ELSINORE VALLEY MUNICIPAL WATER DISTRICT

SEWER SYSTEM MANAGEMENT PLAN

October 2018

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ELSINORE VALLEY MUNICIPAL WATER DISTRICT

SEWER SYSTEM MANAGEMENT PLAN

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LIST OF ABBREVIATIONS

Abbreviation	Definition
2016 WMP	2016 Water Distribution System Master Plan
BMP	Best Management Practices
C	Hazen-Williams Roughness Coefficient
CCTV	Closed Circuit Television
CDL	California Driver's License
cfs	Cubic Feet per Second
CIP	Capital Improvement Plan
CIWQS	California Integrated Water Quality System
CMOM	Capacity, Management, Operation, and Maintenance
d/D	Flow Depth to Pipe Diameter Ratio
District	Elsinore Valley Municipal Water District
FOG	Fats, Oils, and Grease
fps	Feet per Second
ft/ft	Feet per Feet
GIS	Geographic Information Systems
I/I	Infiltration and Inflow
in	Inches
MRP	Monitoring Reporting Program
n	Manning's Friction Coefficient
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OES	Office of Emergency Services
Order No. 2006-0003	State Water Resources Control Board Order No. 2006-0003
Order No. 2013-0058	State Water Resources Control Board Order No. 2013-0058
PM	Preventative Maintenance
PVC	Polyvinyl Chloride
RWQCB	Regional Water Quality Control Board
SDR	Standard Dimension Ratio
SOI	Sphere of Influence
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSRP	Sewage Spill Response Plan

Abbreviation	Definition
TBD	To Be Determined
TV	Television
WDR	Waste Discharge Requirement
WRF	Water Reclamation Facility
WWMP	Wastewater Master Plan

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Chapter 1

INTRODUCTION

This chapter presents an overview of the need for this Sewer System Management Plan (SSMP).

1.1 PURPOSE

This SSMP has been prepared by Elsinore Valley Municipal Water District in order to comply with the State Water Resources Control Board (SWRCB) Order No. 2006-0003 (Order No. 2006-0003), adopted May 2, 2006. A copy of Order No. 2006 0003 is included in Appendix B. Order No. 2006-0003 was amended on February 20, 2008 and an additional amendment on September 9, 2013. The provisions of these amendments are incorporated in this report.

The purpose of this SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the District's sanitary sewer system. This will help reduce and prevent sanitary sewer overflows (SSOs) to the extent possible, as well as mitigate any SSOs that do occur.

1.2 SERVICE AREA

The District, which was formed in 1950, is located in the southwestern portion of Riverside County and provides potable water, sewer, and reclamation services to the City of Lake Elsinore, the City of Canyon Lake, portions of the City of Murrieta, Wildomar, and some unincorporated areas of Riverside County (Figure 1.1).

The District currently covers an area of approximately 96 square miles. The ultimate sphere of influence (SOI) of the District covers approximately 132 square miles. Figure 1.2 shows the current District boundary.

The District currently has three separate collection systems that are enrolled in the California Integrated Water Quality System (CIWQS) electronic reporting system. These systems are as follows:

- Regional Collection System;
- Horsethief Canyon Collection System;
- Southern Collection System.

This report serves as a comprehensive District SSMP and covers all three of the District's collection systems.

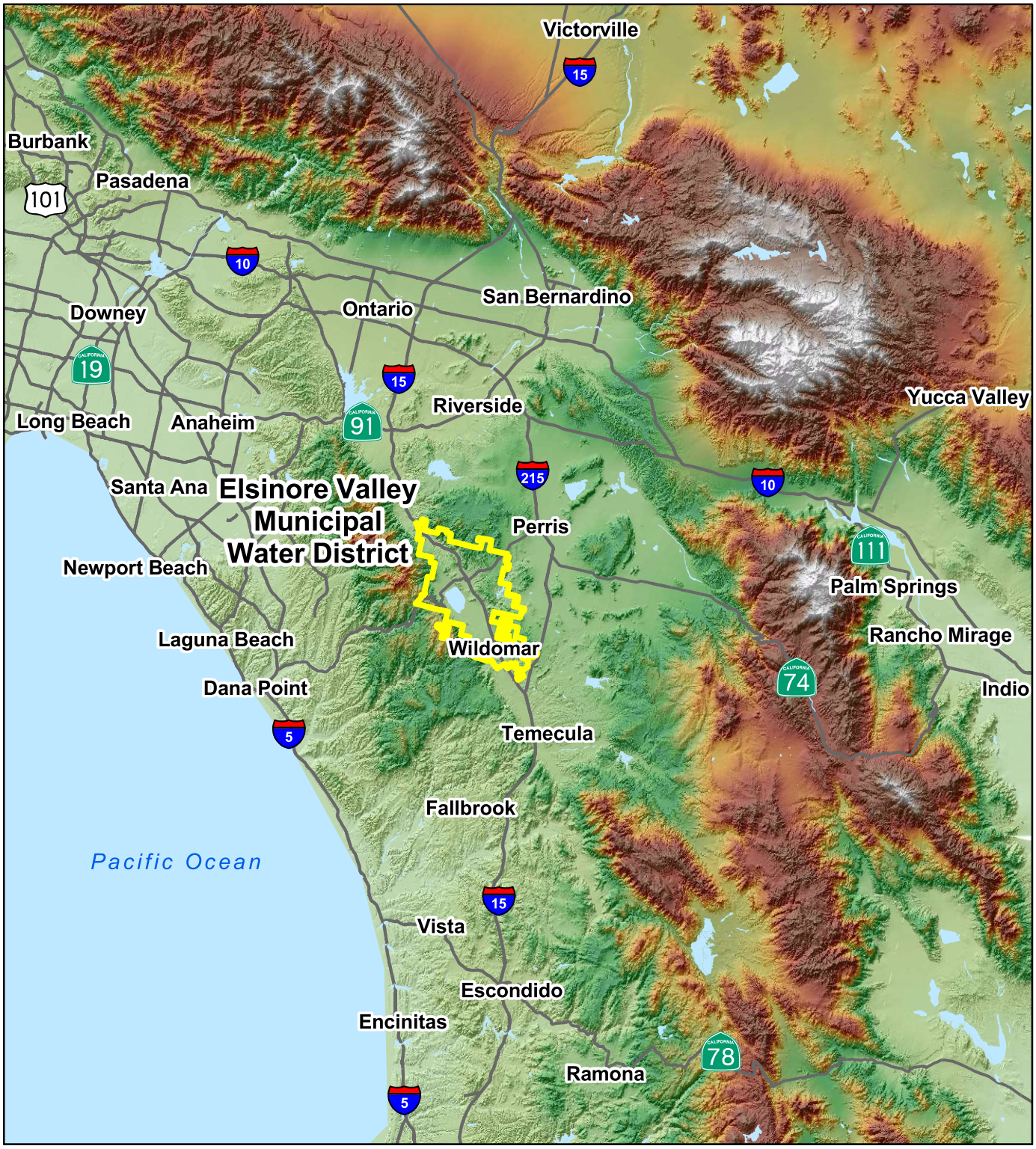

FIGURE 1.1
REGIONAL LOCATION MAP

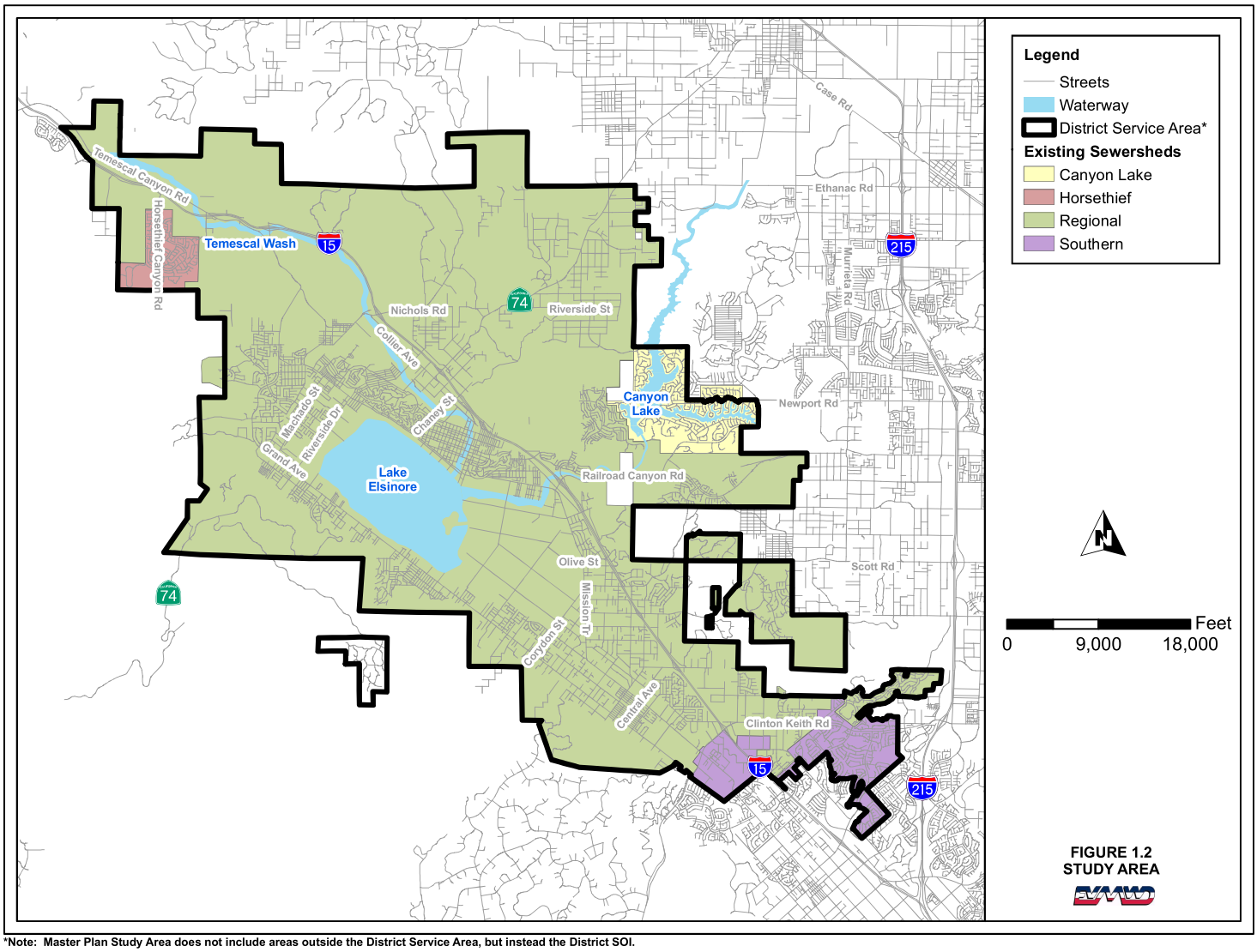

FIGURE 1.2
STUDY AREA

*Note: Master Plan Study Area does not include areas outside the District Service Area, but instead the District SOI.

1.3 BACKGROUND

Nationally, SSOs have been in the regulatory spotlight since 1995. The Environmental Protection Agency Report to Congress (August 2004) [1] identified the number and frequency of SSOs as a public health and water quality issue.

On May 2, 2006, the California SWRCB adopted Order No. 2006-0003, which focused on the reduction of SSOs. Order No. 2006-0003 requires that all collection systems with more than one mile of sewer pipe apply for coverage under the order by November 2, 2006.

Several Regional Water Quality Control Boards (RWQCBs) have existing requirements for collection systems and SSOs. Order No. 2006-0003 supplements the existing RWQCB requirements with the intent to gradually make requirements consistent statewide.

However, RWQCBs have the authority to adopt more stringent regional waste discharge requirements (WDRs).

The requirements for SSMPs are closely related to the Environmental Protection Agency's Capacity, Management, Operation, and Maintenance (CMOM) rule (published in the Federal Register in January 2001) and they constitute a best management practices (BMP) approach to the regulation of collection systems. The SSMP elements are:

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

1.4 SCHEDULE

Order No. 2006-0003 established an SSMP implementation schedule based on the size of the agency. According to the District's 2007 Draft Water Distribution System Master Plan (2007 WMP), the District's current population is over 100,000. The schedule for agencies with a population greater then 100,000 therefore governs the District's implementation schedule (Table 1.1).

Table 1.1 Sewer System Management Plan Implementation Schedule Sewer System Management Plan Elsinore Valley Municipal Water District	
Task	**Required Certification Date[(1)]**
SSMP Development Plan and Schedule	08/01/07
Goals and Organization Structure	11/01/07
Overflow Emergency Response Plan Legal Authority O&M Plan FOG Plan	11/01/08
Design and Performance Standards System Evaluation and Capacity Assurance Plan Final SSMP and Certification	05/01/09
Performance Audits completed every 2 years	
Review, Update and Recertify every 5 years	
Note: 1. Required Certification Date based on Order No. 2006-0003 for Population greater than 100,000 (See Appendix B).	

1.5 REFERENCE FORMAT

References are cited periodically throughout this report, as appropriate. Reference sources are identified by the title of the referenced document followed by a reference number in brackets. The reference format is provided below:

- Title of Report or other Reference Source or Document [No.]

A complete list of references containing detailed information concerning each reference source is provided in Appendix A.

1.6 REPORT ORGANIZATION

This SSMP contains twelve chapters. Appendices are provided to support the information provided in the text. A brief description of the chapters is provided as follows:

Chapter 1 – Introduction. This chapter provides a brief description of the need for the SSMP and a description of the report organization.

Chapter 2 – Goals. This chapter discusses the goals of the District's SSMP. These goals pertain to the operation and management of the District's wastewater collection system with respect to SSOs.

Chapter 3 – Organization Structure. This chapter identifies the District's responsible representative for the implementation of this SSMP. It also includes an organizational chart and a chain of communication for reporting SSOs.

Chapter 4 – Legal Authority. This chapter serves to confirm that the District has the authority, through ordinances, services agreements, or other legally binding procedures, to conform to the requirements of Order No. 2006-0003.

Chapter 5 – Operation and Maintenance Program. This chapter contains a description of the District's O&M program, including mapping, routine and preventative maintenance, rehabilitation, and training.

Chapter 6 – Design and Performance Provisions. This chapter presents a summary of the District's design and construction standards, as well as its standards for the inspection and testing of new sewers, pumps, and other appurtenances and for rehabilitation projects.

Chapter 7 – Overflow Emergency Response Plan. This chapter contains a description of the District's overflow emergency response plan that serves to provide measures to protect the public health and the environment in the event of an overflow.

Chapter 8 – Fats, Oils, and Grease Control Program. This chapter discusses the need for a FOG control program. The purpose of such a program is to limit the amount of fats, oils, and greases that enter the collection system to the extent feasible.

Chapter 9 – System Evaluation and Capacity Assurance Plan. This chapter provides an evaluation of the District's sanitary sewer system facilities, identifies and proposes improvements for deficiencies, identifies design criteria, and provides a Capital Improvement Program (CIP) and schedule for improvements.

Chapter 10 – Monitoring, Measurement, and Program Modifications. This chapter presents a summary of the steps to be taken by the District to evaluate the effectiveness of this SSMP, and update it should improvements be necessary or desirable.

Chapter 11 – SSMP Program Audits. This chapter presents a summary of the procedures to be used by the District to perform internal audits.

Chapter 12 – Communication Program and Final Certification. This chapter presents a summary of the steps to be taken by the District to communicate with the public on the development, implementation, and performance of the SSMP. This chapter also contains the final certification of this SSMP.

1.7 ABBREVIATIONS

To improve readability, this report includes several abbreviations. The abbreviations are spelled out in the text the first time the phrase or title is used in each chapter and

subsequently identified by abbreviation only. A summary of the abbreviations used in this report is located in the List of Abbreviations found immediately after the Table of Contents.

