


KIRKWOOD MEADOWS PUBLIC UTILITY DISTRICT
SEWER SYSTEM MANAGEMENT PLAN 2022 AUDIT REPORT

Developed in compliance with Waste Discharge Requirement Water Quality Order No. 2006-003

This SSMP Audit Report was approved and adopted by the KMPUD Board of Directors during a public Board Meeting on

Audit Report Prepared By:

 12/15/22

Derek Dornbrook
Wastewater Operator 3

Date

Approved By:

Bob Epstein
KMPUD Board President

Date

 12/13/2022

Erik M. Christeson
KMPUD General Manager

Date

Introduction

This report serves to comply with Order No. 2006-0003, issued by the State Water Resources Control Board in 2006. Order No. 2006-0003, hereinafter referred to as the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (WDR), requires that all public entities that own or operate one or more miles of sewer system comply with the contents of this order. The purpose of the WDR is to ensure that sanitary sewer overflows (SSOs) are mitigated through the implementation of system-wide operation, maintenance, and a Sanitary Sewer Management Plan (SSMP). Included in the details of the SSMP is a necessary self-audit corresponding to the size of the system with a minimum biannual frequency. This report outlines Kirkwood Meadows Public Utility District's (District) SSMP program audit and its corresponding tasks. The SSMP audit shall:

- Evaluate the effectiveness of the current SSMP
- Identify potential weaknesses of the current SSMP
- Determine improvement opportunities in the current SSMP

WDR Requirements for SSMP Element 10: SSMP Program Audits

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

District Compliance Approach – As Stated in the SSMP

The District prepared and adopted an updated SSMP in June 2014. The updated SSMP expanded and improved the scope of the existing SSMP, which had last been updated in 2008. Section 10.2 of the District's updated SSMP document states that Beginning in June 2014, and every two years thereafter, the District will audit the effectiveness of all elements of the SSMP. The most recent SSMP self-audit was completed in October 2022. The program audit will include a final report reviewing the District's performance and identifying findings. The report will be made available to the public and will be kept on file.

District System Description and Performance

The District maintains approximately 8.6 miles of pipeline. The collection system pipeline consists of 6, 8, and 10-inch diameter pipe constructed of both concrete asbestos and polyvinyl chloride materials. Approximately 1/2 mile of the collection system consists of a force main. Included in the system are two pump stations.

In the last 5 years, the system had 4 reported SSOs in the California Integrated Water Quality System (CIQWS) as detailed in **Table 1**. The WDR requires that SSO records be kept for the previous 5 years as a minimum.



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Table 1: CIQWS Summary of District SSOs January 2017-2022

No.	Date	SSO Category	SSO Description	SSO Vol. Gallons	Volume Recovered Gallons	Volume Reached Surface Water Gallons
1	1/14/18	3	Collection system Manhole overflow due to debris blockage.	900	900	0
2	4/7/18	1	Collection system Manhole overflow due to extreme storm event which overwhelmed Influent Pump Station.	5000	4000	1000
3	8/23/18	3	Collection system Manhole overflow due to debris blockage.	400	400	0
4	8/13/20	3	Collection system Manhole overflow due to debris blockage.	20	20	0

Audit Tasks

The responsibility of this audit has been assigned to District Wastewater Operator 3, Derek Dornbrook who is directly involved with the daily operations of the collection system. In addition to completing the attached SSMP Audit Form, the following tasks are associated with the SSMP audits:

1. Review operation and maintenance protocols with field staff including preventative maintenance.
2. Conduct interviews of operational staff and staff that respond to SSOs to verify familiarity with the SSMP and SSO response procedures.
3. Review condition assessment and rehabilitation protocols.
4. Review the past 2 years of District SSO data and determine if additional corrective action is needed.
5. Record all findings during the audit process on the attached SSMP Audit Form. This form will be the final audit report for the District's collection system performance and improvement opportunities. This report will be kept on file and made available to the public.

