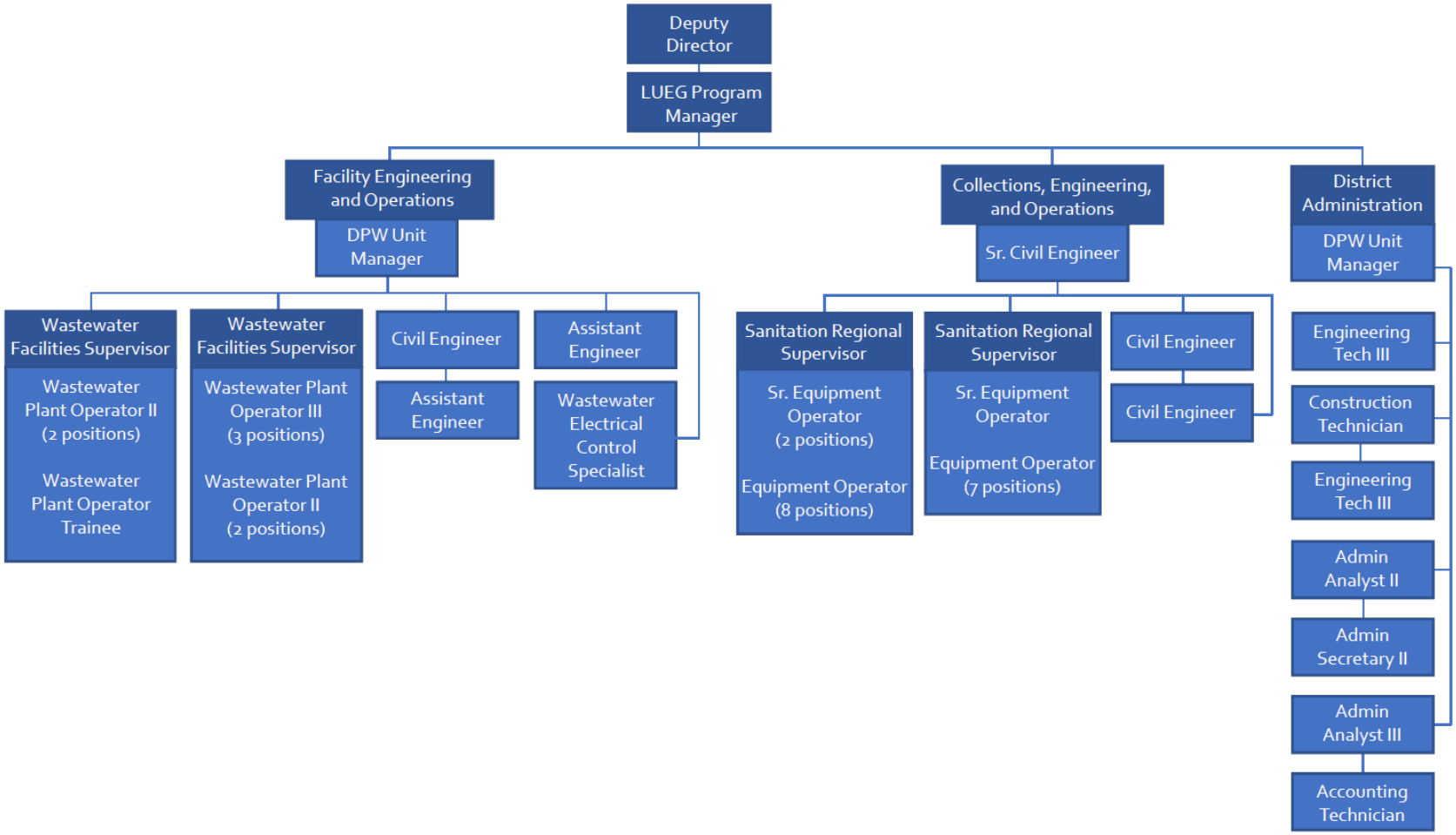


Figure 3.2 Wastewater Management Organization Chart

Chapter 4

LEGAL AUTHORITY

The WDRs require that the County show, through ordinances, service agreements, or other legally binding procedures, that it possesses the legal authority to a) prevent illicit discharges into its sanitary sewer system including, but not limited to, inflow and infiltration, storm water, chemical dumping, unauthorized debris, and cut roots, etc.; b) require that sewers and connections be properly designed and constructed; c) provide access for maintenance, inspection, or lateral connection repairs d) limit the discharge of fats, oils, grease, and other debris that may cause blockages; and e) enforce any violation of its sewer ordinances.

The County's legal authority and powers pertaining to the County's wastewater collection system are included in the San Diego Code of Regulatory Ordinances (County Code). Generally, the County requires compliance with several sections of the County Code including Title 1, General Regulations, Title 6, Health and Sanitation, and Title 9, Construction Codes and Fire Code.

The County also requires compliance with the latest approved edition of the Standard Specifications for Public Works Construction (Greenbook), Regional Supplemental Amendments to the Standard Specifications for Public Works, and the latest edition of the San Diego Regional Standard Drawings. Collectively, the documents serve to facilitate the control of inflow and infiltration; require proper design, construction, installation, testing, and inspection of new and rehabilitated sewers and laterals; enforce violation of ordinances, and promote and protect the health, safety, and general welfare of the citizens of the County.

Since the certification of the County's SSMP document, County Codes remain current and applicable. The following provides a brief summary of the County Codes as they apply to the wastewater collection system.

4.1 Prevention of Illicit Discharges

The following sections in Division 8 of Title 6 of the County Code establish the County's authority to prohibit illicit discharges into the County's wastewater collection system.

- Section 68.162, Limitations on Use of Sewer
- Section 68.163, Opening Maintenance Hole
- Section 68.209, Throwing Refuse in Maintenance Holes Prohibited

4.2 Proper Connections and Construction

The following includes a summary of the sections of the County Code that establishes the County's authority to require and confirm that wastewater facilities are properly designed and constructed.

Title 6, Division 8 – Sewage and Refuse Disposal

- Section 68.145, Sewers in County Highway
- Section 68.146, Sewers in State Highway

- Section 68.147, Main Line Sewers
- Section 68.159, Work and Plans Shall Conform
- Section 68.161, Connecting Sewer In Undedicated Street
- Section 68.204, Persons Authorized to Make Sewer Service Lateral Connections-Fees

Title 9, Division 4 - San Diego County Plumbing Code

The San Diego County Plumbing Code (County Plumbing Code) is included in the County Code, Title 9, and Division 4. The County Code adopts Title 24, Part 5 of the California Plumbing Code of Regulations which incorporates, by adoption, the 2006 edition of the Uniform Plumbing Code with California Amendments, and the 2007 California Plumbing Code portion of the California Building Standards Code with the County's modifications, additions, and deletions. The County Plumbing Code is applicable to the unincorporated areas of San Diego County.

Section 94.1.1004, Adoption of the Appendices A, B, D, G and I of the California Plumbing Code, adopts the listed appendices in their entirety as part of the County Plumbing Code.

Chapter 1 of Division 4 includes definitions, requirements for permits and inspection for installing or altering systems, regulations for the erection, construction, enlargement, alteration, repair, moving, removal, conversion, demolition, equipment use and maintenance of buildings and structures, including their inspection and provides penalties for violation of this chapter. This chapter applies to all new construction and to any alterations, repairs, or reconstruction, except as otherwise provided for in this chapter.

The codes are specific for wastewater facilities and provide the County the authority to require, review, and approve design and construction plans for facilities discharging flows into the County's wastewater collection system. The County's authority also includes the review of design and construction plans for main line sewers or sewer service laterals within a street, highway, alley, or right of way not dedicated or granted to a sanitation or maintenance district within which the line or lateral is to be located.

4.3 Accessibility for Maintenance, Inspection, and Repair

The County Code includes access requirements specific for sewage pumping and treatment plants and for the inspection of construction work performed. The access requirements for maintenance and repairs of the wastewater collection system are managed through the plan review and permitting procedures for new sewer service where County staff confirms that sewer system facilities are constructed to specific standards within the public right-of-way or within easements.

The following sections include a summary of the County's existing codes and ordinances included in Title 6, Division 8 as they apply to facility access for maintenance, inspection or repairs.

- Section 68.156, Inspection by Director, in Article 5 of Chapter 1
- Section 68.158, Maintenance Instructions, in Article 5 of Chapter 1
- Section 68.206, Inspections of Sewer Connections

The codes imply that the County may have accessibility rights in that it requires the Director of Public Works to issue a permit before a sewer line may be constructed and connected. As such, the Director of Public Works has the opportunity to confirm that new sewer lines are accessible

by County staff. Typically, County staff reviews access and easement requirements during the plan review process for new sewer facilities.

4.4 Limit FOG Discharge

The County's concentrated effort for addressing FOG related issues has been its proactive preventive maintenance program. The routine inspections performed of food service establishments by the Department of Environmental Health (DEH) has afforded the County an opportunity to reiterate the importance of limiting FOG discharge into the County's wastewater collection system and reduce the potential of SSOs due to excessive FOG. Practical Best Management Practices continue to be included in the permit conditions as a method to enforce the County's efforts.

4.5 Violation Enforcement

Title 1, Division 1, titled General Provisions, Division 6 titled Appeals and Nuisance Abatement, and Division 8 titled Administrative Remedies include provisions, policies, and procedures for implementing and enforcing violations of the County Code. Additionally, Title 6, Division 8 titled Health and Sanitation allows the County to revoke permits issued. Additionally, the County DEH enforces the Health and Safety Code sections pertaining to Retail Food activities, collectively known as Cal Code.

The following are the specific sections of the County Code that establish the County's authority to enforce violations of the County's codes as they pertain to the wastewater collection system:

Title 1, Division 1 – General Provisions

- Section 11.111, Public Nuisance
- Section 11.116, Violations-Criminal Penalties
- Section 11.121, Violations - Criminal, Civil, and Administrative Remedies

Title 1, Division 6 – Appeals and Nuisance Abatement

- Chapter 2, Section 16.202.5, Administrative Procedures

Title 1, Division 8 – Administrative Remedies

- Chapter 1, Administrative Citations, Section 18.104, Administrative Citations
- Chapter 1, Administrative Citations, Section 18.106, Amount of Fines
- Chapter 2, Administrative Civil Penalties, Section 18.201, Authorization and Purpose
- Chapter 2, Administrative Civil Penalties, Section 18.203, Civil Penalties

Title 6, Division 8 – Sewage and Refuse Disposal

- Chapter 2, Connections to Sewers, Section 68.211, Revocation of Permits and Disconnection of Facilities

Chapter 5

OPERATIONS AND MAINTENANCE

The County's O&M Program includes a current summary of the County's procedures and practices as they pertain to the O&M of the sanitary sewer system. The following provides a summary of the County's current O&M procedures as they apply to the program components.