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GOALS

This chapter discusses the goals of the Elsinore Valley Municipal Water District's (District's) Sewer System Management Plan (SSMP). The SSMP goals pertain to the operation and management of the District's wastewater collection system with respect to sanitary sewer overflows (SSOs).

2.1 REGULATORY REQUIREMENT

Order No. 2006-0003 establishes the goal of the SSMP as follows:

> *"The purpose of this SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur."*

2.2 SSMP GOALS

This SSMP has been prepared in order to achieve the following goals:

- Properly manage, operate, and maintain all aspects and components of the District's wastewater collection system.
- Provide the wastewater collection system with adequate capacity to convey peak wastewater flows.
- Minimize the occurrence of SSOs to the extent possible.
- Mitigate the impacts that are associated with any SSO that may occur.
- Meet all regulatory requirements related to the SSMP and SSO reporting system.

2.3 DEFINITIONS

An SSO is defined as any overflow, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. There are four categories of SSOs as established by Order No. 2013-0058-EXEC:

- **Category 1**: This category includes **Any Volume** discharges of sewage resulting from a failure in the District's sanitary sewer system that:
  a. Result in a discharge to a drainage channel and/or surface water; or
  b. Discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system.
- **Category 2**: This category includes any discharges of sewage resulting from a failure in the District's sanitary sewer system that:

a. Equal or exceeds 1,000 gallons, or

b. Result in a discharge but **does not** reach a drainage channel and/or surface water or storm drain.

- **Category 3**: This category includes all other discharges of sewage resulting from a failure in the District's sanitary sewer system.
- **Private Lateral Sewage Discharges**: Sewage discharges that are caused by blockages or other problems within a privately owned lateral.

As part of Order No. 2013-0058-EXEC, all agencies that own or operate sanitary systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility are required to report Category 1, Category 2 and Category 3 SSOs. The reporting of Private Lateral Sewage Discharges is voluntary.

2.4 PROHIBITION

Order No. 2006-0003 prohibits any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States or that causes a "nuisance," as defined in California Water Code Section 13050(m). There is no "affirmative defense" for unforeseen or unavoidable SSOs. Instead, Section D.6 of Order No. 2006-0003 includes the concept of "enforcement discretion," and identifies seven specific factors that must be considered in an enforcement action, such as the extent to which the discharger has complied with the provisions of the WDRs. In the event of an SSO, all feasible steps should be taken to limit the released volume and prevent untreated water from entering storm drains, creeks, etc. All SSOs must be reported through a new statewide online reporting system, the California Integrated Water Quality System (CIWQS).

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ORGANIZATION STRUCTURE

This chapter identifies the responsible representative from the Elsinore Valley Municipal Water District (District) for the implementation of this Sewer System Management Plan (SSMP). It also includes an organizational chart and a chain of communication for reporting sanitary sewer overflows (SSOs).

3.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies that the SSMP must identify the following:

a. *The name of the responsible or authorized representative for the implementation of the SSMP;*

b. *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 organizational chart or similar document with a narrative explanation; and*

c. *The chain of communication for reporting SSOs, from receipt of a complaint and other information, including the person responsible for reporting SSOs to the State and Regional Water Quality Control Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Quality Control Board, and/or State Office of Emergency Services (OES)).*

3.2 AUTHORIZED REPRESENTATIVE

The District has authorized nine positions to serve as authorized representatives. These positions are the General Manager, AGM- Engineering & Operations, Director of Engineering & Water Resources, Engineering Manager, Director of Operations, Maintenance Manager, Wastewater Operations Manager, Wastewater Collections Superintendent and Mechanical Maintenance Superintendent.

The District has established three data entry designees who are responsible for entering spill data on CIWQS for the authorized representatives. The position is Collection Systems Maintenance Worker III.

The names and positions and contact information for the authorized representatives are presented in Appendix C.

3.3 ORGANIZATIONAL HIERARCHY

The organizational hierarchy and contact information for the implementation of the measures specified in this SSMP are provided in Appendix C and shown in Figure 3.1. A general description of those positions is provided in this section. Appendix D contains the detailed job descriptions for these positions.

- **General Manager**. The General Manager is the chief executive officer of the District and serves as agent of the District Board of Directors in planning, directing, managing, and overseeing the services, activities, and operations of the District.
- **AGM- Engineering & Operations.** The Assistant General Manager, under general direction of the General Manager, the Assistant General Manager-Engineering and Operations plans, directs, manages and oversees the functions, programs, and operations of the Water Resources, Engineering, and Operations Divisions, including Water Operations, Wastewater Operations, and Maintenance; and provides highly responsible and complex administrative support to the General Manager The Assistant General Manager also acts as General Manager in the absence of the General Manager
- **Director of Engineering & Water Resources.** The Director of Engineering, under general administrative direction, plans, organizes, directs, manages, and oversees the functions, programs, and operations of the Engineering and Water Resources Departments; coordinates assigned activities with other departments and outside agencies; and provides highly responsible and complex administrative support to the Assistant General Manager.
- **Engineering Manager.** The Engineering Manager plans, directs, manages, and oversees the functions, programs, and operations of the Engineering Division, including planning, design, and construction of all District facilities; coordinates assigned activities with other departments and outside agencies; and provides highly responsible and complex administrative support to the Assistant General Manager.
- **Director of Operations**. The Director of Operations plans, directs, manages, and oversees the functions, programs, and operations of the Operations Department. This includes the District's domestic water system, including water treatment, groundwater production, water storage and delivery systems, the District's wastewater collection and treatment operations and source control program, the District's agricultural water pumping and delivery systems, the District's fleet maintenance and repair operations, District facilities and grounds maintenance and repair, and the District's Safety and Health Program.
- **Wastewater Operations Manager**. The Wastewater Operations Manager directs, manages, supervises, and coordinates the activities and operations of the Wastewater Division within the Operations Department, including collection system pipelines and water reclamation facilities (WRFs).

- **Wastewater Collection Systems Superintendent**. The Wastewater Collection Systems Superintendent oversees, supervises, and coordinates the work of a number of crews engaged in sanitary sewer maintenance and operation within the Wastewater Department.

- **Collection Systems Maintenance Worker III**. The Senior Collection Systems Maintenance Worker leads, oversees, and participates in the work of a crew performing a variety of unskilled, semi-skilled and skilled operation, maintenance, and repair work involved in the District's sewage collection systems.
- **Collection System Maintenance Worker II**. The Collection System Maintenance Worker performs a variety of unskilled, semi-skilled, and skilled maintenance, operational, and repair tasks involved in the District's sewage collection systems.
- **Collection System Maintenance Worker I**. The Collection System Maintenance Worker performs a variety of unskilled, semi-skilled, and skilled maintenance, operational, and repair tasks involved in the District's sewage collection systems.
- **Maintenance Manager.** The Maintenance Manager directs, manages, supervises and coordinates the activities of the Facilities Maintenance, (buildings) and Mechanical Maintenance, (treatment plants, wells boosters and lift stations) divisions.
- **Mechanical Maintenance Superintendent.** The Mechanical Maintenance supervisor plans, assigns, directs and inspects the work of field service crews and personnel involved in the installation, maintenance, repair and servicing of mechanical equipment and machinery used in the production, treatment, storage, transmission and distribution of potable, non-potable, and reclaimed water, and the treatment and collection of wastewater.
- **Electromechanical Technician I.** The Electrical Technician I performs a wide variety of skilled, journey-level duties in the design construction, installation maintenance and repair of industrial electrical and electronic control systems and process control used in the water, wastewater and agricultural water systems.
- **Mechanical Maintenance Technician III.** The Maintenance Technician III participates in the installation, maintenance, inspection and servicing of mechanical equipment used in the water, wastewater, reclaimed and agricultural divisions. Performs preventative and predictive maintenance on assigned equipment, diagnoses and repairs involving the sewage lift stations.
- **Mechanical Maintenance Technician II.** The Maintenance Technician II participates in the installation, maintenance, inspection and servicing of mechanical equipment used in the water, wastewater, reclaimed and agricultural divisions. Performs preventative and predictive maintenance on assigned equipment, diagnoses and repairs involving the sewage lift stations.
- **Mechanical Maintenance Technician I.** The Maintenance Technician I participate in the installation, maintenance, inspection and servicing of mechanical equipment used

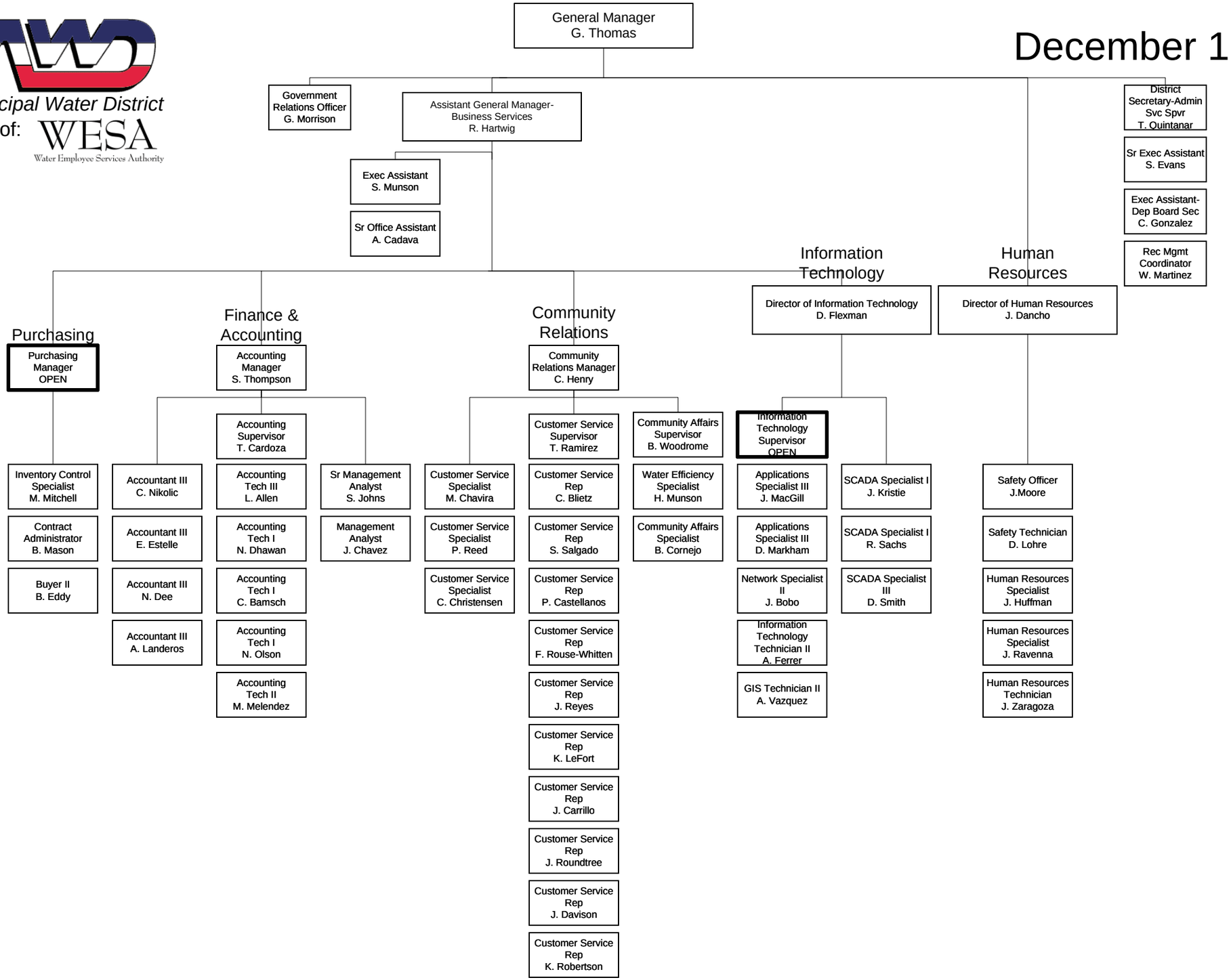
in the water, wastewater, reclaimed and agricultural divisions. Performs preventative and predictive maintenance on assigned equipment, diagnoses and repairs involving the sewage lift stations.

- **Director of Information Technology.** The Director of Information technology directs, manages, supervises and coordinates the activities and operations of the information Technology Division. within the Administrative Services Department including assuming responsibility for the development of the Authority's overall information systems strategy, management of Authority-wide information systems planning, ensuring mid- to long-term plans are prioritized and consistent with resource allocations, developing new automated systems and programs as well as the modification, management and enhancement of existing systems to meet the business needs of the Authority, management of the Authority's acquisition of new and replacement software and hardware, and planning, management and coordination of the Authority's Geographic Information System activities and the SCADA (supervisory control and data acquisition) systems.
- **SCADA specialist I/II/III.** The SCADA Specialists plans organizes and participates in a wide variety of advanced professional and technical duties related to the construction, maintenance and repairs of SCADA (Supervisory Control and Data Acquisition), telemetry, instrumentation, motor control centers, process control systems and other types of electronic and electrical equipment used in the water, wastewater and agricultural water systems.
- **Regulatory Compliance Specialist.** Under general direction, performs complex technical and administrative responsibilities; writes and coordinates preparation of major reports; develops, recommends and implements policies and procedures; develops, coordinates and manages projects; plans and participates in the work of assigned staff; and ensures compliance with WESA's Regulatory Compliance Requirements.
- **Water Quality Supervisor.** The Water Quality Supervisor oversees, supervises, and coordinates the work of staff engaged in a number of tasks associated with the Water Quality Laboratory for water, wastewater, recycled and agricultural testing.
- **Water Quality Technician.** The Water Quality Technician performs water quality department duties including potable and wastewater laboratory testing including field sampling research and testing.
- **Water Quality Analyst.** Under general supervision, performs a variety of tests and analyses on raw and potable water, wastewater, and biosolids associated with the District's extensive water quality and related technical programs; maintains and operates the District's water/wastewater laboratory for microbiological and chemical analysis in compliance with federal, state, and local requirements; performs professional and scientific work associated with regulatory oversight for District's Laboratory.