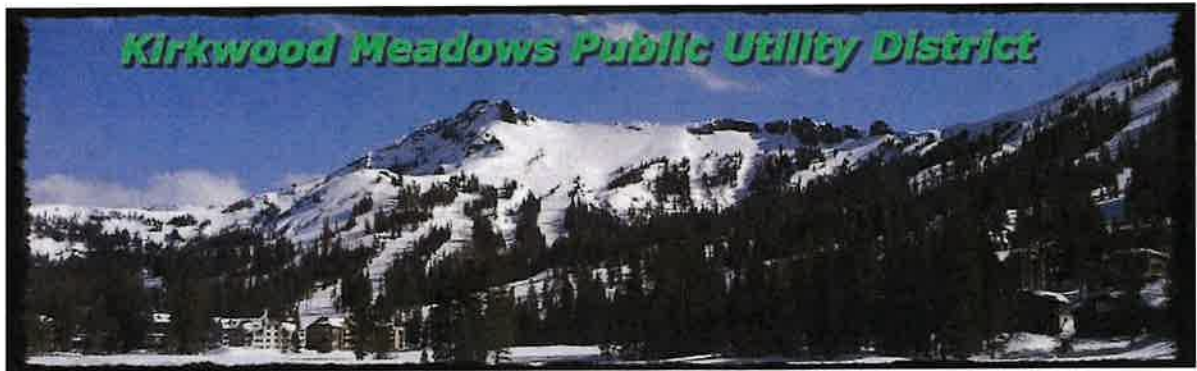
Conclusion

The SSMP is functioning successfully however, it is now due for the 5-year update for adequate performance as indicated by the Statewide Sanitary Sewer Systems general Order (Order No. 2006-0003-DWQ.) During the review period, the District experienced no SSOs due to collection system blockages or major storm events.

As a summary of the attached SSMP Audit Form, the following improvement opportunities were identified in **Table 2** below.

Table 2: 2022 SSMP Audit Improvement Opportunities

SSMP Section	Improvement Opportunity	Target Date
Element 4. Operation and Maintenance Program. Maps.	Map updates and a comprehensive atlas.	December 2023.
Element 4. Operation and Maintenance Program. Training.	CWEA Collection System Specialist certifications for key operators.	Operator to be certified by December 2022.



ATTACHMENT 1

SSMP AUDIT FORM

(ADAPTED FROM FORMAT DEVELOPED BY BAY AREA CLEAN WATER AGENCIES)

Table 3: Description of Sewer System Maintained by Kirkwood Meadows Public Utility District

Name of agency	Kirkwood Meadows Public Utility District
Date of audit	September 30th, 2022
Name of auditor	Derek Dornbrook, Wastewater Operator 3
System Overview	
LF of gravity sewer mains	42,240 LF (8 mi)
LF of force mains	3,250 LF
Total LF of all sewer lines	45,490 LF (8.6 mi)
Number of pump stations	2
Population served	250-6,000
Number of connections	664
Current average monthly single family sewer rate	\$75

Audit Report – Elements 1-11

Element 1. Goals.

- Are the goals stated in the SSMP still appropriate and accurate?

Audit Findings

Yes, the goals stated in the SSMP are still appropriate and accurate. The SSMP supplements and supports the District's existing operation and maintenance programs and SSMP goals by providing high-level, consolidated guidelines and procedures for all aspects of the District's sewer system management

Element 2. Organization

- Is the SSMP up-to-date with District organization and staffing contact information?

Audit Findings

No, Organizational Chart will be included as part of the SSMP update effort. The SSO Response Plan and the SSO Reporting Chain of Communications are up-to-date. Names and contact information have been updated to current contact information as of September 30, 2022, and are included in Appendix A of the revised 2022 SSMP.