5.1 Sanitary Sewer System Mapping

The County continues its efforts to update its Geographic Information System (GIS) to more accurately reflect the existing wastewater collection system and incorporate any recently installed or realigned wastewater infrastructure. Currently, the County's wastewater collection system is documented in map books that are used daily by maintenance crews as they conduct routine maintenance activities. Discrepancies identified between map book pages and field conditions are manually noted on the map book pages. The map book pages containing comments are submitted to the County's Cartographic staff for updating of electronic files.

The County continues to incorporate as-built information into its GIS and developing formal standard operating procedures for updating GIS information as well as its effort to develop an asset mapping tool to facilitate viewing wastewater facility related data. The intranet-based viewer is intended to be specific to the County's wastewater collection system and allow County staff to view newly revised data, associated as-built drawings and perform data queries.

Additionally, the County implemented an asset mapping tool called Computerized Maintenance Management System (CMMS) to facilitate viewing wastewater facility related data. The County's intranet-based viewer is specific to the County's wastewater collection system and allows County staff to view newly revised data, associated as-built drawings, and perform data queries.

5.2 Preventive Maintenance Program

The County's Preventive Maintenance Program primarily includes scheduled maintenance of the wastewater facilities, including sewer pump stations and, wet wells, routine cleaning and root treatment of the wastewater collection system pipelines, and maintenance hole treatment.

5.2.1 Mechanical Cleaning

The County Collections Engineering and Operations staff conducts the routine cleaning of the County's wastewater collection facilities one sanitary sewer service area at a time in the direction of flow to convergence locations. The collection system is separated into pipelines 18-inches and smaller that is cleaned annually, while pipelines greater than 18-inches is cleaned as-needed. Additionally, crews clean high frequency maintenance locations (Special Maintenance Sites) on a quarterly basis. These locations include several of the County's pipelines with areas identified as having excessive grease and root concentrations.

The County revised its rodding sheets, used to document cleaning efforts, to allow for the documentation and collection of more comprehensive information pertaining to the cleaning efforts. Additional data collected includes:

- Water loads used per basin
- Length of pipe cleaned
- Number of passes necessary for proper cleaning
- Preliminary assessment of upstream and downstream maintenance holes
- Accessibility issues
- Type of debris removed (roots, grease, silt)
- Amount of debris removed (light, moderate, heavy)
- Identification of potential defects/deficiencies

Since implementing the revised rodding sheets, County staff has been able to identify additional areas requiring specific maintenance needs and is updating the list of Special Maintenance Sites as the maintenance efforts capture more comprehensive system conditions.

As the County is committed to maintaining its inspection efforts and achieving its inspection goals, as necessary, the County exercises its authority to retain the services of outside resources to provide support in achieving its objectives. To date, the County is on track in achieving its yearly goal of cleaning the entire small diameter wastewater collection system on a yearly basis.

5.2.2 Root Treatment

The County's sewer maintenance crews primarily use jet-rodder/vactor and/or continuous rodder vehicles in areas with high root concentrations. Recently, the County implemented a program to assess the need for incorporating chemical root treatment into its maintenance program. The need and frequency of the root treatment will be determined based on information captured during ongoing monitoring and televising of the system. The County has identified several specific areas of the system (Spring Valley) in which the program is currently being implemented for further evaluation.

5.3 System Inspection and Condition Assessment Program

Regular and systematic inspection and assessment of sanitary sewer system facilities provides a means to monitor the condition of the facilities, the effectiveness of the maintenance operations, and provides a basis for identifying and scheduling capital improvements. As well, the overall assessment can be used to determine the funding required to repair, rehabilitate, and replace an aging collection system and to prioritize the allocation of funds and optimize the expenditure and efforts to operate a sewer collection system.

5.3.1 Installation and Use of SmartCover Monitoring System

The County currently has 32 SmartCovers in place and is planning to install an additional 40 SmartCovers in the near future. The purpose of the SmartCovers is to reduce the risk of an SSO by alerting the County on rising flow trends within the maintenance hole. SmartCovers is a device that has an antenna attached on the maintenance hole cover and a sensor that monitors the height of the sewage flow at the maintenance hole invert. The flow information is transmitted wirelessly to mobile phone applications as well as desktop computers. The information transmits flow trends, alerts, and alarms. The SmartCovers are placed strategically

within the system at remote environmentally vulnerable locations, at known SSO locations, and Special Maintenance lines.

5.3.2 System Inspection and Assessment

The County conducts regular inspection and assessment of the wastewater system pipelines using closed circuit television (CCTV) technology. The County's CCTV vehicles are equipped with GraniteNet developed by Cues. The inspection codes incorporated into the Granite Software are National Association of Sewer Service Companies (NASSCO) certified and comply with the Pipeline Assessment and Certification Program (PACP).

Inspections continue to be performed systematically and generally on a daily basis. The inspections are performed subsequent to all new and rehabilitated pipelines to identify potential defects, determine the effectiveness of the cleaning efforts, and confirm contractor compliance with County design and construction standards. Progress of CCTV inspection efforts is documented by staff and utilized for tracking and reporting purposes. As the necessity to televise a particular location or portion of the wastewater collection system arises, staff is assigned to accommodate the request.

Generally, condition assessment of the sewer pipelines is performed in the field during the CCTV inspection process by the County field crews performing the inspections. Defects detected are recorded on the system's hard drive to document the defect(s) and potential problem(s) requiring repair and to identify the necessary repair method. Permanent records of the detected defects are produced by capturing images of the information on the CCTV screen and recording the images on the local drive that is maintained at the Spring Valley Operations Yard.

To date, the County exceeded its yearly goal of televising approximately 49 miles of small diameter pipelines by 40 percent in 2019. The County is currently undergoing a multi-year program to televise and assess the entire collection system.

5.4 Capital Improvement Program Project Identification

Projects included in the Major Maintenance Program primarily originate based on the assessment of the CCTV inspections conducted by County staff while CIP projects are identified based on capacity modeling results and other necessary projects identified during the update of the County master plans.

The County recognizes that close coordination between the Major Maintenance Project Program and CIP is essential to avoid planning, scheduling, and budgeting of the same projects in both programs. The County's Communication Structure (Figure 3.3 in SSMP) facilitates and promotes the collaboration between the various sections of the Wastewater Management Program to identify and prioritize pipeline replacement and rehabilitation projects to address critical issues. Additionally, projects in each program may be coordinated and/or combined and result in an overall cost savings.

The County has updated several master plans for all of its service areas and developed a rolling 10-year CIP list of projects. The master plans include a summary of the projected costs and dates for start and end of construction. The CIP, Major Maintenance Project Program, and wastewater maintenance staff reviews the list every two years to coordinate and include newly identified projects, revise the priorities, and update estimated costs based on updated information. This serves to assure that the necessary projects will be completed in a timely and efficiently manner and thereby reducing the potential occurrence of an SSO.

Projects not included in the program or postponed are maintained on the appropriate maintenance schedule and tracked as potential future projects. Projects that are included in the program and completed are eventually removed from the tracking list and information pertaining to the management and maintenance of the asset is updated.

5.5 Training Program

Operations staff is routinely trained on the provisions of wastewater operation and maintenance policies, procedures safety policies and the equipment used. Instructional materials have included training on the County's SSMP and Sanitary Sewer Overflow Emergency Response Plan (SSOERP). Training on the operation of County equipment includes "on-the-job" training in conjunction with bi-weekly "tailgate" meetings to discuss safety issues and operating procedures. All training including subject matter, duration, and attendance is documented.

Training programs available include:

- Training on 11 Safety Related Director Letters of Instruction
- Trenching/Shoring
- Confined Space
- First Aid/CPR
- Heat Illness Prevention
- Traffic Control and Flagger
- Chain Saw
- Forklift
- Omnibus Transportation Act
- Backhoe Operator
- Fire Extinguisher
- Stormwater Pollution Prevention
- Chlorine Safety
- Fall Protection
- Wildfire Smoke Protection

Currently, all Wastewater Management staff is required to obtain a Class A driver's license. Although not required for all staff, the County encourages its wastewater maintenance staff to obtain various certifications including, but not limited to, the Plant Maintenance certification and the Department of Health Services Water Distribution certification. Several maintenance staff are NASSCO or PACP certified to perform CCTV inspection and assessment. As necessary and determined appropriate, training programs may include supplemental technical training.

5.6 Equipment and Replacement Part Inventories

The County maintains an updated inventory list of vehicles and replacement parts available. Maintenance vehicles and sanitary sewer system replacement parts are readily available in the Spring Valley Operations Yard and are accessible to operations staff and sufficient supplies are maintained to allow for prompt responses to various types of routine and emergency conditions that may occur. Staff may purchase equipment from approved vendors using an assigned Purchase Card or "P-Card."

As necessary, maintenance staff solicits the utilization of resources, including equipment and staff. For implementation of repairs that extend beyond the County's internal resource capabilities, the County retains the services of professional contractors.

Chapter 6

DESIGN AND PERFORMANCE PROVISIONS

The County requires all projects that include design and construction of new, rehabilitated, and replacement of sewer system facilities within the County or under contract to the County be constructed in accordance with Title 6 of the County Code.

Section 68.159 of the County Code codifies the County's current design and performance criteria and requires that all work be performed and that all plans and specifications conform to the requirements prescribed by the San Diego Regional Standard Drawings and the Greenbook. Additionally, compliance with the Regional Supplemental Amendments to the Greenbook and the San Diego County Standards for Sewer Construction is required.

For facilities that the County considered non-standard, such as treatment plants, pump or lift stations, force mains, internal sealing of existing sewers, outfall sewers, energy dissipaters, regulating devices, and/or flow measurement devices, and not included in the San Diego County Standards for Sewer Construction, the County requires approval prior to commencing design and final acceptance.

For compliance with inspection and testing of wastewater facilities, the County requires that all main line sewers, service laterals and structures be tested in the presence of a County inspector and in accordance with Section 306-1.4.4 and Mandrel Test per Section 306-1.2.12 of the Greenbook. The Greenbook includes procedures and standards for inspecting and testing the installation of sewer mains and related appurtenances and for the rehabilitation and repair of existing sanitary sewer systems. As well, it includes inspection and testing criteria for various pipe materials and installation methods. Section 500-1.2.6 requires the Engineer to review pipeline inspection video submitted by the Contractor to verify the pipeline point repair or replacement installation of wastewater pipelines and maintenance holes are constructed to County satisfaction prior to backfilling.