Elsinore Valley Municipal Water District

Staffed by members of: WESA Water Employee Services Authority

December 1, 2022



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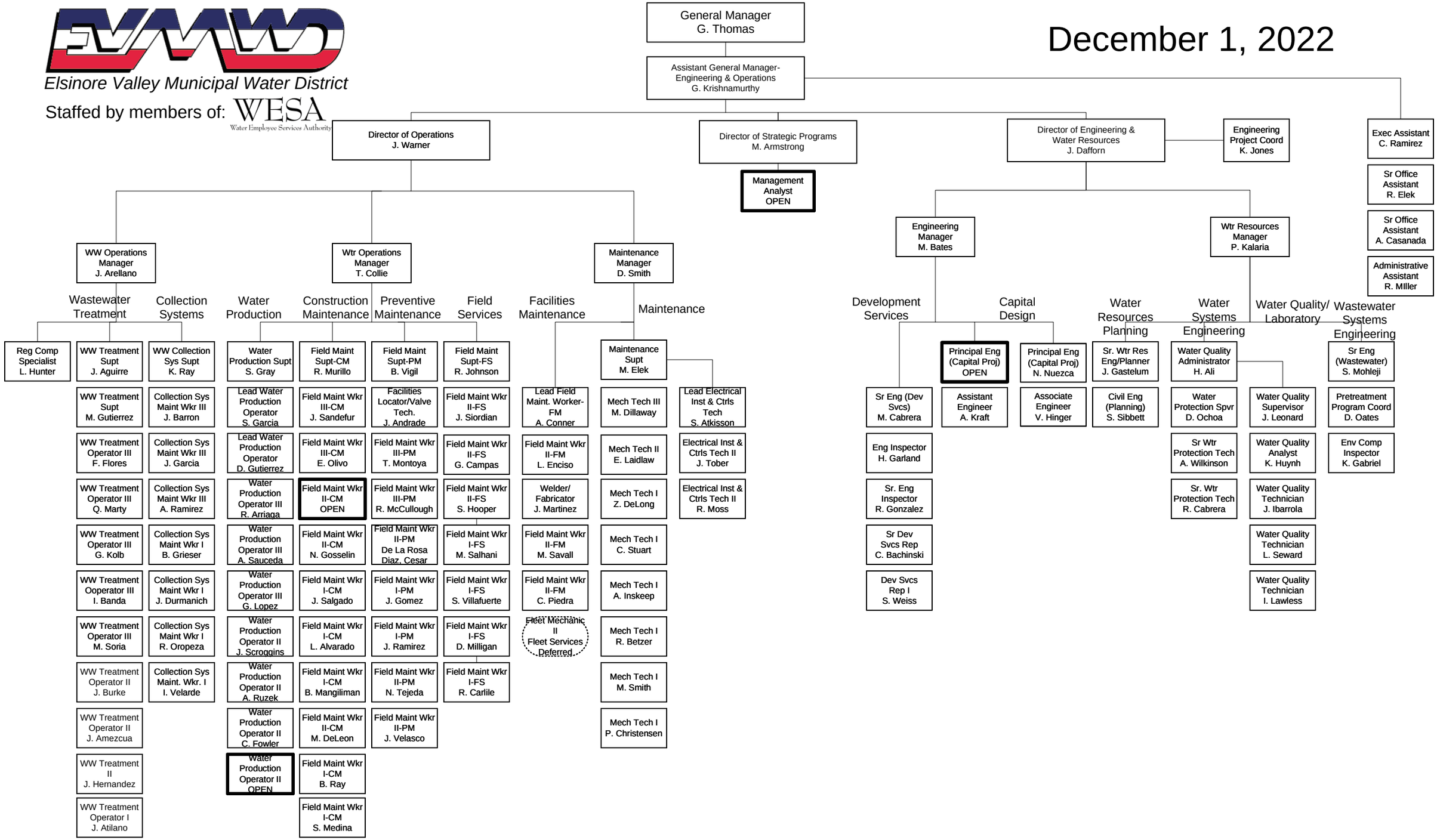

3.4 CHAIN OF COMMUNICATION FOR REPORTING SSOs

The District's Sewage Spill Response Plan (SSRP) contains the procedures utilized by the District to notify the primary SSO response crews (Appendix E). In addition to the SSRP, the District also conforms, as applicable, to the spill response procedures laid out in the Unified Sanitary Sewer Spill Response Procedure (Appendix F). This document is specific to the Santa Ana RWQCB and is meant to act as a bridge between different agencies within the region.

In addition to Figure 3.2, the San Diego RWQCB has also developed a flow chart for guidance on reporting SSOs that occur within their jurisdiction. This flow chart is included in Appendix G.

3.4.1 SWRCB SSO Reporting Procedure

Order No. 2006-0003 specifies certain requirements for the reporting of SSOs. The District will comply with these requirements. Upon notification that an SSO has occurred, an initial report will be made to the State Office of Emergency Services, Regional Water Quality Control Board and the Riverside County Environmental Health as outlined in Attachment A of Order No. 2013-0058-EXEC. The online CIWQS SSO reporting shall be prepared and submitted as outlined in Attachment A Order No. 2013-0058-EXEC. All Orders, including amended Orders, are in Appendix B.

Source: Adapted from Flow Chart created by the California Water Environment Association

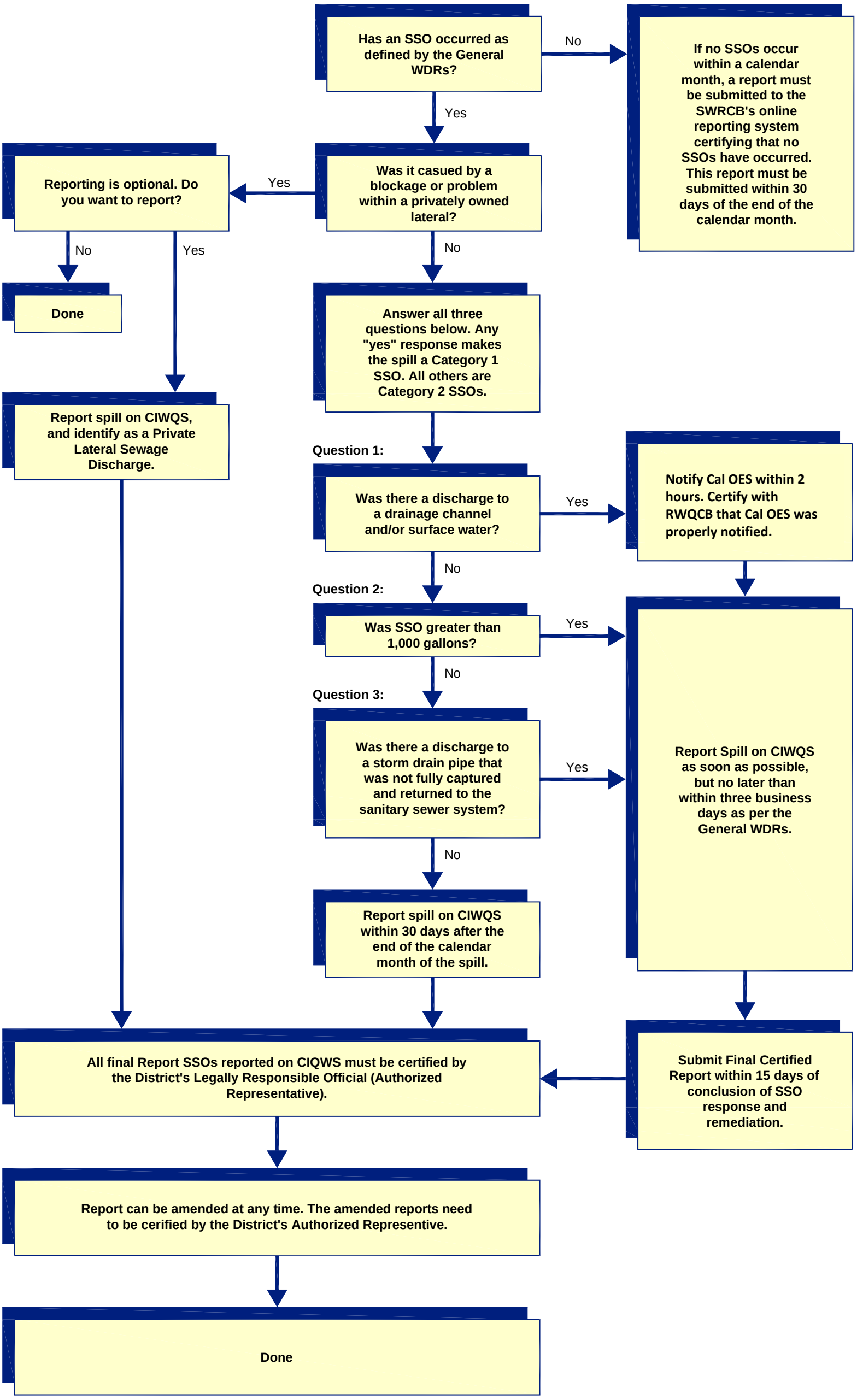

FIGURE 3.2
SWRCB SSO REPORTING REQUIREMENTS FLOW CHART

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LEGAL AUTHORITY

This chapter serves to confirm that the Elsinore Valley Municipal Water District (District) has the authority, through ordinances, services agreements, or other legally binding procedures, to conform to the requirements of Order No. 2006-0003.

4.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies the following with respect to Legal Authority:

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

a. *Prevent illicit discharges into its sanitary sewer system (examples may include infiltration and inflow (I/I), stormwater, chemical pumping, unauthorized debris and cut roots, etc.);*

b. *Require that sewers and connections be properly designed and constructed;*

c. *Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;*

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

e. *Enforce any violation of its sewer ordinances.*

4.2 WASTE DISCHARGE AND SEWER USE ORDINANCES

The District Board of Directors has adopted Ordinance No. 160, which identifies District regulations for waste discharge and sewer use (Appendix H). The following subsections summarize Ordinance No. 160 as it pertains to the requirements established in Order No. 2006-0003.

Based on a review of Ordinance No. 160, it is not anticipated that any additions or modifications are necessary to comply with the requirements (a. through e.) outlined in Section 4.1 of this chapter.

4.2.1 Authority to Enforce Waste Discharge and Sewer Use Regulations

Section 1.900 of Ordinance No. 160 describes the District's authority to establish regulations on waste discharge and sewer use. This article states that the District is governed by various United States Government and State of California agencies. Through various Federal and State laws, the District has been granted authority to regulate and/or

prohibit direct or indirect discharges into the District's wastewater facilities. These laws include, but are not limited to, the following:

- The Clean Water Act (33 U.S.C. Section 1251 et seq);
- California Porter Cologne Water Quality Act (California Water Code Section 13000 et seq);
- California Health and Safety Codes sections 25100 to 25250;
- Resource and Recovery Act of 1976 (42 U.S.C. Section 6901 et seq); and
- California Government Code, Sections 54739 - 54740.

4.2.2 Illicit Discharges

Article 3.100 of Ordinance No. 160 provides prohibitions on certain types of wastewater discharges into the District's wastewater collection system. The following subsections summarize Article 3.100, while Appendix H contains the full text of Ordinance 160.

4.2.2.1 General Waste Discharge Prohibitions

Part A of Section 3.100 of Ordinance No. 160 provides generalized discharge prohibitions for the District's wastewater collection system. This section states, in part:

> "No user shall introduce or cause to be introduced into the District's collection system any pollutant which, alone or in conjunction with other substances, may cause pass through or interference, or any wastewater which has the potential to adversely or harmfully effect the District's sewers, maintenance personnel, wastewater treatment plant personnel or equipment, treatment plant process or the quality of treatment plant effluent or bio-solids, public or private property, or wastes which may otherwise endanger the public, the environment, or create a public nuisance."

4.2.2.2 Specific Waste Discharge Prohibitions

Part B of Section 3.100 of Ordinance No. 160 identifies 21 specific discharge prohibitions for the District's wastewater collection system. The 21 prohibited discharge types are included in pages 19 through 21 of Appendix H.

4.2.3 Design and Construction Requirements

Section 3.1000 of Ordinance No. 160 identifies the requirements for building sewers within the District. This section requires that all new building sewer construction and repair work be in accordance with District construction standards. Section 3.4000 of Ordinance No. 160 identifies the requirements for the inspection of newly constructed building sewer connections.

4.2.4 Maintenance, Inspection, and Repair Access

Section 1.700 of Ordinance No. 160 establishes the District's right for maintenance, inspection, and repair access. Section 1.700 states:

> "The District, Regional Water Quality Control Board, and the United States Environmental Protection Agency (when accompanied by District personnel) shall be permitted to enter all properties from which wastes or wastewaters are being or are capable of being discharged into a public sewer main for purposes of inspecting, copying of records, taking photographs observing, measuring, sampling, and testing pertinent to the discharge of wastes or wastewaters to ascertain whether the intent of this Ordinance is being met and the user is complying with all requirements. The District shall have access at reasonable times and without delay to all parts of the premises for the purposes of inspection and/or sampling. The District shall have the right to set up on the user's property such devices as are necessary to conduct sampling or metering operations. Where a user has security measures in force, the user shall make necessary arrangements so that personnel from the District will be permitted to enter without delay for the purpose of performing their specific responsibilities. Delays in allowing or refusal to allow the District access to the User's premises shall be a violation of (Ordinance No. 160)."

4.2.5 Limitations on Fats, Oils, and Grease and Other Debris

Part B, Item 3, of Section 3.100 of Ordinance No. 160 prohibits the discharge of:

> "Any solids or viscous substances of such size or in such quantity, condition, or nature that they may cause obstruction to flow in the sewer or be detrimental to proper wastewater treatment plant operations. These objectionable substances include…any materials which tend to solidify or collect in the sewer and obstruct wastewater flow."

Fats, oils, and grease (FOG) usually enter the wastewater collection system in a liquefied state. Reduced turbulence and low water temperatures within the collection system can then cause FOG to solidify and accumulate in sewer pipes and lift stations. This accumulation can lead to pipe blockages and sanitary sewer overflows (SSOs). For this reason, FOG can be interpreted to be covered under Part B, Item 3, of Section 3.100 of Ordinance No. 160.

4.2.6 Policies for Enforcing Violations

Article 5 of Ordinance No. 160 contains the procedures to be followed by the District in the event of a violation of Ordinance No. 160. This article also outlines the process of appeals to the General Manager or Board of Directors. The extent and severity of the enforcement action is generally dependent upon the magnitude and extent of the violation, the effect of the violation on District operations or discharge permits, the compliance history of the user, and the general good faith of the user. The full text of the District's enforcement policies is included in pages 46 through 62 of Appendix H.

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Chapter 5

OPERATION AND MAINTENANCE PROGRAM

This chapter contains a description of the Elsinore Valley Municipal Water District (District) operations and maintenance program, including mapping, routine and preventative maintenance, rehabilitation, and training.

5.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies that a District's Sewer System Management Plan (SSMP) must include the following elements as appropriate to the system:

a. *Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;*

b. *Describe routine preventative operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The preventative maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;*

c. *Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at a risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should have a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;*

d. *Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and*

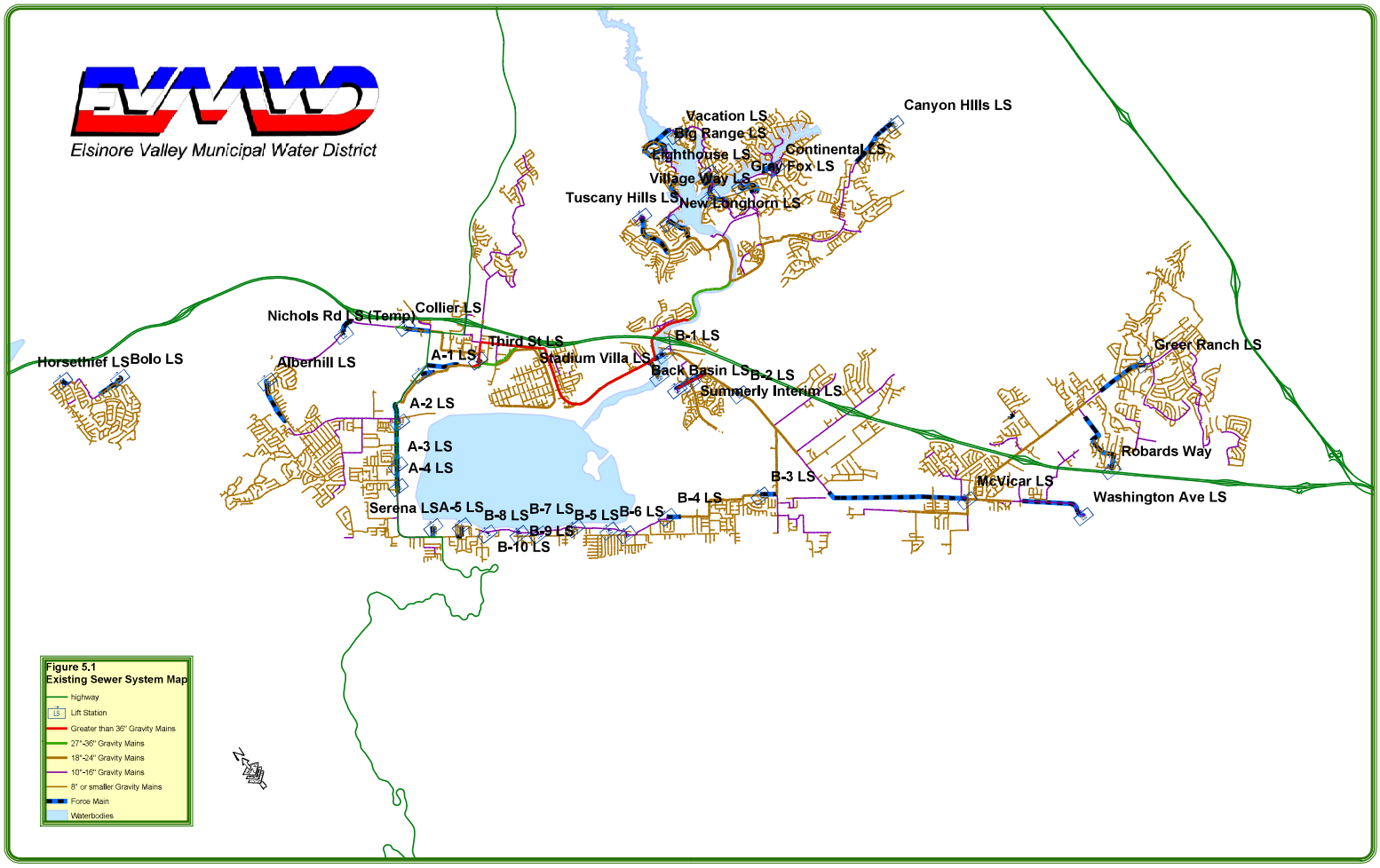
e. *Provide equipment and replacement part inventories, including identification of critical parts.*