Element 3. Legal Authority

Reference Material

Ordinances

Enforcement Actions

- Does the SSMP contain up-to-date information about your agency's legal authority?
- Does your agency have sufficient legal authority to control sewer use and maintenance?

Audit Findings

No, the updated SSMP contains the formation document for KMPUD which is the basis of our legal authority.

Yes, the KMPUD Sewer Regulations are referenced in this element are current. All regulations, rates, connection fees, and ordinances can be referenced in Appendix D of the SSMP.

Element 4. Operations and Maintenance Program

A. Collection System Maps

Reference Material

Summary of information included in mapping system

- Does the SSMP contain up-to-date information about the District's maps?
- Are the District's collection system maps complete, up-to-date, and sufficiently detailed?

Audit Findings

Yes, the District currently has basic sewer system maps.

Yes, the District's collection system maps are up-to-date. However, the District's collection system maps are not complete and sufficiently detailed. The District will be retaining a consulting engineer to create a comprehensive sewer collection system map that will be available to KMPUD operations staff in electronic format and in bound hard-copy version for use. The maps will be actively updated based on information gathered in the field regarding physical features, conditions assessments, and/or maintenance activities.

B. Resources and Budget

Reference Material

Current Capital Improvement Plan (CIP)

Current Operating budget

Wastewater Collection System Repairs and Maintenance 5-Year plan

- Does the SSMP contain up-to-date information about the District's resources?
- Are the District's resources and budget sufficient to support effective sewer system management?
- Do the District's planning efforts support long-term goals?

Audit Findings

Yes, the above cited reference materials contain up-to-date information about District resources.

Yes, after the 2020 Wastewater Rate Study, the District has sufficient budget to support effective sewer system management.

The referenced 5-year plan has been augmented with a variety of planning efforts. Additionally, the District will be retaining a consulting engineer to develop a long-term master plan. The SSMP will be updated to reflect these changes and activities.

C. Prioritized Preventative Maintenance

Reference Material

Cleaning schedules

Work Orders

Service call data

Inspection reports.

Infiltration and inflow (I/I) monitoring studies and reports

Pipe and manhole condition data

Table 4. Annual Blockage Statistics and Preventative Maintenance Activities

	2018	2019	2020	2021	2022
Blockages in the past year	3	0	1	0	0
Blockages due to:					
Roots	0	0	0	0	0
Grease	0	0	0	0	0
Debris	3	0	1	0	0
Other	0	0	0	0	0
Average response time	1/2 hour	N/A	1/2 hour	N/A	N/A
Ratio of planned cleaning to unplanned cleaning (LF)	3 to 0	N/A	1 to 0	1 to 0	1 to 0
Number of customer complaints in last year	0	0	0	0	0
Number of positive customer responses	1	0	0	0	0

- Does the SSMP contain up-to-date information about your agency's preventative maintenance activities?
- Considering the information in Tables 4-6, are the District's preventative maintenance activities sufficient in reducing and preventing SSOs and blockages?
- Are the District's preventative maintenance activities sufficient and effective in reducing and preventing SSO's?
- Does the SSMP contain up-to-date information about the District's inspections and condition assessment
- Are the District's scheduled inspections and condition assessments effective in locating, identifying, and addressing deficiencies?

Audit Findings

Yes, the SSMP contains up-to-date information about the District's maintenance and inspection activities.

Yes, the sufficiency and effectiveness of these activities in reducing and preventing SSOs are reflective of the aforementioned tables. The District's preventative maintenance activities have been exceptional in reducing and preventing SSOs and blockages as there have been no SSO incidents during the audit review period. Recent activities have included televising, recording, and cleaning large sections of the collection system. Additionally, pump station alarm systems have been improved in response to an SSO in 2014 and all alarms systems are routinely inspected and tested. Improved documentation regarding FOG inspections has been implemented in addition to formalized documentation of said inspections and have served to prevent SSOs due to FOG.