Generally, the provisions noted in the County's design and construction standards are sufficient and continue to address the required components of the WDRs.

Chapter 7

SANITARY SEWER OVERFLOW

SSOs may occur as a result of a blocked sewer pipelines, pipeline failures, mechanical malfunctions, and other natural or man-made causes. Therefore, it is imperative that formal response procedures be established to confirm that County crews respond appropriately and efficiently to an SSO to minimize the effects of an SSO on the environment while protecting the public's health and safety.

An update to the County of San Diego's 2015 SSOERP is included in Appendix C of the SSMP. The County intends for the SSOERP to supplement the County's existing emergency plans and standard operating procedures and facilitate coordination and mobilization of necessary equipment and personnel in an organized and efficient manner. The SSOERP includes the necessary guidelines for County staff to respond to an SSO occurrence and contains the following elements:

- Introduction and Regulatory Requirements.
- Sanitary Sewer Overflow Emergency Response Procedures.
- Public Advisory of Sewage Contamination Procedures.
- SSO Monitoring and Reporting Requirements.
- Training Requirements.
- SSOERP Updating Requirements.
- Various Attachments.

The County's SSOERP includes response priorities, safety, and overflow containment, correction, and clean-up measures for actual SSOs of various types. Figure 4-1 of the SSOERP offers a current and concise overview of the steps required to be implemented by County staff to quickly respond to an actual or possible SSO event. It summarizes the SSO response procedures and illustrates the County's emergency response procedures, including notification and request of additional resources as required in the event of a large SSO.

The County has updated the following components of the SSOERP. Generally, the modifications include revisions to forms and updates to names and contact information for notification purposes:

- Attachment B: County of San Diego Stand-by List.
- Attachment C: Approved Contractors and Equipment Rental Vendors.
- Attachment E: Regulatory Agency SSO Notification List.
- Attachment I: Pre-scripted Public Notices.

County staff incorporated the modified forms and contact information into the SSOERP to confirm that the document is maintained updated and reflects the most current information including the most current monitoring and reporting requirements.

The County has since developed and incorporated into its SSOERP a right of entry form that will allow County staff the right of access and entry onto properties within the County's jurisdiction

for the purpose of evaluating, removing and/or clearing debris, and performing appropriate remediation efforts in the event of an SSO occurrence.

In compliance with the WDRs, the County conducts an annual review of the SSOERP to confirm all provisions of the plan are being met and implemented and has determined that the established procedures for responding to reports of possible and confirmed SSOs originating from the County's wastewater collection system as included in the SSOERP are current.

Chapter 8

FOG CONTROL PROGRAM

The County continues its commitment to minimizing the quantity and/or effects of FOG discharged into the wastewater collection system. The FOG Characterization Study prepared in conjunction with the County's SSMP served to:

- Compile and categorize FOG related information.
- Identify and locate potential FOG sources.
- Identify high frequency maintenance locations due to FOG.
- Identify areas potentially susceptible to excessive FOG accumulation.
- Identify and locate areas within the wastewater collection system in which SSOs have occurred due to excessive FOG.

Information compiled, reviewed and evaluated included a comprehensive list of businesses permitted by the County DEH, Special Maintenance Sites per service area, and historical SSO records reported to the San Diego Regional Water Quality Control Board.

8.1 County DEH

Review of the business permits issued in the year 2018 by the County DEH revealed that approximately 232 food service establishments were likely to use, produce and/or contribute FOG to the wastewater collection system.

8.2 Special Maintenance Sites

There are currently over 400 pipe segments identified by County wastewater maintenance staff as Special Maintenance Sites and located in the service areas as shown in Table 8.1.

Table 8.1 Location of Special Maintenance Sites

Special Maintenance Sites		
Alpine Service Area:	25 segments	6%
Lakeside Service Area:	73 segments	17%
Spring Valley Service Area:	294 segments	69%
Winter Gardens Service Area:	32 segments	8%

Currently there are no Special Maintenance Sites identified within the Julian, Pine Valley, Campo, or East Otay Mesa service areas.

8.3 Historical SSO Records

Records reviewed included historical records obtained from the San Diego Regional Water Quality Control Board website that included SSOs reported by the County and included SSO occurrences at private laterals. Where the location of an SSO occurrence was not noted, a review of the County's Maintenance Action Report, which includes a summary of the emergency calls received was reviewed to determine the types of calls received.

8.4 Findings

FOG Characterization study revealed that the majority of the SSO occurrences were primarily due to debris accumulation in the pipelines. Overall, the data indicated that SSOs were not associated with food service establishments but due to residential discharge of FOG into the system. Therefore, the County's proactive preventive maintenance program and the routine cleaning of its Special Maintenance Sites were sufficient for addressing FOG related conditions in the wastewater collection system.

For purposes of the audit, California Integrated Water Quality System (CIWQS) records were obtained from the SWRCB database and reviewed to assess the reported cause of SSOs since the certification of the County's SSMP document in June 2010. Table 8.2 provides a summary of the reported causes of SSOs based on the review of the CIWQS information, which included data from 2010 through 2019.

Table 8.2 Reported Cause of SSO

Reported Cause	No. of SSOs	Percentage
Debris	14	18%
Roots	40	53%
Grease	4	5.3%
Defect	2	3%
Vandalism	13	17%
Other	3	4%
Total	**76**	**100%**

Notes:
(1) Based on CIWQS data for WDIDs 9SSO10662, 9SSO10689, and 9SSO10673.

Based on the findings, only four (4) SSOs that have occurred since 2010 were reported as having been caused due to excessive FOG in the wastewater collection system. Since 2010, the majority of the SSO occurrences have been primarily due to debris and root accumulation in the pipelines. In response to the SSO occurrences, and as further described in Section 10, the County is currently implementing a program to address this matter.

Chapter 9

SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

The WDRs require the County to prepare and implement a capital improvement plan that includes measures to address system hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions and the appropriate design storm or wet weather event. Since the certification of the County's SSMP, the County has prepared the following wastewater master plans for its wastewater service areas:

- Alpine and Lakeside Sewer Service Area Sewer Master Plan, January 2013
- Spring Valley Service Area Sewer Master Plan, January 2013
- Winter Gardens, Julian, Campo, and Pine Valley Area Sewer Master Plan, January 2013

The master plans include an evaluation of the hydraulic capacity of the major sewer pipelines, sewer lift stations, and force mains. A capacity analysis of the existing collection system for each service area was performed under existing and build-out peak dry weather flow and peak wet weather flow conditions. Model simulations were performed for the 2030 planning horizon to identify potential improvement projects.

In the service areas in which recommended capacity improvement project were identified, the pipeline improvement projects were sized to accommodate the projected build-out flows based on land-use. Projects were then evaluated under the existing 2030 planning horizon to identify project priority and phasing. Lift stations and force mains were also evaluated under existing and projected wastewater flows based upon the County criteria. The stations were evaluated for operational, storage, condition and sizing requirements.

The following sections provide brief descriptions of each master plan and the capacity management measures implemented to address the current and future capacity requirements of the service area collection system and identify capacity improvement projects. A master plan update has not been prepared for the East Mesa sewer service area since 2006. The County is planning to perform an update to the master plans in early 2021.

9.1 Alpine and Lakeside Sewer Service Areas Master Plans

9.1.1 Evaluation

Wastewater generation rates were estimated using two sources for comparison purposes including population estimates compiled by SANDAG and the County's current land use data. Based on the analysis, more conservative generation rates were recommended for estimating future wastewater generation flows. Wastewater flow projections were developed through 2030 and for buildout conditions. Flow projections through 2030 were estimated by applying the recommended population unit generation rates to the recommended phased populations. Buildout wastewater flow projections were determined by applying the land-use based unit generation rates to the land use acreages and allowable densities. The projections formed the

basis for sewer input flows to the hydraulic model and analyses of future capacity needs in the wastewater collection system.

A capacity evaluation of the Alpine and Lakeside Service Areas existing wastewater collection system was completed to identify sewer reaches that may be deficient under recommended design criteria and to identify any upgrades needed to accommodate existing and projected dry and wet weather wastewater flows. Based on the capacity evaluation, phased facility improvements were identified to reduce the potential for SSOs as well as to accommodate projected growth.

9.1.2 Design Criteria

Recommended criteria were developed to evaluate the capacity of the existing collection system under existing and projected dry and wet weather flow conditions. The recommended evaluation criteria were developed by comparing existing County criteria to criteria for similar Southern California sewer agencies. The recommended criteria were used to identify deficient facilities and size replacement infrastructure. The evaluation criteria are presented in Table 4-1 of the Master Plan.

9.1.3 Capacity Enhancement Measures

A capacity analysis of the existing collection system including lift stations, force mains, and siphons, was performed under existing and forecasted dry and wet weather flow conditions based on evaluation criteria. Model simulations were performed for the recommended 2030 wastewater generation to identify potential improvement projects. The identified improvement projects were then sized to accommodate the buildout flow projections based on the land use. Projects were then evaluated under the existing and recommended 2020 wastewater generation to identify project priority and phasing.

The capacity evaluation concluded there are several capacity-constrained sewers based on the evaluation criteria under existing conditions. The study identified pipeline deficiencies, which capacity deficiencies were evaluated in conjunction with identified condition related projects to form the CIP. The CIP is presented in four major phases of work based on priority needs.

9.1.4 Schedule

A CIP for the Alpine and Lakeside Service Areas was developed based on the findings of the Master Plan. The CIP projects identified facilities needed to meet existing system needs based on the County's design criteria for the wastewater collection system. The projects were presented in four major phases of work based on priority needs. The projects identified for each service area are summarized in Table 7-3 of the Master Plan.

9.2 Spring Valley Sewer Service Area Master Plan

9.2.1 Evaluation

Wastewater generation rates were estimated using two sources for comparison purposes including population estimates compiled by SANDAG and the County's current land use data. Based on the analysis, more conservative generation rates were recommended for estimating future wastewater generation flows. Wastewater flow projections were developed through 2030 and for buildout conditions. Flow projections through 2030 were estimated by applying the recommended population unit generation rates to the recommended phased populations. Buildout wastewater flow projections were determined by applying the land-use based unit

generation rates to the land use acreages and allowable densities. The projections formed the basis for sewer input flows to the hydraulic model and analyses of future capacity needs in the wastewater collection system.

A capacity evaluation of the existing wastewater collection system in the Spring Valley Service Area was completed to identify sewer reaches that may be deficient under recommended design criteria and to identify any upgrades needed to accommodate existing and projected dry and wet weather wastewater flows. Based on the capacity evaluation, phased facility improvements were identified to reduce the potential for SSOs as well as to accommodate projected growth.