5.2 COLLECTION SYSTEM MAP

The District maintains a comprehensive map of its wastewater collection facilities in a Geographic Information System (GIS) format (Figure 5.1). An extensive amount of information is stored in the Districts collection system GIS data. This data includes the following:

- **Gravity Mains and Force Mains**
  - Diameter;
  - Status (Active or Inactive);
  - Installation Date;
  - Road Centerline Offset Distance;
  - Curb Offset Distance;
  - Pipe Material;
  - Pipe Length;
  - Upstream and Downstream Invert Elevations;
  - Pipe Slope;
  - Water Reclamation Facility (WRF) that the Pipeline is Tributary to;
  - Lift Station that the Pipeline is Tributary to.
- **Manholes**
  - Status (Active or Inactive);
  - Installation Date;
  - Manhole Diameter;
  - Manhole Depth;
  - Influent and Effluent Pipeline Invert Elevations;
  - Manhole Rim Elevation;
  - WRF that the Manhole is Tributary to;
  - Lift Station that the Manhole is Tributary to.
- **Lift Stations**
  - Status (Active or Inactive);
  - Installation Date;
  - Lift Station Name;
  - Number of Pumps;
  - Lift Station Capacity;
  - Address;
  - Location of Lift Station (Latitude and Longitude);
  - WRF that the Lift Station is Tributary to.

The District updates their GIS data periodically whenever changes to the collection system are made.


Elsinore Valley Municipal Water District
Vacation LS
Big Range LS
Lighthouse LS
Continental LS
Gray Fox LS
Village Way LS
Tuscany Hills LS
New Longhorn LS
Canyon HIlls LS
Nichols Rd LS (Temp)
Collier LS
Third St LS
Stadium Villa LS
B-1 LS
Back Basin LS
B-2 LS
Summerly Interim LS
A-1 LS
A-2 LS
A-3 LS
A-4 LS
A-5 LS
Horsethief LS
Bolo LS
Alberhill LS
Serena LS
B-8 LS
B-7 LS
B-5 LS
B-6 LS
B-9 LS
B-10 LS
B-4 LS
B-3 LS
McVicar LS
Washington Ave LS
Greer Ranch LS
Robards Way
Figure 5.1
Existing Sewer System Map
highway
Lift Station
Greater than 36" Gravity Mains
27"-36" Gravity Mains
18"-24" Gravity Mains
10"-16" Gravity Mains
8" or smaller Gravity Mains
Force Main
Waterbodies

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5.3 WASTEWATER COLLECTION SYSTEM OVERVIEW

This section provides a brief overview of the District's wastewater collection system facilities. A detailed description of these facilities can be found in the 2016 Sewer System Master Plan report. The District is divided into four major collection systems, which are distinguished by the WRF that services that collection system:

- Regional collection system;
- Canyon Lake collection system;
- Horsethief collection system; and
- Southern collection system.

5.3.1 Regional Collection System

This section summarizes the major aspects of the Regional collection system.

- **Regional WRF.**
  - Wastewater flow generated within the Regional collection system is treated at the District operated Regional WRF. This facility is located near the intersection of Chaney Street and Treleven Avenue and serves the District's customers in the City of Lake Elsinore and portions of the surrounding community.
  - The Regional WRF was constructed in 1985 with a capacity of 2.0 million gallons per day (mgd). The plant was expanded in 1989 to a total capacity of 4.0 mgd (Train A). In 2002, a new 4.0 mgd process train (Train B) was added to the existing 4.0 mgd Train A, expanding the Regional WRF to accommodate an average flow of 8.0 mgd. The disinfection process with chlorine was replaced with an ultraviolet disinfection system designed to treat 8.0 mgd average flow and 16.0 mgd peak flow.
  - Regional WRF is in the process of adding an additional train, Train C, to increase average capacity from 8 MGD to 12 MGD.
- **Gravity Mains.**
  - This Regional collection system contains approximately 307 miles of sewer mains up to 54 inches in diameter, approximately 66 miles of which are 10 inches in diameter and larger.
- **Lift Stations and Force Mains.**
  - The Regional collection system contains 28 lift stations and associated force mains. Details of the District's lift stations and force mains are provided in the 2016 Sewer System Master Plan Report.

5.3.2 Canyon Lake Collection System

This section summarizes the major aspects of the Canyon Lake collection system.

- **Railroad Canyon WRF.**
  - Wastewater flow generated within the Canyon Lake collection system is treated at the Railroad Canyon WRF. This facility is located near Railroad Canyon Road east of Interstate 15 and treats wastewater flow from the communities surrounding Canyon Lake and was constructed in 1984. An expansion of the facility was completed in 2005 to meet the effluent Nitrogen criterion of less than 10 milligrams per liter (mg/L).

  It should be noted that the Railroad Canyon WRF is a scalping plant designed to treat up to 1.3 mgd average daily flow. Excess wastewater flows from the Canyon Lake area and all waste activated sludge from the plant are discharged to the Regional WRF via the Regional collection system.

- **Gravity Mains.**
  - The Canyon Lake collection system contains approximately 46 miles of sewer mains up to 21 inches in diameter, approximately 6.7 miles of which are 10 inches in diameter and larger.

- **Lift Stations and Force Mains.**
  - The Canyon Lake collection system contains 9 lift stations and associated force mains.

5.3.3 Horsethief Collection System

This section summarizes the major aspects of the Horsethief collection system.

- **Horsethief Canyon WRF.**
  - Wastewater flow generated within the Horsethief planned community is treated at the Horsethief Canyon WRF. This facility is located on Shotgun Trail Road in the northeastern portion of the Horsethief Canyon planned community and is designed to treat up to 0.5 mgd of average daily flow. The plant was constructed in 1990.
  - Horsethief WRF is currently under construction for the expansion of the facility from 0.5 mgd to 0.8 mgd

- **Gravity Mains.**
  - The Horsethief collection system contains approximately 18 miles of sewer mains up to 18 inches in diameter, approximately 0.8 miles of which are 10 inches in diameter and larger.

- **Lift Stations and Force Mains.**
  - The Horsethief collection system contains 2 lift stations and associated force mains.

5.3.4 Southern Collection System

The Southern Sewershed conveys wastewater from a small area in the southeastern portion of the District to five metering manholes (MMHs) within the Rancho California Water District (RCWD) wastewater collection system. The RCWD records flow at these manholes using permanent flow meters. According to the District's GIS data, the Southern Sewershed currently covers an area of approximately 2.3 square miles (1,500 acres).

Santa Rosa WRF.

- The Santa Rosa WRF is located southeast of the District's service boundary on Washington Avenue in the City of Murrieta. Owned and operated by the RCWD, this facility is currently designed to accommodate an average design flow of 5.0 mgd and serves the cities of Temecula, Murrieta, and other unincorporated areas of Riverside County, including a portion of the District's service area.

- **Gravity Mains.**
  - This sewer shed contains approximately 36 miles of sewer mains up to 15 inches in diameter, approximately 5.0 miles of which are 10 inches in diameter and larger. All wastewater generated within this sewershed presently flows by gravity to the RCWD collection system.

- **Lift Stations and Force Mains.**
  - The Southern collection system does not contain any lift stations or force mains.

5.4 DISTRICT PREVENTATIVE MAINTENANCE PROGRAM

The following subsections summarize the District's existing maintenance activities with respect to the requirements of Order No. 2006-0003. The District has developed a preventative maintenance program to more efficiently manage and operate its wastewater collection facilities. The facilities are divided into two departments, Wastewater Collections Systems and Mechanical Maintenance

5.4.1 Sanitary Sewer Main Line Cleaning

The sanitary sewer main line cleaning program consists of regular maintenance of the District's known problem areas, as well as scheduled maintenance of the remaining District facilities.

The District has identified several segments of pipes and certain manholes for more frequent maintenance. These High Frequency Maintenance Lines within the District's collection systems where problems are known to exist, which may cause blockages or other maintenance problems for the District. The general location of these High Frequency Maintenance Lines is presented visually on Figure 5.2. Appendix I contains a table with

more detailed information related to each High Frequency Maintenance Lines, as well as street level maps showing the precise location of each High Frequency Maintenance Lines.

Aside from the District High Frequency Maintenance Lines, sewer mains in Old Town Lake Elsinore are cleaned annually, sewer mains in the Canyon Lake sewer shed are cleaned every two to three years, and the remaining sewer mains are cleaned every five to 5.5 years. Table 5.1 summarizes the District's sewer main cleaning schedule.

Table 5.1 Sanitary Sewer Main Cleaning Schedule
Sewer System Management Plan
Elsinore Valley Municipal Water District

Area	Sewer Main Cleaning Frequency
Old Town Lake Elsinore	Annually
Canyon Lake Sewershed	Once Every 2 - 3 Years
Designated "Hot Spots"	Varies (see Appendix I for Cleaning Schedule)
All Other Areas	Once Every 5 - 5.5 Years

5.4.2 Lift Station Maintenance Program

The District inspects its sanitary sewer lift stations routinely five days out of the week (Monday through Friday). Any issues uncovered during these inspections are addressed as soon as possible to ensure that each lift station is operating correctly. In addition to the daily inspections, all liftstations had SCADA installed by July 2013. This allows for trending of the liftstation functions. All employees responsible for the operation of the liftstations have been trained in the use of the of the SCADA system.

Cleaning of the wet wells is performed on an as needed basis or scheduled due to the past history cleaning cycles.

5.5 REHABILITATION AND REPLACEMENT PLAN

Replacement and rehabilitation of deteriorated and capacity limited facilities are coordinated through the District's Capital Improvement Program (CIP). Details of the District CIP are available through the District's website. Additionally, the 2016 Sewer System Master Plan provides recommendations for the replacement of certain District facilities. Additionally, the district has a re-occurring CIP established for the rehabilitation of manholes throughout the district.

5.6 STAFF TRAINING

The District trains its maintenance workers through a combination of official certification programs and formal and informal training of staff on District standard operating procedures. Licensing and certification requirements vary depending on position. Table 5.2 lists these requirements for the District's positions. The District has a tiered Collection System and Mechanical Technician Structure, which facilitates staff training. In this system,

Horsethief Canyon WRF
Horsethief Canyon Rd
15
74
Nichols Rd
Collier Ave
Regional WRF
Lakeshore Dr
Grand Ave
Riverside Dr
Detail A
Detail B
Lake Elsinore
Railroad Ave
Railroad Canyon Rd
Railroad Canyon WRF
Canyon Lake
Detail C
Ethanac Rd
Case Rd
Newport Rd
Holland Rd
Garbani Rd
Scott Rd
Mission Trl
Condon St
Central Ave
Grand Ave
Clinton Keith Rd
15
215
Los Alamos Rd
Washington Ave

Legend

- WRF
- Lift Stations
- Manhole Hot Spot
- Pipe Hot Spot
- Streets
- Waterway
- District Boundary

Existing Collection System

- 8" and Smaller
- 10" and Larger
- Force Main

N

0 8,000 16,000 Feet

FIGURE 5.2
SANITARY SEWER "HOT SPOTS"

EVMWD

carollo
Engineers...Working Wonders With Water™

the higher-level maintenance workers (Collection System Maintenance Worker III and Mechanical Technician III) are responsible for training the lower level maintenance workers on work practices and procedures. Lower-level maintenance workers thereby gain valuable experience by working under and learning from the more experienced workers.

The Electrical Technicians and the SCADA Technicians are trained and informed if there is a change that is or needs to be made in the operations of the liftstations.

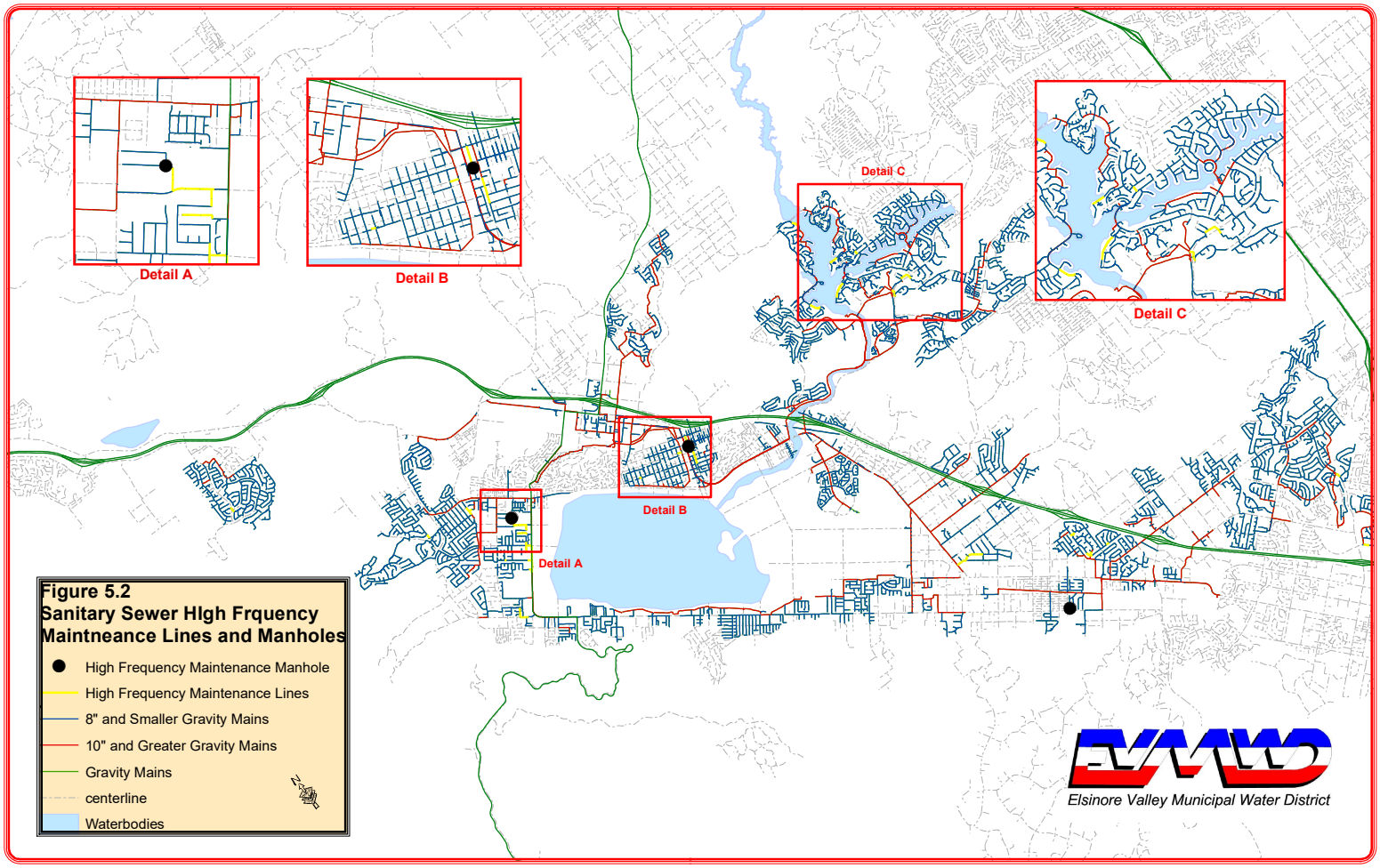
Detail A
Detail B
Detail C
Detail C
Detail B
Detail A
Figure 5.2
Sanitary Sewer HIgh Frquency
Maintneance Lines and Manholes
High Frequency Maintenance Manhole
High Frequency Maintenance Lines
8" and Smaller Gravity Mains
10" and Greater Gravity Mains
Gravity Mains
centerline
Waterbodies
N
Elsinore Valley Municipal Water District