9.2.2 Design Criteria

Recommended criteria were developed to evaluate the capacity of the existing collection system under existing and projected dry and wet weather flow conditions. The recommended evaluation criteria were developed by comparing existing County criteria to criteria for similar Southern California sewer agencies. The recommended criteria were used to identify deficient facilities and size replacement infrastructure. The evaluation criteria are presented in Table 4-1 of the Master Plan.

9.2.3 Capacity Enhancement Measures

A capacity analysis of the existing collection system including lift stations, force mains, and siphons, was performed under existing and forecasted dry and wet weather flow conditions based on evaluation criteria. Model simulations were performed for the recommended 2030 wastewater generation to identify potential improvement projects. The identified improvement projects were then sized to accommodate the buildout flow projections based on the land use. Projects were then evaluated under the existing and recommended 2020 wastewater generation to identify project priority and phasing.

9.2.4 Schedule

A CIP for the Spring Valley Service Area was developed based on the findings of the Master Plan. The CIP projects identified facilities needed to meet existing system needs based on the County's design criteria for the wastewater collection system. The projects were presented in four major phases of work based on priority needs. The projects identified for the service area are summarized in Table 7-3 of the Master Plan. Table 7-5 includes a summary of the recommended improvements identified as a result of the condition assessment performed of selected pipelines.

9.3 Winter Gardens, Julian, Campo, Pine Valley Sewer Service Areas Master Plans

Separate Master Plans for the Winter Gardens, Julian, Campo, and Pine Valley Sewer Service Areas were simultaneously developed in 2013. The Master Plans were then consolidated into one overall report titled Winter Gardens, Julian, Campo, Pine Valley Sewer Service Areas Master Plans, January 2013. The following provides a brief summary of each Master Plan and the methodology used to model each system, develop estimated wastewater flows, and evaluate the sewer system capacity to address components as required by the WDRs.

9.4 Winter Garden Service Master Plan

9.4.1 Evaluation

Wastewater generation rates for the Winter Gardens Service Area were estimated using two sources for comparison purposes including population estimates compiled by SANDAG and the County's current land use data. Using SANDAG population data, per capita wastewater generation rates were determined thorough a comparison of the existing SANDAG population data within a given meter basin against the average wastewater flows observed at that flow meter, and industry standard ranges. Through an iterative process, per capita generation rates for residential and employment populations were estimated. Table 3-1 in the Master Plan summarizes the estimated unit generation rates by population through the flow calibration process. Per capacity unit generation rates were calibrated to within 5 percent of the existing flows.

Land use based unit generation rates were determined through a comparison of the existing area per land use type within the meter basin against the average wastewater flows observed at the flow meter and industry standard ranges. Table 3-2 in the Master Plan summarizes the calibration of sewer flows for the Winter Gardens Service Area by land use. Unit wastewater generation rates were calibrated to within 5 percent of the existing flows measured at the flow meter (Meter WG-1). For existing system analysis, the calibrated unit generation rates based on land use were used. For future wastewater generation, more conservative generation rates were used and are summarized in Table 3-3 of the Master Plan.

Wastewater flow projections were developed through 2030 and for buildout conditions. Flow projections through 2030 were estimated by applying the recommended population unit generation rates to the recommended phased populations. Buildout wastewater flow projections were determined by applying the land-use based unit generation rates to the land use acreages and allowable densities. The projections formed the basis for sewer input flows to the hydraulic model and analyses of future capacity needs in the wastewater collection system.

A capacity evaluation of the Winter Gardens Service Area existing wastewater collection system was completed to identify sewer reaches that may be deficient under recommended design criteria and to identify any upgrades needed to accommodate existing and projected dry and wet weather wastewater flows. The principal tool utilized in the capacity analysis was a steady state hydraulic analysis spreadsheet using the Manning formula to evaluate flow conditions such as flow depth, flow rate, and velocity within pipes and maintenance holes in the collection system. The model was utilized to evaluate the existing collection system under existing and projected wet weather flow conditions in order to identify potential recommended improvements to the existing collection system.

9.4.2 Design Criteria

Recommended criteria were developed to evaluate the capacity of the existing collection system under existing and projected dry and wet weather flow conditions. The recommended evaluation criteria were developed by comparing existing County criteria to criteria for similar Southern California sewer agencies. The recommended criteria were used to identify deficient facilities and size replacement infrastructure. The evaluation criteria are presented in Table 4-1 of the Master Plan.

9.4.3 Capacity Enhancement Measures

A capacity analysis of the existing collection system including lift stations, force mains, and siphons, was performed under existing and forecasted dry and wet weather flow conditions based on evaluation criteria.

The principal tool utilized in the capacity analysis was a dynamic hydraulic model which simulated flow conditions such as wastewater flow depth, flow rate, and velocity within pipes and maintenance holes in the service area collection system. The model was developed using the physical collection system data, existing and forecasted populations, per capita unit generation rates, diurnal patterns, and rainfall events. The model was calibrated to flow metering records for dry and wet weather conditions and then used to evaluate the existing collection system under existing dry and wet weather flow conditions in order to identify potential recommended improvements to the existing collection system.

Model simulations were performed for the recommended 2030 wastewater generation to identify potential improvement projects. The identified improvement projects were then sized to accommodate the buildout flow projections based on the land use. Projects were then evaluated under the existing and recommended 2020 wastewater generation to identify project priority and phasing.

9.4.4 Schedule

CIP for the Winter Gardens Sewer Service Area was developed based on the findings in the Master Plan. The CIP projects identified facilities needed to meet existing system needs based on the County's design criteria for the wastewater collection system and include capacity and condition related projects. The recommended CIP project to address an identified capacity issue for the Winder Gardens Sewer Service Area is summarized in Table 6-2 while Table 6-3 includes a summary of the recommended improvements identified as a result of the condition assessment performed of selected pipelines.

9.5 Julian Service Area Master Plan

9.5.1 Evaluation

Wastewater generation rates for the Julian Service Area were estimated using two sources for comparison purposes including population estimates compiled by SANDAG and the County's current land use data. Using SANDAG population data, per capita wastewater generation rates were determined thorough a comparison of the existing SANDAG population data within a given meter basin against the average wastewater flows observed at that flow meter, and industry standard ranges. Through an iterative process, per capita generation rates for residential and employment populations were estimated. Table 3-1 in the Master Plan summarizes the estimated unit generation rates by population through the flow calibration process. Per capacity unit generation rates were calibrated to within 5 percent of the existing flows.

Land use based unit generation rates were determined through a comparison of the existing area per land use type within the meter basin against the average wastewater flows observed at the plan flow meter and industry standard ranges. Table 3-2 in the Master Plan summarizes the calibration of sewer flows for the Julian Sewer Service Area by land use. Unit wastewater generation rates were calibrated to within 5 percent of the existing flows measured at the Julian Water Pollution Control Facility (JWPCF).

For existing system analysis, the calibrated unit generation rates based on land use were used and are summarized in Table 3-2 of the Master Plan. For future wastewater generation slightly higher and more conservative generation rates for commercial and institutional uses were used to determine an estimated 2050 flow. However, future flows will be limited by the JWPCF treatment and disposal capacity. Generation rates used to estimate future flows are summarized in Table 3-3 of the Master Plan.

Wastewater flow projections were developed through 2030 and for buildout conditions. Flow projections through 2030 were estimated by applying the recommended population unit generation rates to the recommended phased populations. Buildout wastewater flow projections were determined by applying the land-use based unit generation rates to the land use acreages and allowable densities. The projections formed the basis for the analyses of future capacity needs in the wastewater collection system.

A capacity evaluation of the Julian Service Area existing wastewater collection system was completed to identify sewer reaches that may be deficient under recommended design criteria and to identify any upgrades needed to accommodate existing and projected dry and wet weather wastewater flows.

9.5.2 Design Criteria

Recommended criteria were developed to evaluate the capacity of the existing collection system under existing and projected dry and wet weather flow conditions. The recommended evaluation criteria were developed by comparing existing County criteria to criteria for similar Southern California sewer agencies. The recommended criteria were used to identify deficient facilities and size replacement infrastructure. The evaluation criteria are presented in Table 4-1 of the Master Plan.

9.5.3 Capacity Enhancement Measures

A capacity analysis of the existing collection system including lift stations, force mains, and siphons, was performed under existing and forecasted dry and wet weather flow conditions based on evaluation criteria.

The principal tool utilized in the capacity analysis was a steady state hydraulic analysis spreadsheet using the Manning formula to evaluate flow conditions such as flow depth, flow rate, and velocity within pipes and maintenance holes in the collection system. The model was utilized to evaluate the existing collection system under existing and projected wet weather flow conditions in order to identify potential recommended improvements to the existing collection system.

Model simulations were performed for the recommended 2030 wastewater generation to identify potential improvement projects. The identified improvement projects were then sized to accommodate the buildout flow projections based on the land use. Projects were then evaluated under the existing and recommended 2020 wastewater generation to identify project priority and phasing.

9.5.4 Schedule

A CIP for the Julian Sewer Service Area was developed based on the findings of the Master Plan. The CIP projects identified facilities needed to meet existing system needs based on the County's design criteria for the wastewater collection system. The recommended CIP project to

address an identified capacity issue for the Julian Sewer Service Area is summarized in Table 6-1 while Table 6-2 includes a summary of the recommended improvements identified as a result of the condition assessment performed of selected pipelines.

9.6 Campo Service Area Master Plan

9.6.1 Evaluation

Wastewater generation rates for the Campo Service Area were estimated using two sources for comparison purposes including population estimates compiled by SANDAG and the County's current land use data. Using SANDAG population data, per capita wastewater generation rates were determined thorough a comparison of the existing SANDAG population data within the basin against the average wastewater flows observed at the Ranch Del Campo Water Pollution Control Facility (RDCWPCF) flow meter, and industry standard ranges. Through an iterative process, per capita generation rates for residential and employment populations were estimated. Table 3-1 in the Master Plan summarizes the estimated unit generation rates by population through the flow calibration process. Per capacity unit generation rates were calibrated to within 3 percent of the existing flows based on industry standards.

Land use based unit generation rates were determined through a caparison of the existing area per land use type within the meter basin against the average wastewater flows observed at the plan flow meter and industry standard ranges. Table 3-2 in the Master Plan summarizes the calibration of sewer flows for the Campo Sewer Service Area based on land use. The unit wastewater generation rates were calibrated to within 5 percent of the existing flows measured at the RDCWPCF. For existing system analysis, the calibrated unit generation rates based on land use were used. For future wastewater generation, more conservative generation rates were used and are summarized in Table 3-3 of the Master Plan.