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Table 5.2 Licensing and Certification Requirements
Sewer System Management Plan
Elsinore Valley Municipal Water District

License or Certification	Time Frame
Collections Systems Maintenance Worker I	
Valid Driver's License	Upon Appointment
Class B California Driver's License (CDL) with air breaks and tank endorsements	within 18 Months of Appointment
CWEA Collection System Maintenance Technologist Grade I	Upon Appointment
District provided CPR/First Aid and Bloodborne Pathogen Training	Upon Appointment or Shortly Thereafter
Collections Systems Maintenance Worker II	
Valid Driver's License	Upon Appointment
Class B California Driver's License (CDL) with air breaks and tank endorsements	Upon Appointment
CWEA Collection System Maintenance Technologist Grade II	Upon Appointment
District provided CPR/First Aid and Bloodborne Pathogen Training	Upon Appointment or Shortly Thereafter
Collection Systems Maintenance Worker III	
Valid Driver's License	Upon Appointment
Class B CDL w/ air breaks and tank endorsements	Upon Appointment
CWEA Grade II Collection System Maintenance Certification	Upon Appointment
District provided CPR/First Aid and Bloodborne Pathogen Training	Upon Appointment or Shortly Thereafter
Mechanical Technician I	
Valid Driver's License	Upon Appointment
Class B CDL with Air Brake and Tank Endorsement	within 12 Months of Appointment
District provided CPR/First Aid and Bloodborne Pathogen Training	Upon Appointment or Shortly Thereafter
CWEA Grade I Mechanical Technology Certification	within 18 Months of Appointment
State of California D1 Water Distribution Certification	within 24 Months of Appointment
CWEA Grade I Collection System Maintenance Certification	within 24 Months of Appointment
Mechanical Technician II	
Valid Driver's License	Upon Appointment
Class B CDL with Air Brake and Tank Endorsement	within 6 Months of Appointment
District provided CPR/First Aid and Bloodborne Pathogen Training	Upon Appointment or Shortly Thereafter
State of California D2 Water Distribution Certification	Upon Appointment
CWEA Grade II Mechanical Technology Certification	Upon Appointment
CWEA Grade I Collection System Maintenance Certification	Upon Appointment
Mechanical Technician III	
Valid Driver's License	Upon Appointment
Class B CDL with Air Brake and Tank Endorsement	within 12 Months of Appointment
District provided CPR/First Aid and Bloodborne Pathogen Training	Upon Appointment or Shortly Thereafter
State of California D2 Water Distribution Certification	Upon Appointment

Table 5.2 Licensing and Certification Requirements Sewer System Management Plan Elsinore Valley Municipal Water District	
CWEA Grade III Mechanical Technology Certification	within 18 Months of Appointment
CWEA Grade I Collection System Maintenance Certification	Upon Appointment
CWEA Plant Maintenance Electrical/Instrumentation Certification	Desirable

Electrical Instrumentation & Controls Technician I	
Valid Driver's License	Upon Appointment
Grade 1 Electrical/Instrumentation Certificate issued by the California Water Environment Association	Within 12 months of appointment
State of California D1 Water Distribution Certification	Within 24 months of appointment
Electrical Instrumentation & Controls Technician II	
Valid Driver's License	Upon Appointment
Grade II Electrical/Instrumentation Certificate issued by the California Water Environment Association	Within 24 months of appointment
State of California D2 Water Distribution Certification	Upon Appointment
Lead Electrical Instrumentation & Controls Technician	
Valid Driver's License	Upon Appointment
District provided CPR/First Aid and Bloodborne Pathogen Training	Upon Appointment or Shortly Thereafter
Grade III Electrical/Instrumentation Certificate issued by the California Water Environment Association	Within 18 months of appointment
State of California D2 Water Distribution Certification	Upon Appointment
Cane Operator Certificate	Within 24 months of appointment

All new staff are trained on District standard operating procedures for equipment use and tasks upon hire. The standard operating procedures are then reviewed and updated every two years. Safety training and individual department tail gate training sessions are performed on a bi-weekly basis. Specialty training on specific safety programs is provided annually. In addition, staff are scheduled to attend one to two seminars annually.

5.7 EQUIPMENT AND REPLACEMENT PART INVENTORIES

The District has developed an equipment and replacement parts inventory for tracking purposes. The inventory is included in Appendix J of this report. The District uses this equipment in the performance of routine and emergency maintenance of the District's wastewater collection systems.

The District has a spare parts inventory to minimize downtime in the event of an emergency (such as a pump failure). It is recommended that the District periodically examine its spare parts inventory to determine which spare parts are needed in the event of a breakdown or malfunction.

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DESIGN AND PERFORMANCE PROVISIONS

This chapter presents a summary of the Elsinore Valley Municipal Water District's (District) design and construction standards, as well as its standards for the inspection and testing of new sewers, pumps, and other appurtenances and for rehabilitation projects.

6.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies that a Sewer System Management Plan (SSMP) must include the following:

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

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

6.2 DESIGN STANDARDS AND SPECIFICATIONS

Volume 1 of the District's Standards and Standard Drawings [2] contains the District's requirements for the design and construction of sanitary sewer facilities. Excerpts of this document are included in Appendix K. An electronic copy of the entire document is available through the District's website (www.evmwd.com/Departments/Engineering/Development Services) [3], and a hard copy can be purchased from the District.

6.2.1 Design Requirements

This section summarizes the District's sewer design requirements. For a more detailed account of the District's design requirements, refer to Volume 1 of the District's Standards and Standard Drawings.

6.2.1.1 Mainline Size

The minimum pipe diameter for public collection sewers in the District is 8 inches, unless a smaller pipeline size is authorized by the District. For pipeline sizing, it is necessary to determine the average wastewater flow that is meant to be served by the pipeline. This can be determined in several different ways, depending on the type of development. Section 2.04 of Volume 1 of the District's Standard Specifications and Drawings contains the procedures that should be followed to determine average wastewater flow.

The District's Standard Specifications and Drawings specify that the design peak flow for any given development should be calculated using the following equation:

$$Q_{peak} = 1.84 (Q_{avg})^{0.92}$$

Where: Q_{peak} = Design Peak Wastewater Flow (in cubic feet per second, cfs)

Q_{avg} = Average Wastewater Flow (cfs)

The District's design standards specify variable flow depth criteria for various pipe sizes. These criteria are expressed as a maximum depth of flow to pipe diameter ratio (d/D). Design d/D ratios typically range from 0.5 to 0.92, with the lower values typically used for smaller pipes, which may experience flow peaks greater than the design flow or blockages from debris, paper, or rags. Table 6.1 summarizes the d/D ratios used for the design of future trunk sewers.

Table 6.1 Maximum d/D Ratio for Design of New Sewers
Sewer System Management Plan
Elsinore Valley Municipal Water District

Pipe Diameter (in)	Maximum d/D Ratio (during peak flows)
12 and smaller (New Sewers)	1/2
Larger than 12 (New Sewers)	2/3

Source:
Elsinore Valley Municipal Water District Standards Standard and Drawings, Volume 1.

6.2.1.2 Manning's Coefficient

The Manning coefficient 'n' is a friction coefficient and varies with respect to pipe material, size of pipe, depth of flow, smoothness of joints, root intrusion, and other factors. The District's design standards specify that a Manning's roughness coefficient (n) of 0.013 be used for the design of sewer facilities in the District.

6.2.1.3 Minimum Pipe Slope

According to the District's standard design requirements, sewers must be designed and constructed such that the mean velocity during design peak flow conditions is greater than 2 feet per second (fps). The maximum allowable velocity for gravity sewers is 10 fps. Table 6.2 lists the minimum slopes provided in the District's standard design requirements.

6.2.1.4 Minimum Cover

The minimum cover for sewer pipes is seven feet. District approval must be obtained if a shallower depth is needed. Additionally, the District may require greater cover depths, if necessary, to extend the sewer to other areas.

Table 6.2 Minimum Slopes for New Circular Pipes Sewer System Management Plan Elsinore Valley Municipal Water District		
Sewer Size (in)	**Minimum Pipe Slope (ft/ft)**	**Pipe Material**
4	0.0200	SDR-35 PVC
6	0.0100	SDR-35 PVC
8	0.0040	SDR-35 PVC
10	0.0032	SDR-35 PVC
12	0.0024	SDR-35 PVC
15	0.0015	SDR-35 PVC
18	0.0012	SDR-35 PVC
21	0.0009	Vylon
24	0.0008	Vylon
27	0.0006	Vylon
Source: Elsinore Valley Municipal Water District Standards and Standard Drawings, Volume 1.		

6.2.1.5 Manhole Requirements

The following summarizes the District's requirements for the installation of sanitary sewer manholes:

- Manholes must be installed at all changes in pipe slope, diameter, alignment, and all intersections of main sewers;
- The maximum manhole spacing is 400 feet. For curved sewers, the maximum spacing is 300 feet;
- The minimum drop across a manhole for pipes with less than a 7.5 percent slope is 0.10 feet. For pipe slopes greater than 7.5 percent, the following equation is used:

  Manhole Drop = $(S_1+S_2)(D_1+D_2)$

  Where: S_1 = Invert slope entering manhole, feet/feet

  S_2 = Invert slope leaving manhole, feet/feet

  D_1 = Diameter of inlet pipe

  D_2 = Diameter of outlet pipe
- When a smaller sewer joins a larger one, the crown elevations should be matched;
- The District must approve drop manholes for pipe sizes over 15 inches;
- The minimum inside diameter of a manhole is 48 inches (4 feet);

- Five-foot manholes are required when sewer depths are greater than 12 feet, when more than two sewer mains or laterals are connected to the manhole, and for pipe sizes greater than 18 inches;
- Steeply sloped pipes shall be polyvinyl chloride (PVC)-lined and provided with a sealed lid;
- Manholes in non-paved areas must have a 10-foot by 10-foot paved area surrounding them.

6.2.1.6 Other Miscellaneous Considerations

The District's design standards identify other requirements for the design of sanitary sewer facilities. These include requirements for the horizontal alignment of sewers, the requirements for curved sewers, service laterals, inverted siphons, easements, and closed circuit television (CCTV) inspection. Final inspection of all sewer lines is performed using CCTV. The contractor shall repair, at its own expense, any defects, should they be observed, to the satisfaction of the District.

Additionally, Section 2 of Volume 1 of the District's Standards and Standard Drawings (2013) contains general requirements for the design of potable water, recycled water, and sanitary sewer facilities. These requirements must be followed in the design of sanitary sewer facilities.

6.2.2 Inspection Requirements

Section 50 of the District's Technical Specifications (2011) contains leakage and infiltration testing requirements for sewers. The District requires the following tests be performed in the presence of the District:

- **Leakage Test:** Each section of sewer pipe between two successive manholes, or between a manhole and its corresponding cleanout or end plug, is tested for leakage, including sewer laterals to the property line;
- **Infiltration Test:** An infiltration test is performed in areas where groundwater is encountered, or where evidence exists that groundwater has encroached to the elevation of the sewer;
- **CCTV Inspection:** A CCTV inspection is required to be performed by the contractor upon the installation of the sewer;
- **Vacuum Testing:** Vacuum testing is performed on manholes in accordance with the requirements of Section 53 of the District's Technical Specifications (2011);
- **Mandrel Testing:** Sewer pipes are tested for deflections, joint offsets, and lateral pipe intrusions by pulling a mandrel through the pipe after backfill, but prior to the placement of permanent pavement; and

- **Pressure Tests for Sewer Force Mains:** All force mains should be pressure tested in accordance with the requirements of Section 56 of the District Technical Specifications (2011). The allowable leakage in a sewer force main, however, is zero gallons.

For more detailed descriptions of the test procedures for the aforementioned tests, refer to Volume 1 of the District's Standards and Standard Drawings, Vol 1.

6.2.3 Standard Drawings

Section 3 of Volume 1 of the District's Standards and Standard Drawings contains the District's standard drawings for water and sewer facilities. The District's sewer standard drawings have been included in Appendix K as a reference.

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OVERFLOW EMERGENCY RESPONSE PLAN

This chapter contains a description of the Elsinore Valley Municipal Water District's (District's) overflow emergency response plan that serves to provide measures to protect the public health and the environment in the event of an overflow.

7.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies that a Sewer System Management Plan (SSMP) must include an Overflow Emergency Response Program that includes, at a minimum, the following:

a. *Proper notification procedures so that the primary responders and regulatory agencies are informed of all sanitary sewer overflows (SSOs) in a timely manner;*

b. *A program to ensure an appropriate response to all overflows;*

c. *Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Quality Control Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the monitoring and reporting program (M & RP), the California Water Code, other State Law, and other applicable Regional Water Quality Control Board's waste discharge requirements (WDRs) or National Pollutant Discharge Elimination Program (NPDES) permit requirements. The SSMP should identify the officials who will receive immediate notification;*

d. *Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;*

e. *Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and*

f. *A program to ensure that all reasonable steps are taken to contain and prevent discharge of untreated or partially treated wastewater to waters of the United States and to minimize or correct any adverse impact of 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 SEWAGE SPILL RESPONSE PLAN

The District has prepared a Sewage Spill Response Plan (SSRP), which provides information on procedures to be followed by District Staff in the event of an SSO (Appendix E).

As previously mentioned, the District also conforms to the spill response procedures laid out in the Unified Sanitary Sewer Spill Response Procedure (Appendix F) as well as the reporting requirements of the San Diego RWQCB (Appendix G).

7.3 PRIMARY NOTIFICATION PROCEDURES

Section 3 of the District's SSRP contains the procedures that the District follows in the event of an SSO. This includes the procedures utilized during normal working hours, as well as weekends, holidays, and after hours. These procedures are included in Appendix E and are summarized in Section 3.4 of this plan.

7.4 SSO RESPONSE PROGRAM

The District's SSRP contains procedures that are used to promote an appropriate response to SSOs that occur within the District's service boundary. Figure 7.1 is a flow chart that the response crews follow for responding to an SSO. This flow chart is provided in the SSRP, and provides a general response procedure for SSO response teams. In general, the field responder's duties are grouped into the following categories:

- First Responder Responsibilities;
- Identify and Relieve the Cause of the Spill;
- Spill Containment and Recovery;
- Cleanup and Disinfection;
- Spill Documentation.

A detailed description of individual tasks to be performed by the response crew is included in Part C of Section 4 of the District's SSRP (Appendix E).