Wastewater flow projections were developed through 2030 and for buildout conditions. Flow projections through 2030 were estimated by applying the recommended population unit generation rates to the recommended phased populations. Buildout wastewater flow projections were determined by applying the land-use based unit generation rates to the land use acreages and allowable densities. The projections formed the basis for the analyses of future capacity needs in the wastewater collection system.

A capacity evaluation of the Campo Service Area existing wastewater collection system was completed to identify sewer reaches that may be deficient under recommended design criteria and to identify any upgrades needed to accommodate existing and projected dry and wet weather wastewater flows.

9.6.2 Design Criteria

Recommended criteria were developed to evaluate the capacity of the existing collection system under existing and projected dry and wet weather flow conditions. The recommended evaluation criteria were developed by comparing existing County criteria to criteria for similar Southern California sewer agencies. The recommended criteria were used to identify deficient facilities and size replacement infrastructure. The evaluation criteria are presented in Table 4-1 of the Master Plan.

9.6.3 Capacity Enhancement Measures

A capacity analysis of the existing collection system including lift stations, force mains, and siphons, was performed under existing and forecasted dry and wet weather flow conditions based on evaluation criteria.

The principal tool utilized in the capacity analysis was a steady state hydraulic analysis spreadsheet using the Manning formula to evaluate flow conditions such as flow depth, flow rate, and velocity within pipes and maintenance holes in the collection system. The model was utilized to evaluate the existing collection system under existing and projected wet weather flow conditions in order to identify potential recommended improvements to the existing collection system.

Model simulations were performed for the recommended 2030 wastewater generation to identify potential improvement projects. The identified improvement projects were then sized to accommodate the buildout flow projections based on the land use. Projects were then evaluated under the existing and recommended 2020 wastewater generation to identify project priority and phasing.

9.6.4 Schedule

A CIP for the Campo Sewer Service Area was developed based on the findings of the Master Plan. The CIP projects identified facilities needed to meet existing system needs based on the County's design criteria for the wastewater collection system. The projects were presented in four major phases of work based on priority needs.

The recommended CIP project to address an identified capacity issue for the Campo Sewer Service Area is summarized in Table 6-1 while Table 6-2 includes a summary of the recommended improvements identified as a result of the condition assessment performed of selected pipelines.

9.7 Pine Valley Service Area Master Plan

9.7.1 Evaluation

Wastewater generation rates for the Pine Valley Service Area were estimated using two sources for comparison purposes including population estimates compiled by SANDAG and the County's current land use data. Using SANDAG population data, per capita wastewater generation rates were determined thorough a comparison of the existing SANDAG population data within a given meter basin against the average wastewater flows observed at that flow meter, and industry standard ranges. Through an iterative process, per capita generation rates for residential and employment populations were estimated. Table 3-1 in the Master Plan summarizes the estimated unit generation rates by population through the flow calibration process. Per capita unit generation rates were calibrated to within 16 percent of existing flows.

Land use based unit generation rates were determined through a caparison of the existing area per land use type within the meter basin against the average wastewater flows observed at the plan flow meter and industry standard ranges. Table 3-2 in the Master Plan summarizes the calibration of sewer flows for the Pine Valley Sewer Service Area based on land use. The unit wastewater generation rates were calibrated to within 20 percent of the existing flows measured at the Pine Valley Water Pollution Control Facility (PVWPCF). For existing system analysis, the calibrated unit generation rates based on land use were used. For future wastewater generation,

more conservative generation rates were used and are summarized in Table 3-3 of the Master Plan.

Wastewater flow projections were developed through 2030 and for buildout conditions. Flow projections through 2030 were estimated by applying the recommended population unit generation rates to the recommended phased populations. Buildout wastewater flow projections were determined by applying the land-use based unit generation rates to the land use acreages and allowable densities. The projections formed the basis for the analyses of future capacity needs in the wastewater collection system.

A capacity evaluation of the Pine Valley Service Area existing wastewater collection system was completed to identify sewer reaches that may be deficient under recommended design criteria and to identify any upgrades needed to accommodate existing and projected dry and wet weather wastewater flows.

9.7.2 Design Criteria

Recommended criteria were developed to evaluate the capacity of the existing collection system under existing and projected dry and wet weather flow conditions. The recommended evaluation criteria were developed by comparing existing County criteria to criteria for similar Southern California sewer agencies. The recommended criteria were used to identify deficient facilities and size replacement infrastructure. The evaluation criteria are presented in Table 4-1 of the Master Plan.

9.7.3 Capacity Enhancement Measures

A capacity analysis of the existing collection system including lift stations, force mains, and siphons, was performed under existing and forecasted dry and wet weather flow conditions based on evaluation criteria.

The principal tool utilized in the capacity analysis was a steady state hydraulic analysis spreadsheet using the Manning formula to evaluate flow conditions such as flow depth, flow rate, and velocity within pipes and maintenance holes in the collection system. The model was utilized to evaluate the existing collection system under existing and projected wet weather flow conditions in order to identify potential recommended improvements to the existing collection system.

Model simulations were performed for the recommended 2030 wastewater generation to identify potential improvement projects. The identified improvement projects were then sized to accommodate the buildout flow projections based on the land use. Projects were then evaluated under the existing and recommended 2020 wastewater generation to identify project priority and phasing.

9.7.4 Schedule

The CIP projects identified facilities needed to meet existing system needs based on the County's design criteria for the wastewater collection system and include capacity and condition related projects. Based on the capacity evaluation it was determined that under peak 2030 flow conditions, no capacity deficiencies were identified for the gravity sewer system. However, based on estimated average weekend flows, the PVWPCF may not be able to accommodate increase peak flows due to additional growth in the Pine Valley SSA due to limited peak wet weather capacity on the weekends. Table 6-1 includes the recommended improvements identified to improve the condition and operation of the PVWPCF while Table 6-2 includes a summary of the recommended improvements identified as a result of the condition assessment performed of selected pipelines.

Chapter 10

MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

The WDRs require the County develop and implement a monitoring program to assess effectiveness of the SSMP elements, assess the success of the Preventative Maintenance Program and identify and illustrate SSO trends. The following is a summary of the information County staff regularly track and monitor to measure and assess the effectiveness of O&M efforts and identify and prioritize essential related activities to support the more efficient and effective management of the wastewater collection system.

10.1 Preventative Maintenance Program Progress

The County continues to regularly document, manage, and maintain information pertaining to the wastewater infrastructure by means of manually recording preventive maintenance activities and documenting notifications received regarding potential and actual SSO occurrences. The County regularly tracks performance measures through activity logs which include, but are not limited to, the length of pipe cleaned, the quantity and type of debris removed from the cleaned effort, cause and location of system obstructions and SSOs, and the scheduled maintenance of high frequency maintenance locations. Table 10.1 includes a summary of the monthly progress recorded by County crews of the cleaning of the smaller diameter gravity mains (4-12 inches) of the wastewater collection system. Also summarized is the percentage of the system cleaned on a monthly basis. The County crews are on schedule to achieve the annual goal of cleaning 100 percent (or 390 miles) of the small diameter pipeline and 76 miles of Special Maintenance Areas.

Table 10.1 Summary of Monthly Cleaning Progress

Month (2019)	Monthly Cleaning Totals (ft)	Monthly Cleaning Totals (mi)[1]	Percent Completed (Goal vs Actual)[2]
January	135,115	25.6	66.0%
February	151,642	28.7	70.4%
March	219,067	41.5	83.0%
April	120,542	22.8	77.1%
May	282,744	53.6	89.6%
June	187,282	35.5	90.1%
July	172,339	32.6	89.4%
August	212,520	40.3	91.3%
September	190,925	36.2	91.7%

Month (2019)	Monthly Cleaning Totals (ft)	Monthly Cleaning Totals (mi)[1]	Percent Completed (Goal vs Actual)[2]
October	218,328	41.4	93.3%
November	153,754	29.1	91.7%
December *	208,138	39.4	92.6%
Total	**2,252,395**	**426.6**	**92.6%**

Notes:
(1) Data includes 76 miles of Special Maintenance.
(2) Monthly cleaning goal of 38.3 miles, which is based on a total projected goal of 460.5 miles.

County crews also regularly document progress of CCTV inspections and assessments. Table 10.2 includes a summary of the monthly progress recorded by County crews of the CCTV inspections and assessments performed of the smaller diameter gravity mains (4-12 inch) of the wastewater collection system. Based on the 2019 data, County crews are exceeding the goal of inspecting approximately 49 miles of the small diameter pipelines on a yearly basis by over 40 percent in year 2019.

Table 10.2 Summary of Monthly CCTV Progress

Month (2019)	Monthly CCTV Totals (ft)	Monthly CCTV Totals (mi)	Percent Completed (Goal vs Actual)[1]
January	14,626	2.8	68.2%
February	16,315	3.1	72.2%
March	6,917	1.3	58.9%
April	20,011	3.8	67.5%
May	21,067	4.0	73.6%
June	91,186	17.3	132.3%
July	8,131	1.5	118.8%
August	14,150	2.7	112.2%
September	88,598	16.8	145.6%
October	73,022	13.8	165.1%
November	4,699	0.9	152.1%
December *	2,059	0.4	140.3%
Total	**360,782**	**68.3**	**140.3%**

Notes:
(1) Based on an annual goal of cleaning 48.75 miles of small diameter pipelines a year, or 390 miles every eight years.

10.2 SSO Trends and Cause

To identify and illustrate SSO trends within the County service areas, including frequency, location, and volume, information was retrieved from the CIWQS database for review and evaluation. The following illustrations are based on the findings from the CIWQS information.

Figure 10.1 illustrates the number of system overflows reported yearly since 2010 through the most recent reporting period in 2019. Overall, a total of 76 SSOs were reported since 2010 along the County's main lines.

Figure 10.2 illustrates the reported causes of the reported SSOs. Based on the information reported, the primary cause of the SSOs has been due to heavy root concentrations. Less than five SSOs were reported to be caused due to grease related issues, while other causes included debris, structural defects, vandalism, and other related issues.

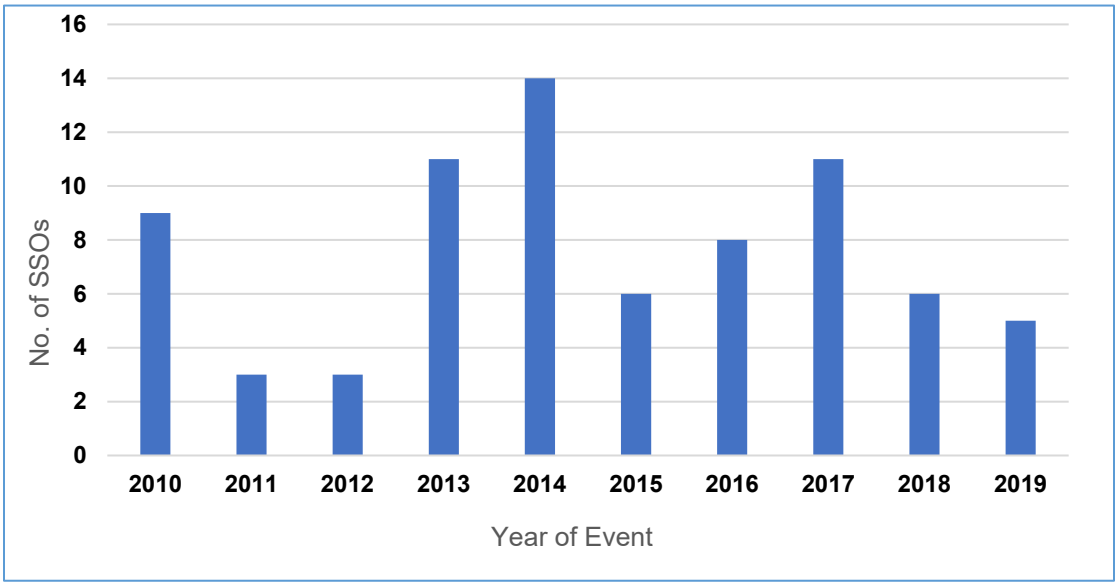


Figure 10.1 Sewer System Overflows

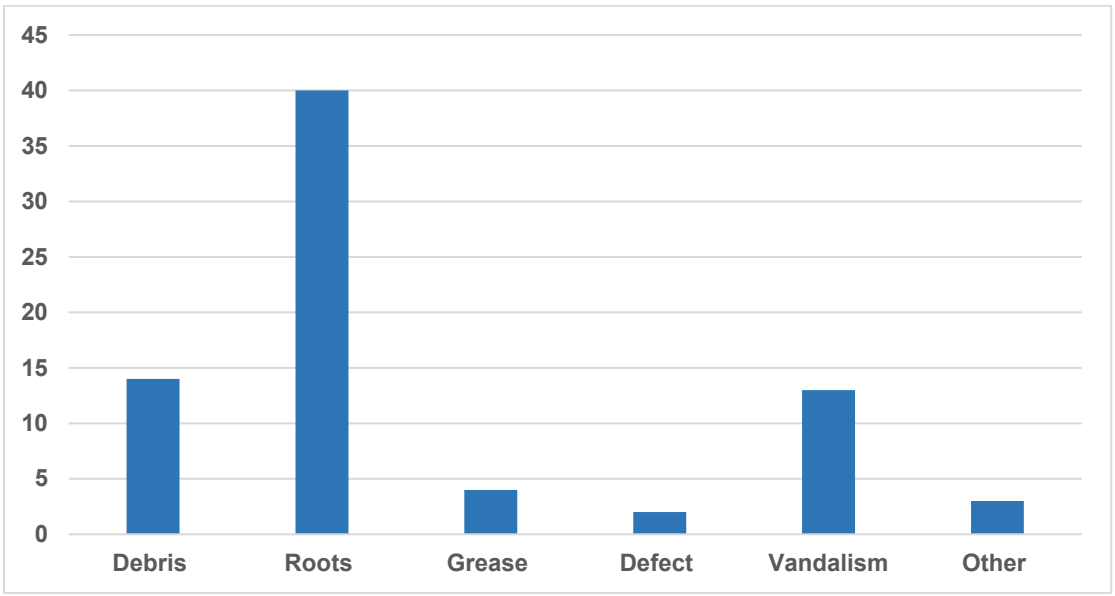


Figure 10.2 Reported Causes of SSOs

Table 10.3 is a summary of the service areas in which the SSOs were reported and the frequency of SSO occurrences in each of the sewer service areas. The SSOs have primarily occurred in three (Alpine, Spring Valley, and Lakeside) of the eight County service areas. Figure 10.4 through Figure 10.6 illustrate the reported locations and causes of SSOs in the affected County service areas based on information obtained from CIWQS.

Table 10.3 Service Areas with Reported SSOs

Year	Sanitary Sewer Overflow Service Area				Total
	Spring Valley[(1)]	Alpine[(1)]	Lakeside[(1)]	Winter Gardens[(1)]	
2010	6	2	1		9
2011	2		1		3
2012	2	1			3
2013	11				11
2014	12	1	1		14
2015	6				6
2016	3		3	2	8
2017	9		2		11
2018	5			1	6
2019	3	2			5
Total	**59**	**6**	**8**	**3**	**76**
Percent	78%	8%	11%	4%	100%

Notes:
(1) County of San Diego, Alpine, Lakeside, Spring Valley, Winter Gardens, East Otay Mesa, WDID# 9SSO10662.
(2) The SSOs are based on current records from CIWQS.

Table 10.3 shows that the over 70 percent of the SSOs have occurred in the Spring Valley Service Area. The reports also indicate that the leading cause of SSOs in the Spring Valley Service Area have been due to roots. In response to this finding, the County has developed and implemented a program that incorporates herbicide treatment and thorough cleaning and inspection efforts of the pipelines treated. Subsequent to chemically treating and cleaning of the pipelines, County staff performs the inspection of the pipelines to verify that no obstructions remain and minimize the potential for an SSO occurrence at the location. Additionally, crews are assessing a variation of nozzles types, equipment and/or their combination to determine the effectiveness and efficiency of the arrangements.

The areas have been specifically targeted as they have been identified and documented as consistently having high root concentrations or the pipelines are located in very steeply sloped areas and have high root concentrations. As the program continues to be implemented, County staff will monitor, track progress and evaluate the findings to further refine the system needs.

10.3 SSO Reported Volume

In compliance with the WDRs, the County has reported the estimated spill volume for each SSO event reported along the County's main lines. Figure 10.3 illustrates the SSO volumes reported since 2010. It should be noted that SSO events reported in 2010 consisted of a total of three occurrences. Two of the SSO events were reported to have occurred in the month of December, which has been documented to have been a large storm event in San Diego County. The SSOs were reported to have been caused due to flooding in the Sweetwater River, which resulted in the surcharge of the sanitary sewer system in the vicinity of the river flooding. Also, in 2017, a large SSO occurred that was due to a large storm event and pipeline failure.

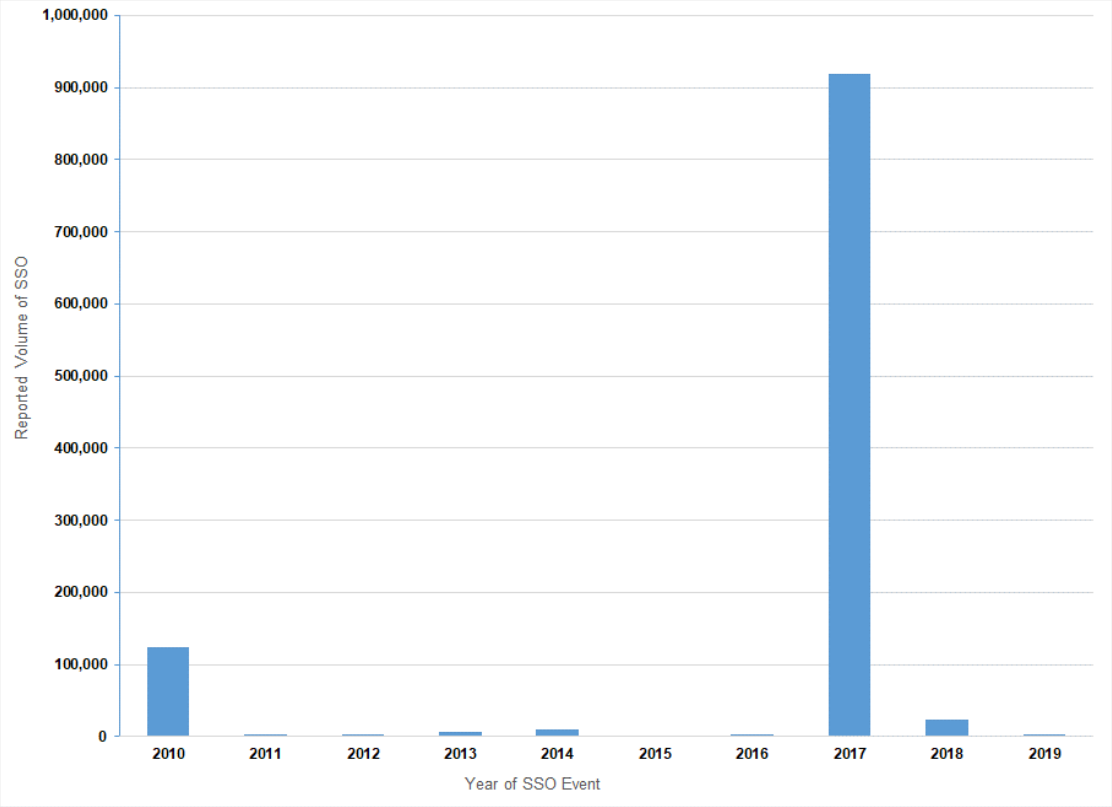


Figure 10.3 Reported Volume of SSO Events

Since 2010, the reported SSO volumes have ranged from 5 to 900,000 gallons. Table 10.4 is a summary of the reported SSO volumes based on the reported cause.

Table 10.4 Reported SSO Volume Based on Defect

Year	Volume of Documented SSO (gal)[1]						Total
	Debris	Root	Grease	Defect	Other	Vandalism	
2010	7,250	0	225	0	117,000	0	124,475
2011	2,000	200	900	0	0	0	3,100
2012	500	2,680	0	0	0	0	3,180
2013	1,935	3,800	150	0	0	875	6,760
2014	4,500	5,195	5	1,000	0	0	10,700
2015	0	2,148	0	0	0	0	2,148
2016	450	1,410	0	0	1,481	0	3,341
2017	500	4,890	0	0	912,700	0	918,090
2018	0	690	0	4,102	2,655	16,500	23,947
2019	130	325	0	0	2,681	300	3,436
Total	**17,265**	**21,338**	**1,280**	**5,102**	**1,036,517**	**17,675**	**1,099,177**

Notes:
(1) Data used for this table came from CIWQS Spill Search Export and 2018 Audit.