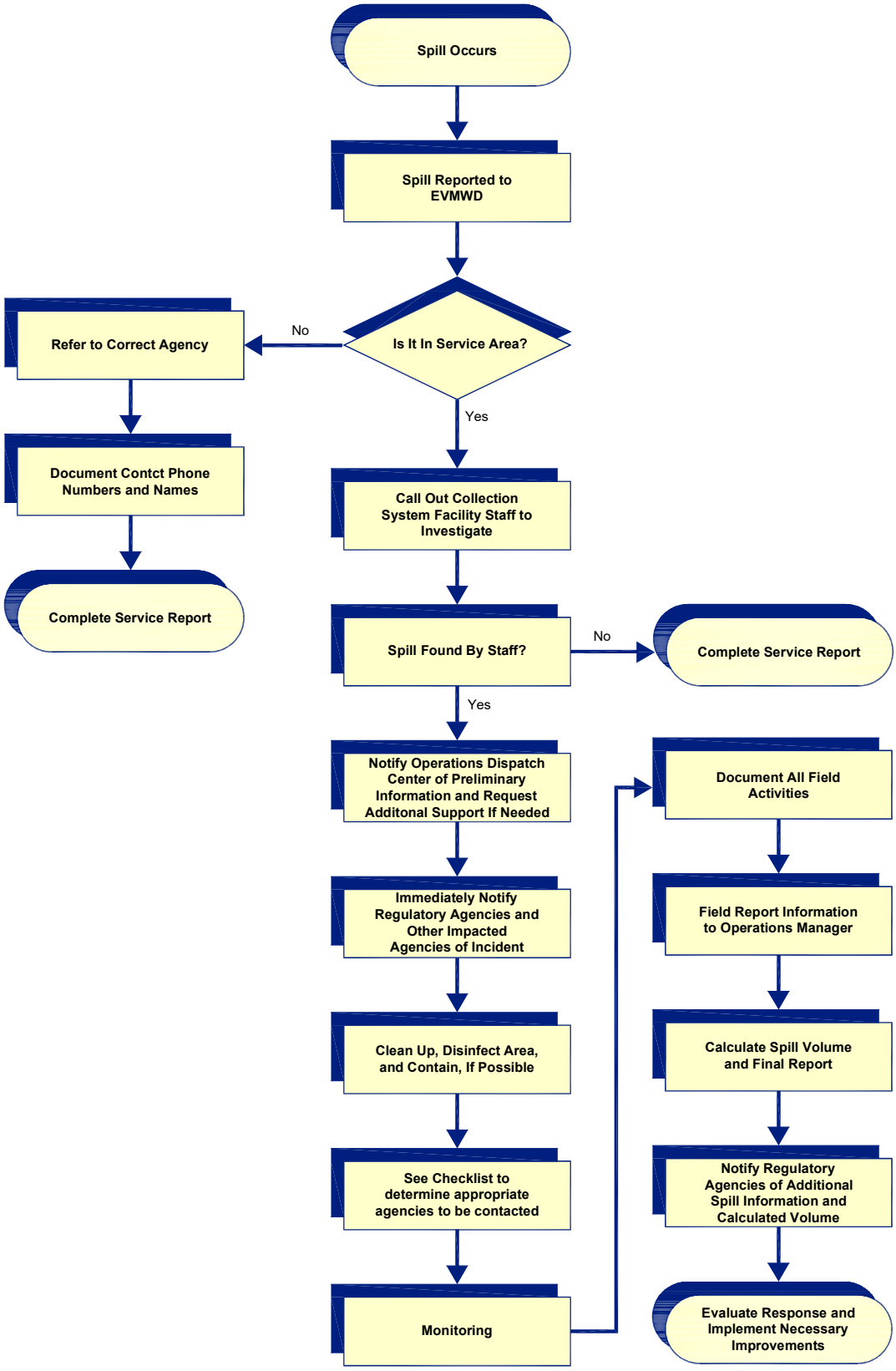

FIGURE 7.1
SPILL RESPONSE FLOW CHART

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7.5 NOTIFICATION OF REGULATORY AGENCIES

If an SSO has occurred, the Superintendent, Wastewater Operations Manager or their designee shall immediately start to notify the appropriate regulatory agencies and other impacted agencies in accordance with the District's Spill Notification Checklists, which are included in the District's SSRP (Appendix E).

Notification of the State Water Resources Control Board (SWRCB) is performed through the California Integrated Water Quality System (CIWQS). On CIWQS, the SSO reporting procedure is dependant upon the type and volume of spill that has occurred. The District is required to use this reporting system to submit SSO spill reports, should they occur, or no spill certification reports. A description of the Category 1, Category 2, and Category 3 SSO reporting procedures are provided in Appendix B, SWRCB Order No. 2006-0003-EXEC Attachment A, and in Appendix E (SSRP section 4) of this report.

7.6 EMERGENCY RESPONSE PLAN AWARENESS AND TRAINING

Section 7 of the District's SSRP stipulates that appropriate District personnel, including management, collection systems, wastewater treatment, engineering, and public information personnel, receive a copy of the SSRP and be informed and trained on its provisions. The SSRP identifies three types of training exercises, which are summarized as follows:

- **Orientation Exercise**: This type of exercise is an introductory, lecture-type, session that includes visuals and dialog between the instructor and District staff. This exercise includes an overview of the SSRP components, provisions, and other appropriate topics. This exercise is given to new hires and provided annually thereafter.
- **Tabletop Exercise**: This type of exercise is a simulation of the SSO response activities, and includes no equipment use or deployment of staff. This exercise is performed annually.
- **Field Exercise**: In this type of exercise, an SSO is simulated. This exercise is used to evaluate the SSRP objectives, and to test equipment, response time, and manpower capabilities.

7.7 EMERGENCY OPERATIONS

Section 4 of the District's SSRP identifies steps to be taken by the District's SSO response crew. The first responder to an SSO should take steps to establish an appropriate perimeter around the spill site. This will prevent disruption of the response crew by vehicle traffic, pedestrians, and other factors that may interrupt the crew's ability to effectively respond to an SSO.

7.8 SSO SURFACE WATER IMPACT MITIGATION PROGRAM

Should an SSO result in a discharge to the waters of the United States, the District should take all feasible steps to avoid the degradation of this body of water. These steps will vary on a case by case basis.

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FATS, OILS, AND GREASE CONTROL PLAN

This chapter discusses the need for a Fats, Oils, and Grease (FOG) control program. The purpose of such a program is to limit to the extent feasible the amount of fats, oils, and greases that enter the collection system.

8.1 REGULATORY REQUIREMENT

Order No 2006-0003 specifies that each Sewer System Management Plan (SSMP) must include an evaluation of the service area of the Elsinore Valley Municipal Water District (District) to determine whether a FOG control program is needed. If no FOG program is needed, justification for why it is not needed must be provided. If FOG is considered to be a problem, a FOG source control program must be prepared and implemented, including the following as appropriate:

a. *An implementation plan and schedule for a public education outreach program that promotes the proper disposal of FOG;*

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

c. *The legal authority to prohibit discharges into the system and identify measures to prevent sanitary sewer overflows (SSOs) and blockages caused by FOG;*

d. *Requirements to install gravity grease interceptor systems, construction design standards for the grease interceptor devices, maintenance requirements, Best Management Practice (BMP) requirements, record keeping and reporting requirements;*

e. *Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;*

f. *An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and*

g. *Development and implementation of source control measures for all sources of FOG discharged into the sanitary sewer system for each section identified in (f) above.*

8.2 FOG CONTROL PLAN

The District implemented a FOG Control Program in 2007 to document program activities and facilitate the maximum beneficial use for the Districts sanitary sewer system, while

preventing blockages of the sewer lines and reducing the adverse effects on sewage treatment facilities resulting from discharges of FOG into the system.

The Districts FOG Control Program documents the processes and procedures intended to reduce the quantity of FOG discharged into the Districts sanitary sewer system to achieve the goal of minimizing SSOs due to excessive FOG. Elements of the Districts FOG control program include the following:

- Issuance of Waste Discharge Permits to Food Service Facilities (FSFs)
- Kitchen BMPs
- Regular Site Inspections
- Grease Interceptor Installation, Operation and Maintenance Requirements
- Record Keeping and Reporting Requirements
- Public Education
- Required Submission of Plans and Applications for New and Remodeled FSFs
- Enforcement Measures through District Ordinance No. 160

To address the components listed in Section 8.1 and as required by Order No 2006-0003, the following subsections provide a summary of the applicable FOG control procedures currently being implemented.

8.2.1 Public Education Program

The primary focus of the Districts FOG Control Program has been on source control, with a concentrated effort on educating FSF staff on the negative impacts of putting FOG into the wastewater collection system. During regularly performed site inspections, District staff provides informative and practical suggestions for reducing the quantity of FOG discharged into the Districts wastewater and storm drain system, engaging FSF staff in reducing FOG related SSOs. As necessary, the District will require an increase in the cleaning frequency of a facility's pretreatment device to ensure the FSF is in compliance with the Districts Ordinance and permitting requirements. To date, the Districts efforts to educate FSF staff has been effective in attaining the desired results from these types of facilities.

8.2.2 Disposal of FOG

The FOG Control Program includes written BMPs, which include simple and effective practices that an FSF can implement to prevent and reduce the quantity of FOG discharged into the sanitary sewer system. Regular inspections performed by District staff provide the District an opportunity to reiterate the importance of limiting FOG discharge into the Districts wastewater collection system and reduce the potential of SSOs due to excessive FOG.

The requirement for the pretreatment of wastewater flows generated at FSFs is included within the Districts Ordinance No. 160 and includes the installation of a minimum 750 gallon grease interceptor systems as determined necessary by the District. Also, the cleaning and removal of all accumulated grease is required to be performed by a licensed waste hauler.

8.2.3 Legal Authority to Prohibit Discharges

The District is required to prevent discharges of illicit and undesirable substances from entering the wastewater collection system.

The Districts current legal authority to limit and prohibit FOG is established through Ordinance No. 160 and wastewater discharge permit terms and conditions.

8.2.4 Requirements for Installation of FOG Pretreatment Devices

The Districts Ordinance No. 160 and FOG Control Program requires that each FSF be solely responsible for the proper operation, maintenance, and repair of District approved grease interceptor systems. Sizing and installation requirements for gravity grease interceptor systems are approved by the Districts Pretreatment Program Coordinator. Cleaning and removal of accumulated FOG within an interceptor system is required to be performed by a licensed waste hauler. To ensure proper disposal of the collected FOG, the District requires that waste hauling manifests be maintained by each FSF for a period of three (3) years and be made available to District Inspectors during facility inspections.

8.2.5 Facility Inspection

The Districts Ordinance No. 160 and FOG Control Program requires all applicable FSFs to obtain and renew a Wastewater Discharge Permit. Although the requirements for compliance with permit conditions vary somewhat among the FSFs, generally each permit requires the FSF to meet the requirements for installation, maintenance, and repair of the facility's FOG removal equipment.

To determine whether the FSF is in compliance with the conditions of the Wastewater Discharge Permit, FOG Control Program, and District Ordinance No. 160, authorized personnel of the District have the authority to inspect unannounced each FSF. Compliance with the FOG Control Program and Ordinance No. 160 requires that reasonable access to all parts of the FSF be made available when inspection and/or sampling of the wastewater are required.

8.2.6 Maintenance Schedule for High Frequency Maintenance Locations

The identification, performance and scheduling of preventive maintenance activities regarding sewer system sections subject to potential FOG blockages (high frequency lines) is performed by existing Wastewater Collection System staff. The Preventive Maintenance Program includes a repetitive cleaning schedule for the areas that have been identified by District staff as wastewater collection system high frequency lines.

8.2.7 Development and Implementation of Source Control Measures

Detailed information regarding sanitary sewer system sections (high frequency lines) subject to FOG blockages and establishment of a cleaning maintenance schedule is included in the Appendix section for reference.

8.3 EXISTING FOG CONTROL MEASURES

The District's FOG control provisions are presented mainly in Article 6 of the District Ordinance No. 160 (Appendix H). This article establishes a Gravity Separation Interceptor Program for the District. This includes requirements for the installation of a gravity separation interception system for industrial users that, in the District's opinion, will contribute FOG, flammable substances, sands, suspended solids, or other constituents harmful to the District's collection systems.

The design and installation of an interception system is required to be performed in accordance with the District standards. The minimum operational fluid capacity of the interceptor is 750 gallons. An interception system is not required for buildings used solely for residential purposes, except where common food preparation occurs.

Article 6 of Ordinance No. 160 also specifies certain requirements for the maintenance of an interceptor system, which are summarized as follows:

- The interceptor system must be maintained such that it is in proper working order at all times;
- Cleaning shall be performed as often as necessary, but not less than two times per calendar year;
- All cleaning shall be performed by a properly licensed and permitted waste hauler;
- The use of chemicals for the emulsification, suspension, or dissolution of FOG is prohibited; and
- Users who are required to have an interceptor system shall have a written plan of operation or program that ensures that the interceptor is properly working.

Additionally, Volume 1 of the District's Standard Specifications and Drawings contains the standard drawings for grease interceptors' systems. Excerpts of this document are included in Appendix B. An electronic copy of the entire document is available through the District's website (www.evmwd.com).

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SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

This chapter provides an evaluation of the Elsinore Valley Municipal Water District's (District) sanitary sewer system facilities, identifies and proposes improvements for deficiencies, identifies design criteria, and provides a Capital Improvement Program (CIP) and schedule for improvements.

9.1 REGULATORY REQUIREMENT

Order No. 2006-0003 requires that the District prepare and implement a CIP that will provide hydraulic capacity for both peak dry weather flows and the appropriate design storm or wet weather event. According to Order No. 2006-0003, the Sewer System Management Plan (SSMP) must address, at a minimum, the following:

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

b. **Design Criteria**. Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria;

c. **Capacity Enhancement Measures**. The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, infiltration and inflow (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; and

d. **Schedule**. The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a) - (c) above. The schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D.14 (of Order 2006-0003).

9.2 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

The District contracted Stantec (previously known as MWH) to complete a Sewer System Master Plan. The District's 2016 Sewer System Master Plan [3] contains the following elements:

- Section 1 - Introduction
- Section 2 - Service Area Description and Population
- Section 3 – Existing Wastewater Facilities
- Section 4 - Model Development and Calibration
- Section 5 - Wastewater Flow Projections
- Section 6 - Recommended Design Criteria
- Section 7 - Sewer System Capacity Evaluation
- Section 8 - Capital Improvement Program

The Executive Summary of the 2016 Sewer System Master Plan is included in Appendix L. A full copy of the 2016 Sewer System Master Plan is available on the District website [4].

9.2.1 Analysis Method

The District's wastewater collection systems were analyzed as part of the 2016 Sewer Master Plan [3] using computer hydraulic modeling software. There is an abundance of sewer analysis software in the marketplace today, with a variety of features and capabilities. The selection of a particular model generally depends on user preferences, software costs, and the complexity of the sewer system. It was agreed that H_2OMAP SWMM, by Innovyze (formerly MWH Soft), would be used to assemble the District's hydraulic model. H_2OMAP SWMM is a fully dynamic, stand alone, wastewater and stormwater modeling software application that provides seamless integration with the District's GIS data.

9.2.2 Planning and Design Criteria

The 2016 Sewer Master Plan [3] established several criteria to model and evaluate the District's wastewater collection systems. This section summarizes the most important planning criteria that were used in the 2016 Sewer System Master Plan [3].

9.2.2.1 Gravity Sewers

The District's gravity sewers were analyzed in accordance with the criteria established in the following subsections.

9.2.2.1.1 Pipe Capacities

Pipe capacities for gravity sewers were determined through the use of the Continuity Equation and Manning's Equations for steady-state flow. The Continuity and Manning's Equation are presented as follows:

Continuity Equation:

$$Q = VA$$

where: Q = peak flow, cfs
V = velocity, fps
A = cross sectional area of pipe, sq. ft.

Manning's Equation:

$$V = \frac{1.486 R^{2/3} S^{1/2}}{n}$$

where: V = velocity, fps
n = Manning's coefficient of friction
R = hydraulic radius (area divided by wetted perimeter), ft
S = slope of pipe, feet per foot

9.2.2.1.2 Manning Coefficient (n)

The Manning coefficient 'n' is a friction coefficient and varies with respect to pipe material, size of pipe, depth of flow, smoothness of joints, root intrusion, and other factors. A value of 0.013 was used for gravity sewers in the master planning effort.