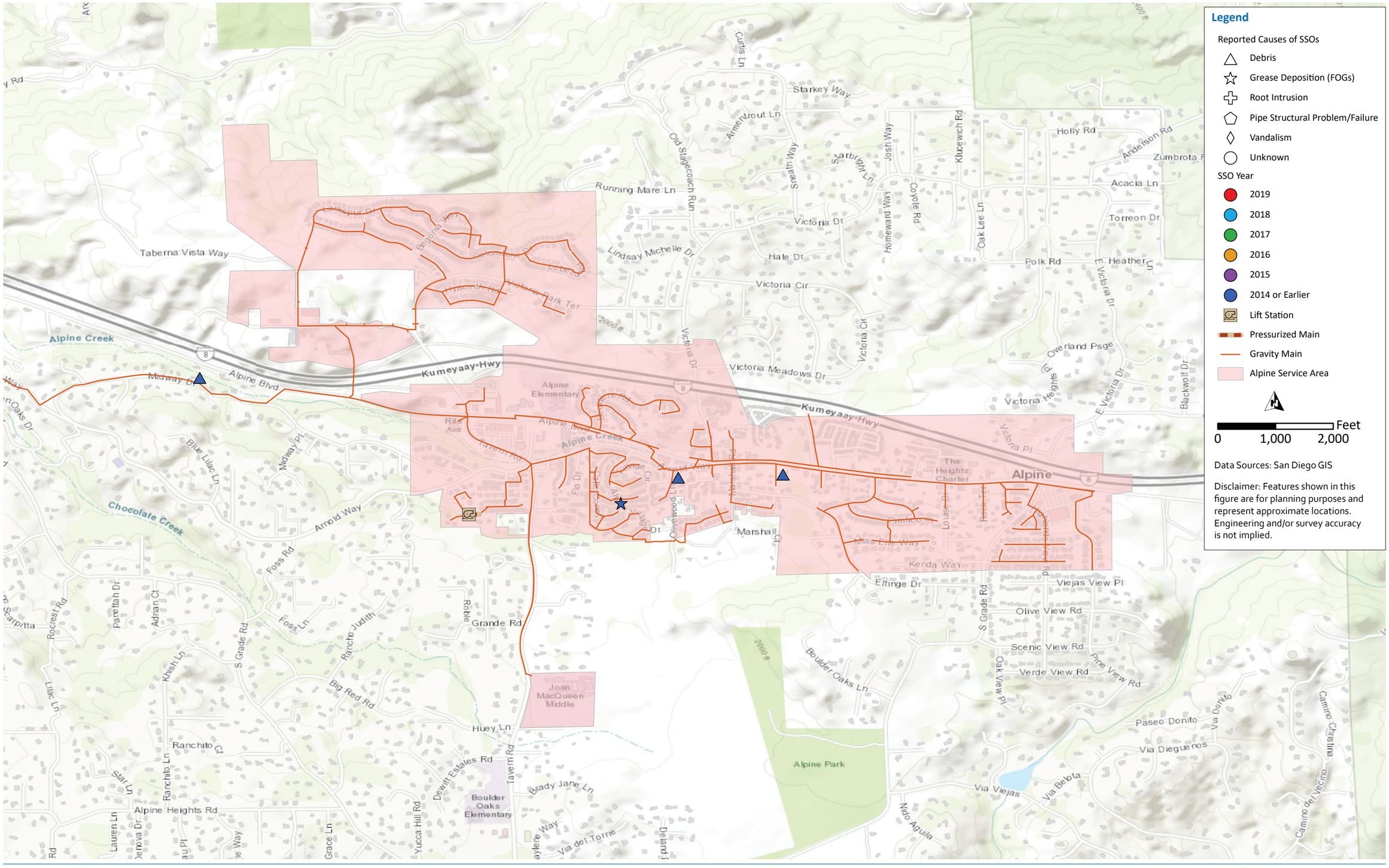


Figure 10.4 Alpine Service Area SSOs

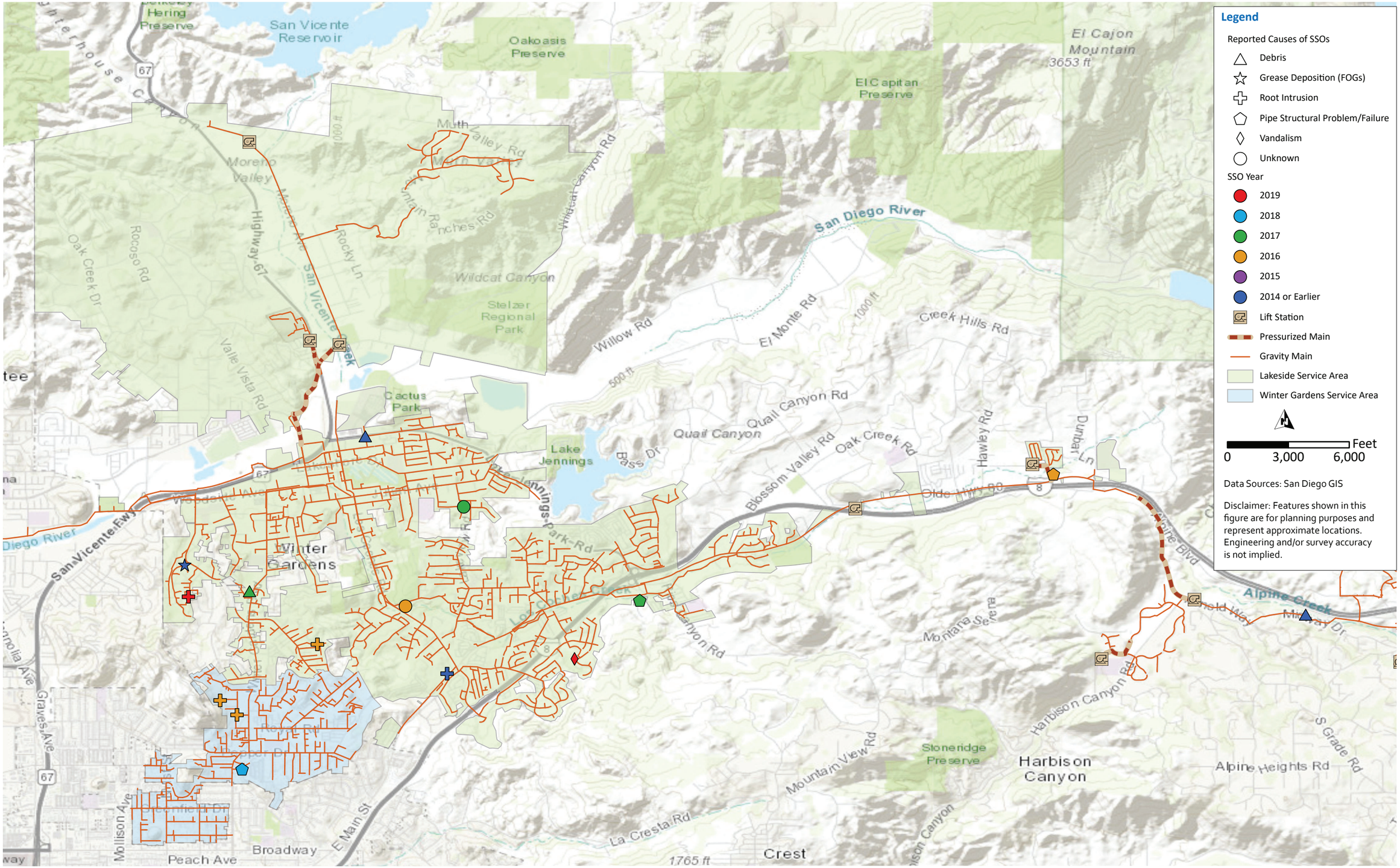


Figure 10.5 Lakeside and Wintergarden Service Areas SSOs

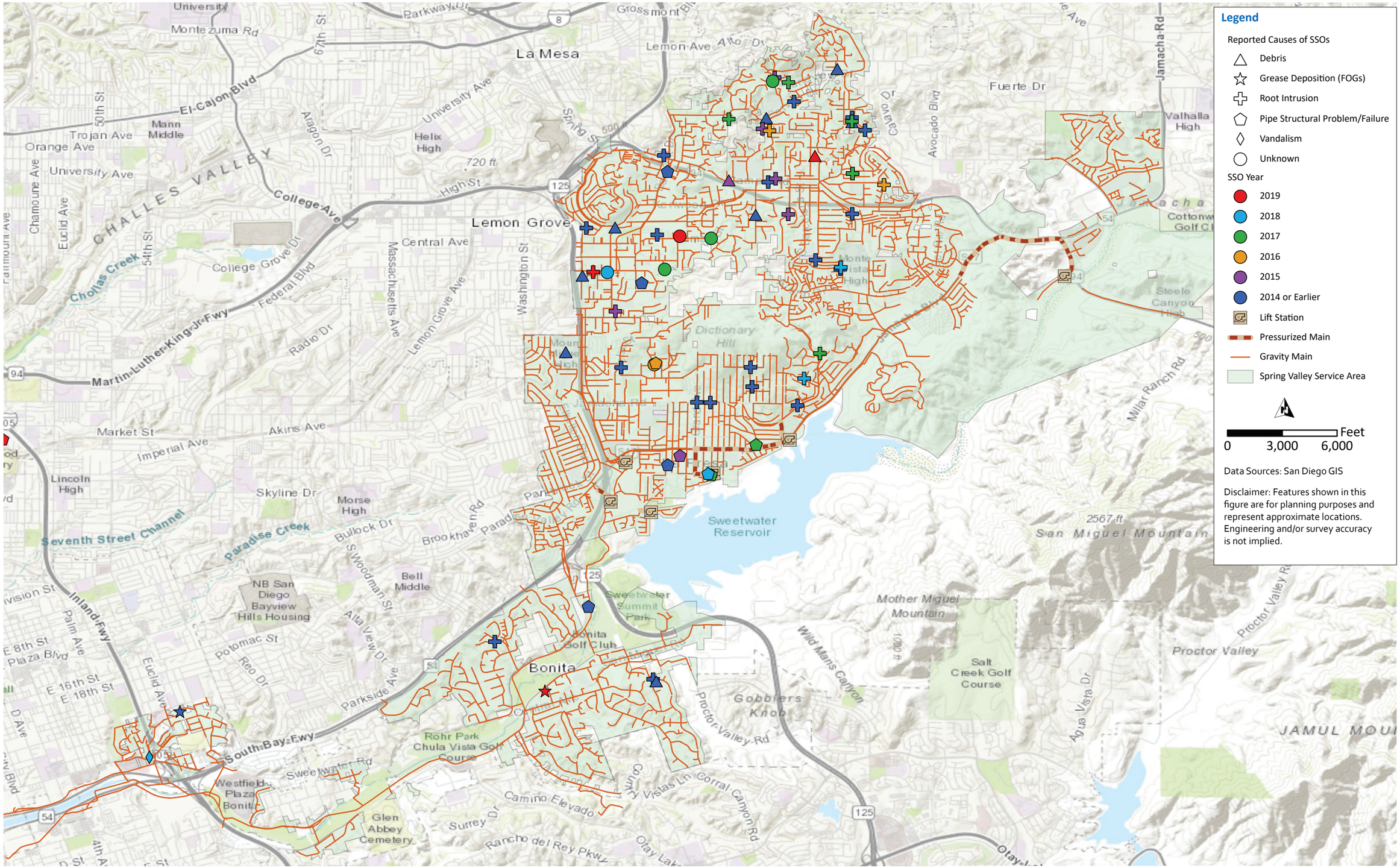


Figure 10.6 Spring Valley Service Areas SSOs

Chapter 11

SSMP AUDITS

The County has prepared and will retain a copy of the audit on file for reference and as required by the WDRs. Generally, the audit was focused on evaluating the effectiveness of the SSMP components and the County's compliance with the WDR requirements, including identification of modifications necessary, program deficiencies and steps to be implemented to address them.

Where applicable, required modifications and/or deficiencies were identified and County staff has proceeded to address and incorporate necessary revision into the relevant SSMP components.

Chapter 12

PUBLIC OUTREACH

The County's continued efforts to increase public awareness, educate, inform, and engage the public's support and participation in the proper utilization of the County's sanitary sewer system, and comply with the WDRs include use of the following:

- County of San Diego Official Website.
- County of San Diego SSOERP.
- Public Meetings.

The County's SSMP and regular audits are available on the County's website (https://www.sandiegocounty.gov/) which allows the public the opportunity to provide input to the elements of the SSMP.

Chapter 13

PROGRAM MODIFICATIONS

In preparing the required audit, the County identified the following as areas with opportunities for improvements. The improvements are focused on ultimately improving system performance and effectiveness.

13.1 Organizational Chart

With recent changes in the County's organization, Figure 3.1 and Figure 3.2 in the SSMP were updated to reflect the County's modifications in department names and responsibilities, respectively. Figure 3.1 illustrates the organization of the departments of the Public Works Program while Figure 3.2 illustrates the County of San Diego Engineering Services Division Wastewater Management Program. Also shown in Figure 3.2 are the key staff positions that support the activities performed by the Wastewater Management Program and implementation of various the SSMP components.

Additionally, the respective description of general responsibilities and the Communication Plan (Figure 3.3 in the SSMP) were revised to reflect the organizational changes and changes in roles and responsibilities of the supporting staff.

13.2 Operations & Maintenance

The County is dedicated to improving the condition and performance of its wastewater collection system and reducing the number of SSOs. Generally, the County's O&M Program includes a current summary of the County's procedures and practices as they pertain to the O&M of the sanitary sewer system. In addition, since the 2018 Audit, one (1) Senior Equipment Operator and three (3) Equipment Operators have been added to assist with O&M activities. The following sections provide a summary of the County's recent modifications to the O&M procedures as they apply to the program components.

13.2.1 Computerized Maintenance Management System

The County utilizes Cityworks for record keeping of the Operation and Maintenance of the sewer system. This system integrates the GIS system, identifying the entirety of the collection system, along with Collections equipment, material, and labor. Daily work orders are created and sent to the Equipment Operators for all task's assigned, which include CCTV, mechanical cleaning, root treatment, small repairs, SSO response, training, along with all other daily assignments. The information gathered from the daily work orders includes the production and cost for all activities.

13.2.2 Sanitary Sewer Mapping

The County recognizes that additional information should be included in its GIS and continues to incorporate any additional information identified or that becomes available. The County continues its commitment to thoroughly and accurately document its wastewater collection system assets and is supported by its retention of additional GIS staff to continue the

documentation efforts that will ultimately assist the County in its efforts to efficiently and comprehensively manage its assets.

Additionally, the County's newly implemented CMMS asset mapping tool allows staff to view newly revised data, associated as-built drawings, and perform data queries.

13.2.3 Preventive Maintenance Program

The County continues its proactive preventative maintenance activities which include scheduled maintenance of the wastewater facilities, including sewer pump stations and, wet wells, routine cleaning of the wastewater collection system pipelines, and CCTV inspections. County staff has recently implemented improved documentation efforts to capture more comprehensive system data.

The additional data captured during the cleaning efforts will serve to allow County staff to update and refine its current list of special maintenance sites and identify pipe segments which may require evaluation as to the condition of the pipeline and associated maintenance holes. Additionally, the information will allow County staff to identify system locations that may be potential candidates for CIP or Major Maintenance projects. As the revised documentation method is implemented, County staff is monitoring and assessing the data collected.

In addition, the County has installed 32 SmartCovers with a near-term plan of adding 40 more within the collection system. The purpose of the SmartCovers is to reduce the risk of an SSO by alerting the County on rising flow trends within the maintenance hole. SmartCovers is a device that has an antenna attached on the maintenance hole cover and a sensor that monitors the height of the sewage flow at the maintenance hole invert. The flow information is transmitted wirelessly to mobile phone applications as well as desktop computers. The information transmits flow trends, alerts, and alarms. The SmartCovers are placed strategically within the system at remote environmentally vulnerable locations, at known SSO locations, and Special Maintenance lines.

13.2.4 Adjusted Maintenance Frequencies

County staff is evaluating the current cleaning schedule and frequency interval for the Special Maintenance Sites to verify the reason for which the site was designated as a Special Maintenance Site. The County's cleaning efforts includes documenting the type and quantity of debris removed from each pipe segment cleaned and the number of passes required to appropriately clean the pipelines.

The findings of the evaluation will serve to establish a basis from which the County's wastewater maintenance staff can monitor the maintenance related findings and other critical elements of each site to determine if the pipe segment has been appropriately designated as a Special Maintenance Site and whether the current cleaning frequency should be modified. Based on the thorough and routine monitoring of the sites and the information obtained, the cleaning frequency will be re-evaluated and adjusted as necessary.

13.2.5 System Inspection and Assessment

The County continues the regular and systematic inspection and assessment of the wastewater system pipelines using CCTV technology. The inspections are performed subsequent to pipe cleaning and debris removal and of all new and rehabilitated pipelines to identify potential

defects, determine the effectiveness of the cleaning efforts, and confirm contractor compliance with County design and construction standards.

Generally, condition assessment of the sewer pipelines is performed in the field during the CCTV inspection process by the County field crews. Defects detected and potential problem(s) requiring repair are identified and documented. Permanent records of the noted defects are saved as images on the local drive that is maintained at the Spring Valley Operations Yard.

To date, the County is on track to achieving its yearly goal of televising approximately 49 miles of small diameter pipelines within the wastewater collection system each year.

13.3 Sanitary Sewer Overflow Emergency Response Plan

The County of San Diego's SSOERP is included in Appendix C of the SSMP and includes the County's guidelines for staff to respond to an SSO occurrence.

Figure 4-1 of the SSOERP offers a current and concise overview of the steps required to be implemented by County staff to quickly respond to an actual or possible SSO event, summarizes the SSO response procedures, and illustrates the County's emergency response procedures, including notification and request of additional resources as required in the event of a large SSO.

The County has updated and incorporated the following attachments of the SSOERP to confirm that the document in maintained updated and reflects the most current information including the most current monitoring and reporting requirements:

- Attachment B: County of San Diego Stand-by List.
- Attachment C: Approved Contractors and Equipment Rental Vendors.
- Attachment E: Regulatory Agency SSO Notification List.
- Attachment I: Pre-scripted Public Notices.

Additionally, the County developed and incorporated a right of entry form to the SSOERP to allow County staff the right of access and entry to properties within the County's jurisdiction for the purpose of evaluating, removing and/or clearing debris in the event of an SSO occurrence.

13.4 Fats, Oils, and Grease Control Program

The County's concentrated effort for addressing FOG related issues has been its proactive preventive maintenance program and the routine cleaning of its Special Maintenance Sites. Based on CIWQS records. Only five of the SSOs that have occurred since 2010 were reported as having been caused due to excessive FOG in the wastewater collection system and the majority of the SSO occurrences appear to have been primarily due to heavy root concentrations and debris accumulation in the pipelines.

To address the root conditions, the County has implemented a program in the Spring Valley Service Area to assess the need for incorporating chemical root treatment into its maintenance program. The need and frequency of the root treatment will be determined based on information captured during ongoing monitoring and televising of the system.

Where SSO occurrences were reported to have occurred as a result of debris accumulation, the County is conducting further research to determine whether deficiencies in pipelines exist.

13.5 System Evaluation and Capacity Assurance Plan

The County has updated the following wastewater master plans in order to prioritize and implement its CIP, which include measures to address potential system hydraulic capacity constraints of key sanitary sewer system elements needed to accommodate dry weather peak flow conditions and the appropriate design storm or wet weather events:

- Alpine and Lakeside Sewer Service Area Sewer Master Plan, January 2013.
- Spring Valley Service Area Sewer Master Plan, January 2013.
- Winter Gardens, Julian, Campo, and Pine Valley Area Sewer Master Plan, January 2013.

The master plans include an evaluation of the hydraulic capacity of the major sewer pipelines, sewer lift stations, and force mains. A capacity analysis of the existing collection system for each service area was performed under existing and build-out peak dry weather flow and peak wet weather flow conditions.

Where recommended, capacity improvement projects were identified and projects were sized to accommodate the projected build-out flows based on land-use. Projects were then evaluated under the existing and the 2030 planning horizon to identify project priority and phasing. Lift stations and force mains were also evaluated under existing and projected wastewater flows based upon the County criteria. The stations were evaluated for operational, storage, condition and sizing requirements.

For each service area, a CIP implementation schedule was developed based on the findings of the Master Plan. The CIP projects identified facilities needed to meet existing system needs based on the County's design criteria for the wastewater collection system. The recommended CIP projects to address an identified capacity issue are in the master plans. The last update for the East Otay Mesa service area was performed in 2006. The County anticipates updating the master plans in 2021.

13.6 Monitoring, Measurement, and Program Modifications

To date, the County has effectively managed and maintained information pertaining to the wastewater infrastructure by means of manually recording preventive maintenance activities and documenting notifications received electronically and regarding potential and actual SSO occurrences. The County has tracked performance measures through the Cityworks, CMMS, and SmartCovers as well as actual and historical reading logs and reports including, but not limited to, the length of pipe cleaned and inspected, the quantity, cause and location of stoppages, SSOs, and the scheduled maintenance of high frequency maintenance locations. The County will continue to monitor the performance measures it currently tracks and will implement necessary adjustments to the program when needed.