9.2.2.1.3 Flow Depth Criteria (d/D)

When designing sewer pipelines, it is common practice to adopt variable flow depth criteria for various pipe sizes. This criteria is expressed as a maximum depth of flow to pipe diameter ratio (d/D). Design d/D ratios typically range from 0.5 to 0.9, with the lower values typically used for smaller pipes, which may experience peak flows greater than the design flow or blockages from debris, paper, or rags. Table 9.1 summarizes the d/D ratios used for planning future trunk sizes.

According to Table 9.1, all new sewer trunks greater than 18 inches in diameter should be sized to carry the peak dry weather design flow at a maximum d/D ratio of 0.75. However, utilizing a d/D ratio of 0.75 for analyzing the existing wastewater collection system may lead to premature or unnecessary replacement of existing pipelines. Therefore, a d/D ratio of 0.85 at peak dry weather flow was utilized to evaluate the District's existing trunk system.

Table 9.1 Maximum d/D Ratio Elsinore Valley Municipal Water District	
Pipe Diameter (in)	**Maximum d/D Ratio (during peak dry weather flows)**
18 and smaller (New Sewers)	0.5
Larger than 18 (New Sewers)	0.75
All Diameters (Existing Pipes)	0.85
Source: 2016 Sewer System Master Plan [3]	

9.2.2.1.4 Changes in Pipe Size

For the master planning effort, and in the absence of field data, sewer crowns were matched at the manholes when a smaller sewer joined a larger sewer.

9.2.2.1.5 Design Velocities and Minimum Slopes

According to the 2016 Sewer System Master Plan [3], the mean velocity at the average dry weather flow conditions is not less than 2 feet per second (fps) to minimize grit and debris accumulation. The maximum allowable velocity for gravity sewers is 10 fps to minimize potential for scouring and pipe erosion.

Table 9.2 lists the minimum slopes that were used for planning future improvements. These values are from the 2016 Sewer System Master Plan [3].

Table 9.2 Minimum Slopes for Pipes *(Reference 3)* Elsinore Valley Municipal Water District		
Sewer Size (in)	**Minimum Pipe Slope (ft/ft)**	**Pipe Material**
6	0.0100	SDR 35 PVC
8	0.0040	SDR 35 PVC
10	0.0032	SDR 35 PVC
12	0.0024	SDR 35 PVC
15	0.0015	SDR 35 PVC
18	0.0012	SDR 35 PVC
21	0.0009	Vylon
24	0.0008	Vylon
27	0.0006	Vylon

9.2.2.2 Lift Stations and Force Mains

As part of the master planning effort, the District's lift stations were evaluated and sized for peak flow with the largest pump serving as standby. For evaluating the force mains, the maximum recommended flow velocity of 8 fps was used. The Hazen-Williams formula is commonly used for the sizing of force mains. The Velocity Equation is:

$$V = 1.32\ C\ R^{0.63}\ S^{0.54}$$

where: V = mean velocity, fps
C = roughness coefficient
R = hydraulic radius, ft
S = slope of the energy grade line, ft/ft

The value of the Hazen-Williams 'C' varies with the type of pipe material. This value is influenced by the type of construction and age of the pipe. A 'C' value of 120 was used as part of the master planning effort.

9.2.3 Evaluation

To identify existing and future system deficiencies, the District's hydraulic model was developed by converting the District's GIS data to H_2OMAP SWMM format and importing it into H_2OMAP SWMM.

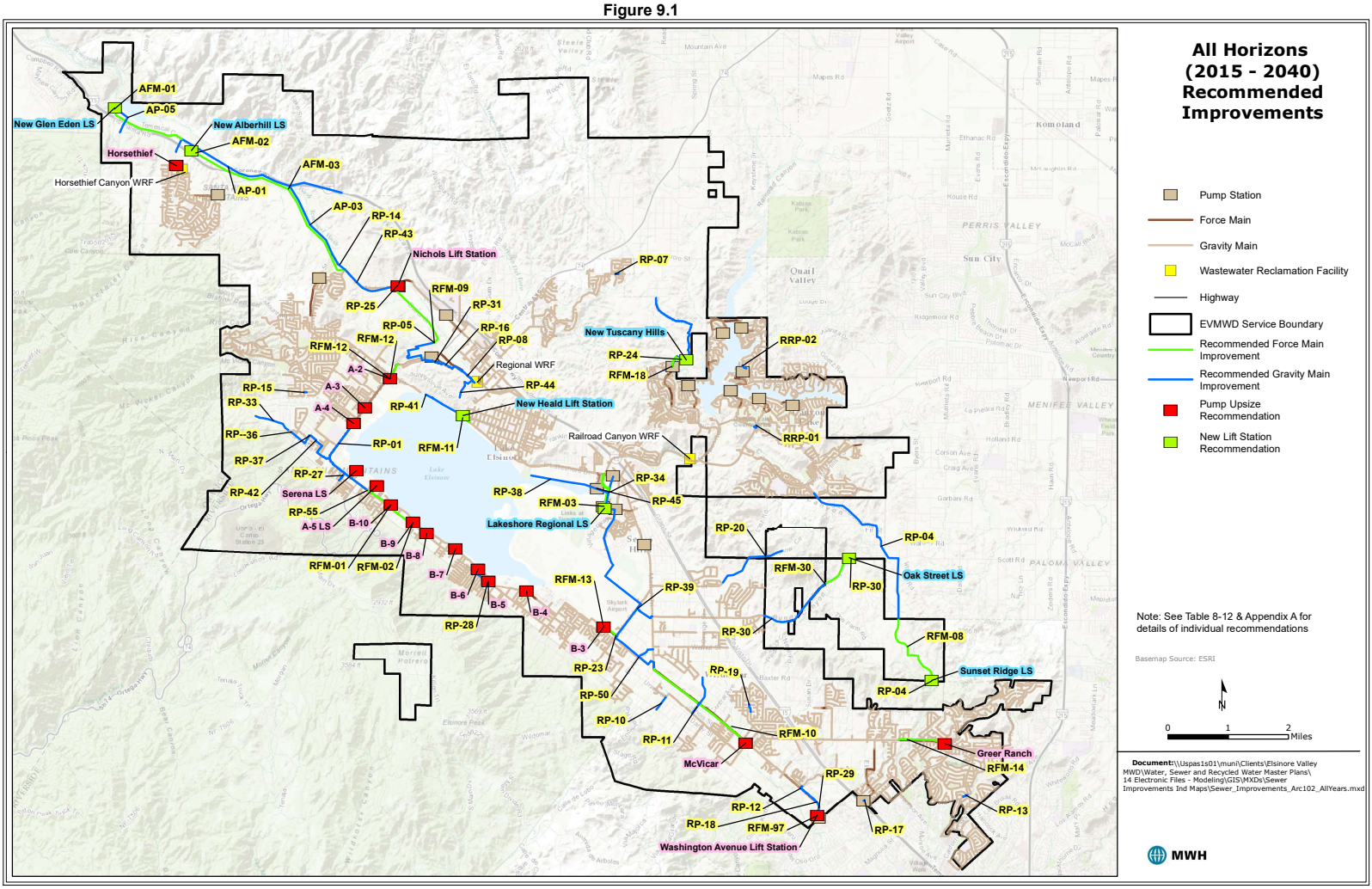
Based on the results of the temporary flow monitoring programs performed as part of the master planning effort, diurnal patterns were developed to be applied to the base wastewater flow at manholes in the District. The model was then calibrated to confirm that the modeled flow closely represents the actual flows recorded during the dry and wet weather flow monitoring programs.

Following calibration, the existing wastewater collection systems were evaluated according to the planning and design criteria summarized in this chapter. Deficient facilities were identified and improvement projects were recommended to address the identified deficiencies. Following the evaluation of the existing system, the District's wastewater collection systems were evaluated for future conditions. Future deficiencies were then identified and improvement projects were recommended such that the District's wastewater collection systems would be capable of conveying wastewater flows through the planning horizon.

9.2.4 Capacity Enhancement Measures (CIP Program)

The 2016 Sewer System Master Plan [3] recommended improvements to mitigate existing and serve future customers. These improvements considered for the 25-years planning period (2015-2040) are shown in Figure 9.1. The 25-years planning period (2015-2040) recommendations are considered into five phases; i.e., 2015-20, 2020-25; 2025-30; 2030-35 and 2035-40. A complete list of the wastewater conveyance CIP including description and cost of each project for each of the five phases is included in Table 9.3. The Phase 1 (2015-2020) total CIP cost is $ 125.6 M (2015 dollars). The detailed specific CIP recommendations for each of the five phases, respectively, are graphically shown on Figures 8-5 thru 8-9 of the 2016 Sewer System Master Plan [3]

Figure 9.1


All Horizons (2015 - 2040) Recommended Improvements
Pump Station
Force Main
Gravity Main
Wastewater Reclamation Facility
Highway
EVMWD Service Boundary
Recommended Force Main Improvement
Recommended Gravity Main Improvement
Pump Upsize Recommendation
New Lift Station Recommendation
Note: See Table 8-12 & Appendix A for details of individual recommendations
Basemap Source: ESRI
0 1 2 Miles
Document:\\Uspas1s01\muni\Clients\Elsinore Valley MWD\Water, Sewer and Recycled Water Master Plans\14 Electronic Files - Modeling\GIS\MXDs\Sewer Improvements Ind Maps\Sewer_Improvements_Arc102_AllYears.mxd
MWH
AFM-01
AP-05
New Glen Eden LS
New Alberhill LS
AFM-02
Horsethief
Horsethief Canyon WRF
AP-01
AFM-03
AP-03
RP-14
RP-43
Nichols Lift Station
RP-25
RFM-09
RP-31
RP-05
RP-16
RFM-12
RP-08
RP-07
New Tuscany Hills
RP-24
RRP-02
RFM-18
Regional WRF
RP-44
A-2
A-3
RP-15
RP-33
A-4
RP-41
New Heald Lift Station
RP--36
RP-01
RFM-11
Railroad Canyon WRF
RRP-01
RP-37
RP-27
RP-34
RP-42
Serena LS
RP-38
RP-45
RP-55
RFM-03
A-5 LS
B-10
Lakeshore Regional LS
RP-20
RP-04
B-9
B-8
RFM-30
RP-30
Oak Street LS
RFM-01
RFM-02
B-7
RFM-13
RP-39
B-6
B-5
B-4
RP-28
RP-30
RFM-08
B-3
RP-23
Sunset Ridge LS
RP-19
RP-50
RP-04
RP-10
RP-11
RFM-10
Greer Ranch
McVicar
RFM-14
RP-29
RP-12
RP-13
RP-18
RFM-97
RP-17
Washington Avenue Lift Station

Description of CIP Item												CIP Costs (Rounded) ($)			
Project ID	Type of Improvement	Description/ Street	Description/ Limits	Sewer Trunk/ Planned Trunk Name	Reference Figure Name (See Appendix A)	Deficiency	CIP Sizes					Pipe Costs	Manhole Costs	Lift Station Costs	Total Capital Improvement Cost
							Existing Diameter (in.)	New Diameter (in.)	Parallel/ Replace/ New/ Upsize	Length (ft.)	HP				
Age Based Replacement Pipes														SUBTOTAL	$38,077,400
ABR-20	All Infrastructure	Age-Based Replacements	Various	Various		No	Various	Various	Replacement	-	-	-	-	-	$38,077,400
2020-2025 Improvements (Phase 2)														SUBTOTAL	$66,010,800
RFM-11	Force Main	Lakeshore Dr.	Chaney St. to Townsend St.	Regional/ Lakeshore North	A-27	No	-	4	New	1,018	-	$448,100	-	-	$448,100
RFM-18	Force Main	Off Road	Force Main for New Tuscany Hills LS	Regional	A-7	Yes	-	Parallel 8	Replacement	3,835	-	$728,600	-	-	$728,600
RP-07	Pipe	Riverside St.	Steele Valley Rd. to 350 ft. e/o Ambridge St.	Regional	A-6	Yes	8	16	Replacement	358	-	$157,700	$17,900	-	$175,600
RP-10	Pipe	Wesley St.	Grand Ave. to Union St.	Regional	A-14, A-15, A-16, A-17	No	-	8	New	1,351	-	$391,700	$67,600	-	$459,300
RP-11	Pipe	Orange St. and Gruwell St.	Laguna Rd. to Front St.	Regional	A-13, A-14	No	-	8	New	3,619	-	$1,181,000	$181,000	-	$1,362,000
RP-12	Pipe	Harwood Ln to Palomar St.	205 ft ne/o Harwood Ln and Wing Elm Cir. To 700 ft se/o Robin Scott St and Palomar St.	Regional/ Washington	A-21	Yes	8/10/12/15	15	Replacement	1,291	-	$361,800	$64,600	-	$426,400
RP-13	Pipe	Via Graziana	Via Llanio to 130 e/o	Southern	A-20	Yes	8	12	Replacement	492	-	$275,300	$24,500	-	$299,800
RP-24	Pipe	Grennwald Ave. and Theda St.	Large Extension spanning many streets	Regional	A-6, A-7	No	-	12	New	9,771	-	$3,661,500	$488,700	-	$4,150,200
RP-41	Pipe	Lakeshore Dr. and W Heald Ave.	Lakeshore Dr. and Cowell St. to W. Heald Ave. and Chaney St.	Regional/ N. Lakeshore	A-27	No	-	12	New	3,814	-	$1,639,400	$190,600	-	$1,830,000
RP-44	Pipe	Palm Dr.	Palm Dr. and Canyon Dr. to Regional WRF	Regional/ N. Lakeshore	A-26, A-27	No	-	12	New	2,308	-	$1,292,200	$115,300	-	$1,407,500
RLS-03	Lift Station	Chaney St.	New Heald LS	Regional/ N. Lakeshore	A-27	No	-	-	New	-	5	-	-	$168,750	$168,750
RLS-17	Pumps	Grand Ave	B-9 LS	Regional/ B-Series	A-23	No	-	-	Replacement	-	5	-	-	$28,150	$28,150
RLS-18	Pumps	Grand Ave	B-10 LS	Regional/ B-Series	A-23	No	-	-	Replacement	-	5	-	-	$28,150	$28,150
RLS-19	Pump	Grand Ave.	B-4 LS	Regional/ B-Series	A-22	No	-	-	Replacement	-	25	-	-	$112,500	$112,500
RLS-20	Pump	Russel St.	B-5 LS	Regional/ B-Series	A-22	No	-	-	Replacement	-	10	-	-	$56,300	$56,300
RLS-21	Pump	Churchill St.	B-6 LS	Regional/ B-Series	A-22	No	-	-	Replacement	-	10	-	-	$56,300	$56,300
RLS-22	Pump	Arch Way	B-7 LS	Regional/ B-Series	A-22	No	-	-	Replacement	-	10	-	-	$56,300	$56,300
RLS-23	Pump	Grand Ave.	B-8 LS	Regional/ B-Series	A-23	No	-	-	Replacement	-	10	-	-	$56,300	$56,300
RLS-26	Pumps	Riverside Dr.	A-3 LS	Regional/ A-Series	A-25	No	-	-	Replacement	-	15	-	-	$84,450	$84,450
RLS-13	Pump	Palomar St. and Cape Cod Dr.	B-3 LS	Regional	A-15	Yes	-	-	Upsize	-	50	-	-	$562,500	$562,500

Description of CIP Item												CIP Costs (Rounded) ($)			
Project ID	Type of Improvement	Description/ Street	Description/ Limits	Sewer Trunk/ Planned Trunk Name	Reference Figure Name (See Appendix A)	Deficiency	CIP Sizes					Pipe Costs	Manhole Costs	Lift Station Costs	Total Capital Improvement Cost
							Existing Diameter (in.)	New Diameter (in.)	Parallel/ Replace/ New/ Upsize	Length (ft.)	HP				
RLS-06	Pump	Off Road	New Tuscany Hills LS	Regional	A-7	Yes	-	-	Upsize	-	60	-	-	$675,000	$675,000
ALS-03	Wet Well	Horsethief Canyon Rd.	Horsethief LS	Alberhill/ Horsethief	A-2	No	-	-	Replacement	-	-	-	-	$300,000	$300,000
ABR-25	All Infrastructure	Age-Based Replacements	Various	Various		No	Various	Various	Replacement	-	-	-	-	-	$52,538,600
2025-2030 Improvements (Phase 3)														SUBTOTAL	$19,400,100
RFM-01	Force Main	Grand Ave.	B-10 LS to Grand Ave. and Bonnie Lee Dr.	Regional	A-23	No	-	6	New	2,417	-	$483,400		-	$483,400
RFM-02	Force Main	Grand Ave.	B-9 LS to B-10 LS	Regional/ A-Trunk	A-23	No	-	6	New	2,884	-	$519,100		-	$519,100
RFM-12	Force Main	Riverside Dr.	A-2 LS	Regional/ A-Trunk	A-25	Yes	14	21	Replacement	1,720	-	$516,100		-	$516,100
RP-14	Pipe	Coal Rd. and Nichols Rd.	Alberhill Ranch Rd. to Lake St.	Regional, Nichols	A-3, A-4	No	-	12	New	1,142	-	$340,600	$57,200	-	$397,800
RP-15	Pipe	Sugarpine St. to Knollwood St. to Teakwood St.	Sugarpine St. and Amarosa St. to Teakwood St. and Terra Cotta St.	Regional	A-25	Yes	8/10	10	New	266	-	$125,100	$13,300	-	$138,400
RP-17	Pipe	Robards Way	Intake to Robards Way LS	Southern	A-21	Yes	8	12	Replacement	121	-	$37,600	$6,100	-	$43,700
RP-18	Pipe	Palomar St.	Roughly 1,000 ft n/o Washington LS	Regional/ Washington	A-21	Yes	12	18	Replacement	294	-	$91,300	$14,700	-	$106,000
RP-19	Pipe	Wanki Ave	Akipa Ct. and Supa Ct.	Regional/ McVicar	A-13, A-14	Yes	8	8	Replacement	711	-	$156,500	$35,600	-	$192,100
RP-20	Pipe	Crab Hollow Cir., Lost Rd., Lemon St.	Lemon St. and Blondon Ct. to Crab Hollow Cir. and Crooked Arrow Dr.	Regional/ Mission Trail	A-28	No	-	12	New	6,405	-	$1,793,400	$320,300	-	$2,113,700
RP-27	Pipe	Macy St.	Lake Terrace Dr. and Grand Ave.	Regional/ A-Trunk	A-24	Yes	8	10	Replacement	1,022	-	$245,300	$51,100	-	$296,400
RP-36	Pipe	Grand Ave.	Grand Ave. and Via Lakistas to Tiller Ln. and Machado St.	Regional	A-24	Yes	8	12	Replacement	2,418	-	$749,500	$120,900	-	$870,400
RP-37	Pipe	Tiller Ln	Keel Dr. to Machado St.	Regional	A-24	Yes	8	12	Replacement	708	-	$184,000	$35,400	-	$219,400
RP-38	Pipe	Off Road	Extension of Back Basin/ Lakeshore Regional Collection adjacent to Lake Elsinore	Regional/ Back Basin	A-18	No	-	15	New	5,907	-	$1,939,000	$295,200	-	$2,234,200
RP-39	Pipe	Garden St.	Mission Trail and Corydon Rd.	Regional/ Back Basin Interceptor	A-15, A-16	No	-	18	New	2,317	-	$1,320,700	$115,800	-	$1,436,500
RP-42	Pipe	Grand Ave.	Trubutary of Riverside Dr. and A-Train	Regional/ A-Trunk	A-24	Yes	8	12	Replacement	2,842	-	$881,100	$142,100	-	$1,023,200
RP-50	Pipe	Bryant St.	Connection to Back Basin Interceptor	Regional/ Back Basin	A-14, A-15	No	-	15	New	1,500	-	$764,800	$75,000	-	$839,800
RP-55	Pipe	Grand Ave.	Connection of B-9 and B-10 to A-Train	Regional/ A-Trunk	A-23, A-24	No	-	18	New	2,524	-	$782,600	$126,200	-	$908,800
ABR-30	Pipe and Force Main, And Lift Stations	Age-Based Replacements	Various	Various		No	Various	Various	Replacement	-	-	-	-	-	$7,061,100

Description of CIP Item												CIP Costs (Rounded) ($)			
Project ID	Type of Improvement	Description/ Street	Description/ Limits	Sewer Trunk/ Planned Trunk Name	Reference Figure Name (See Appendix A)	Deficiency	CIP Sizes					Pipe Costs	Manhole Costs	Lift Station Costs	Total Capital Improvement Cost
							Existing Diameter (in.)	New Diameter (in.)	Parallel/ Replace/ New/ Upsize	Length (ft.)	HP				
2030-2035 Improvements (Phase 4)														**SUBTOTAL**	**$55,632,600**
RP-33	Pipe	Toft Dr. and Grand Ave.	Toft Dr. and Rockridge Rd. to Grand Ave. and Via Lakistas	Regional	A-24	No	-	8/12	New	3,236	-	$782,100	$161,700	-	$943,800
RLS-14	Pump	Palomar St./Washington	Washington LS	Regional/ Washington	A-21	Yes	-	-	Upsize	-	35	-	-	$157,500	$157,500
ABR-35	All Infrastructure	Age-Based Replacements	Various	Various		No	Various	Various	Replacement	-	-	-	-	-	$54,015,200
2035-2040 Improvements (Phase 5)														**SUBTOTAL**	**$87,118,900**
RFM-13	Force Main	Cathy Lane	B-3 LS	Regional/ B-Trunk	A-15	Yes	10	12	Replacement	1,378	-	$344,600	-	-	$344,600
RFM-14	Force Main	Clinton Keith Rd.	Greer Ranch LS	Regional/ McVicar	A-19	Yes	6	8	Replacement	4,184	-	$794,900	-	-	$794,900
RP-25	Pipe	Nichols Rd	New Intake for Nichols LS	Regional/ Nichols	A-4	Yes	16	24	Replacement	72	-	$25,300	$3,600	-	$28,900
RP-28	Pipe	Grand Ave.	Wood St. and Tetterington St.	Regional/ A-Trunk	A-22	Yes	8	12	Replacement	1,671	-	$468,000	$83,600	-	$551,600
RP-29	Pipe	Palomar St.	Robin Scott St. to Washington LS	Regional/ Washington	A-21	Yes	15	18	Replacement	2,070	-	$680,200	$103,500	-	$783,700
RRP-01	Pipe	Off Road	Railroad Canyon Road, n/o Skylink Dr.	Railroad Canyon	A-8	Yes	15	18	Replacement	510	-	$235,800	$25,600	-	$261,400
RRP-02	Pipe	Redwood Rd.	Boating Way	Railroad Canyon	A-7	Yes	8	12	Replacement	495	-	$230,700	$24,800	-	$255,500
ABR-40	All Infrastructure	Age--Based Replacements	Various	Various		No	Various	Various	Replacement	-	-	-	-	-	$84,098,300
TOTAL															**$353,720,000**

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Chapter 10

MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

This chapter presents a summary of the steps to be taken by the Elsinore Valley Municipal Water District (District) to evaluate the effectiveness of this Sewer System Management Plan (SSMP) and update it should improvements be necessary or desirable.

10.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies that the District shall:

a. *Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;*

b. *Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;*

c. *Assess the success of the preventative maintenance program;*

d. *Update program elements, as appropriate, based on monitoring or performance evaluations; and*

e. *Identify and illustrate SSO trends, including frequency, location, and volume.*

10.2 SSMP INFORMATION MAINTENANCE PROGRAM

The District should maintain information that is appropriate to the SSMP in a way that is convenient and easily accessible to those individuals involved with the SSMP. This information should be recorded or stored in the appropriate format so that conclusions and trends related to sanitary sewer overflows (SSOs) and the performance of the SSMP can be easily tracked.

It is recommended that the District develop a database to store and analyze information related to the SSMP, which can be accomplished through simple Microsoft Excel based spreadsheets, GIS techniques, or other means.

The District's SSMP database tracks a few key performance indicators that will be used to measure the progress of the SSMP implementation and the performance of the District's sanitary sewer collection system. The key performance indicators can be tracked through the Districts Maximo work order program, review of the SSO responses that are electronically stored by the District and the California Integrated Water Quality System (CIWQS) online reporting web site.

- Number of Service Calls, blockages, and SSOs over a one year period;
- SSO events by cause;

- SSO events by Category (i.e. Category 1, Category 2, Category 3 or Private Lateral Sewage Discharge);
- Volume of SSOs and volume contained;
- Volume of sewage that reached surface waters; and
- SSO events by location within the District.

10.3 SSMP IMPLEMENTATION MONITORING

To accurately gauge the progress of the SSMP and its successes or failures in preventing SSOs, this plan recommends that the District monitor the implementation and effectiveness of the SSMP elements. The District should maintain all records related to SSMP programs in a common location that is known to all District staff members that are involved in these programs. This should include all records related to the maintenance of the system, SSO field reports, California Integrated Water Quality System (CIWQS) reports, and other relevant information.

This plan recommends that the District assign a key staff member, or a group of staff members to perform interim evaluations of the effectiveness of the SSMP based on the key performance indicators established in Section 10.2 of this report. This evaluation should occur at some predetermined interval, such as bi-annually or annually, and more often as necessary. The purpose of these interim evaluations is to establish the overall trend of the key performance indicators. The conclusions of these evaluations should be kept on record and used for program updates and audits.

10.4 PREVENTATIVE MAINTENANCE PROGRAM EVALUATION

This plan recommends that the District assess the success of the preventative maintenance (PM) program periodically similar to the procedure outlined in Section 10.3 of this report. Appropriate staff members should be designated to perform an evaluation of the District's PM program at some predetermined interval. The District's designees should evaluate where the District's PM program can be improved in order to maximize the efficiency of the system. The PM programs are adjusted according to recommendations of the District's field crews.

10.5 SSMP PROGRAM UPDATES

Updates to the District's SSMP programs should be performed based on the results of the interim evaluations on these programs, as well as the two-year program audits discussed in Chapter 11 of this report. All program updates and modifications should be approved by the District's Authorized Representatives and incorporated into the SSMP report, when necessary. If there are major changes to the SSMP, it needs to be re-certified by District's Authorized Representative on CIWQS. At a minimum, the District shall update and re-certify the SSMP once every five years.

10.6 SSO TRENDS

To optimize the performance of the District's wastewater collection systems, it is necessary to identify any SSO trends that may exist. Through the identification of such trends, the District may find capacity deficiencies, areas of the system in need of increased maintenance, or SSO or fats, oils, and grease (FOG) "High Frequency Lines." The District currently has mapped historical SSOs. This map should be expanded upon whenever a new spill occurs and used to identify SSO trends.

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SSMP PROGRAM AUDITS

This chapter presents a summary of the procedures to be used by the Elsinore Valley Municipal Water District (District) to perform internal audits of the District's Sewer System Management Plan (SSMP).

11.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies the following in relation to audits of the SSMP:

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

11.2 EVMWD'S SSMP PROGRAM AUDITS

In accordance with the requirements of Order No. 2006-0003, the District plans to perform periodic performance audits on its SSMP. The following subsections outline the major components of the District's future performance audits. The costs associated with these audits should be budgeted by the District.

11.2.1 Responsible Party for Program Audit

The District's Authorized Representatives will oversee the performance of the SSMP program audit. They will designate certain key District staff that are knowledgeable in the District's wastewater collection facilities to perform the audits based on the findings of the interim SSMP program evaluations. The District may also choose to contract with a consultant to perform such audits.

11.2.2 Scope of SSMP Program Audits

The District's program audits will consist of a comprehensive analysis of all elements of the SSMP, including the following:

- Goals
- Organization
- Legal Authority (the District's sewer use ordinances)

- Design and Performance Provisions (the District's design and construction standards)
- Overflow Emergency Response Plan
- FOG Control Plan
- System Evaluation and Capacity Assurance Plan (the District's Wastewater Master Plan)
- Monitoring, Measurement, and Program Modifications
- SSMP Program Audits
- Communication Program

11.2.3 SSMP Program Audit Report

An SSMP Program Audit report will be prepared and kept on file, which highlights the results of the SSMP Program Audit. This report should include supporting material, such as tables, figures and maps that support the conclusions of the report. It should also include the following elements, as well as other information that may be useful in the evaluation of the SSMP:

- An evaluation of each element of the SSMP report, including the District's sewer ordinances, design standards, O&M program, overflow emergency response plan, FOG control plan, system evaluation and capacity assurance plan, and communication program;
- Progress made on the development of SSMP elements. Justification should be provided if progress has not been made on the development of certain elements of this SSMP;
- A description of the new SSMP program elements since the last program audit;
- The effectiveness of implementing SSMP elements;
- A description of the additions and improvements to the sanitary sewer collection system facilities since the previous program audit; and
- A description of the additions and improvements to the sanitary sewer collection system facilities planned for the next two years.

11.2.4 Schedule for Program Audits

At a minimum, the District's program audits must occur every two years. Therefore, it is recommended that the District's initial program audit take place within two years of the adoption of this SSMP report, and every two years subsequently. Should District staff determine, based on the results of the interim program evaluations described in Chapter 10, that more frequent audits are desirable, a shorter time interval, such as annually, may be chosen.

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COMMUNICATION PROGRAM AND FINAL CERTIFICATION

This chapter presents a summary of the steps to be taken by the Elsinore Valley Municipal Water District (District) to communicate with the public on the development, implementation, and performance of the Sewer System Management Plan (SSMP). In addition, steps taken for the final certification of the SSMP are summarized in this chapter.

12.1 REGULATORY REQUIREMENT

Order No. 2006-0003 specifies the following for the District's communication program:

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

In order to certify the SSMP, Order No. 2006-0003 specifies that the District must complete the following:

> Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth (in the previous sections) and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general Water Discharge Requirements (WDRs) within the time frames identified in the time schedule provided (in Chapter 1).
>
> In order to complete the certification, the Enrollee's authorized representative must complete the certification portion in the Online Sanitary Sewer Overflow (SSO) Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:
>
> State Water Resources Control Board
> Division of Water Quality
> Attn: SSO Program Manager
> P.O. Box 100
> Sacramento, CA 95812

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

12.2 COMMUNICATION PROGRAM AND SSMP ADOPTION

In order to provide the District's residents with the chance to review and comment on the SSMP, it is recommended that a copy of this document be posted on the District's website. In addition, it is recommended that the District keeps its residents up to date on the implementation and performance of the SSMP. This could be accomplished through bill inserts, public workshops, brochures, or other means.

In accordance with Order No. 2006-0003, the District's Board of Directors held a public hearing and adopted the SSMP on November 19, 2018. A copy of the adopting resolution is included in Appendix M. A notice of the public hearing was posted on the District's website several weeks prior to adoption, which notified interested parties that the draft SSMP was available for review (Appendix N).

12.3 FINAL CERTICATION

The District has certified that all sections of this report are in compliance with the applicable general WDRs and the requirements set forth in Order No. 2006-0003. The District's authorized representatives have completed the certification portion in the Online SSO Database Questionnaire and sent the appropriate signed form to the State Water Resources Control Board (SWRCB). A copy of the SWRCB certification form, sent out on November 28, 2018 is included in Appendix O of this report.

The District plans to update and re-certify the SSMP when significant changes are made. At a minimum, the District plans to update and re-certify this report every five years.

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