D. Equipment and Replacement Inventory

Reference Material

Funds spent on equipment and materials

Equipment and parts inventory

- Does the SSMP contain up-to-date information about equipment and replacement inventories?
- Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?

Audit Findings

Yes, the District maintains spare parts for pump stations in the event of failure, including rebuild kits and level indicators. The District also has a vac-truck, jetter trailer, and temporary bypass pumps available to respond to line blockage. Additionally, the District has full redundancy generators that are kept in a ready-state in case of power loss.

E. Training

Reference Material

Employee training records

Interviews with staff

- Does the SSMP contain up-to-date information about your agency's training expectations and programs?
- Do supervisors believe that their staff is sufficiently trained?
- Are staff satisfied with the training opportunities and support offered?

Audit Findings

Yes, the District places a high level of importance on safety and technical training. The District budget includes a training budget to ensure that all staff is properly trained. New staff receive on-the-job training specific to the collection system and maintenance equipment used. Staff also attends outside

workshops whenever practical. Opportunity for audit improvement exists in Collection System Grade Certification which is offered by the California Water Environment Association (CWEA). All operations staff is encouraged and will be given support to obtain these certifications.

Element 5. Design and Performance Provisions

Reference Material

Design and construction standards

Ordinances

- Does the SSMP contain up-to-date information about the District's design and construction standards?
- Are design and construction standards, as well as standards for inspection and testing of new and rehabilitated facilities sufficiently comprehensive and up-to-date?

Audit Findings

Yes, the SSMP contains up-to-date information about design and construction standards. The District Engineer reviews plans for construction of new collection system infrastructure which includes verification that the proposed improvements adhere to the District's Design Standards. The current KMPUD Design Standards are available at www.kmpud.com.

Element 6. Overflow Emergency Response Program

Reference Material

Data submitted to CIQWS

Service call data

Table 5. Annual SSO Statistic

Number of wet weather SSOs	1	0	0	0	0
Total number of SSOs	3	0	1	0	0
Category 1 SSOs	1	0	0	0	0
Category 2 SSOs	0	0	0	0	0
Category 3 SSOs	2	0	1	0	0
Private Lateral SSOs	N/A	0	0	0	0
Total volume of SSOs	6300	0	20	0	0
Total volume recovered	5300	0	20	0	0
Net volume of SSOs (total minus recovered)	1000	0	0	0	0
SSOs caused by:					
Roots	0	0	0	0	0
Grease	0	0	0	0	0
Debris	2	0	1	0	0
Pipe failure	0	0	0	0	0
Pump station failure	0	0	0	0	0
Capacity-limited pipe segment (no debris)	1	0	0	0	0
Other	0	0	0	0	0
Number of locations with more than one SSO in the past year	0	0	0	0	0
Average response time-during business hours	1/2 hr	N/A	N/A	N/A	N/A
Average response time-after business hours	N/A	N/A	N/A	N/A	N/A

- Does the SSMP contain an up-to-date version of the District's Overflow Emergency Response Plan?
- Considering the information in Table 5, is the Overflow Emergency Response Plan effective in handling SSOs?

Audit findings

Yes, the SSMP contains an up-to-date version of the District's Overflow Emergency Response Plan and this plan has been very effective in handling SSOs. The Response Plan was amended to include a detailed, step-by-step response guide for managers and field operators. Table 6-1: Outside Agency Contact Information was updated on September 30, 2022 and is included in Appendix B-KMPUD SSMP Field Guide.

Element 7. Fats, Oils, and Grease (FOG) Control Plan

Reference Material

Restaurant inspection reports

Data submitted to CIQWS

Service call data

Table 6. FOG Control Statistics

	2018	2019	2020	2021	2022
Number of SSOs caused by FOG	0	0	0	0	0
Planned cleaning (LF)	3	6	3	4	5
Unplanned cleaning (LF)	0	0	0	0	0
Ratio of planned to unplanned cleaning (LF)	N/A	N/A	N/A	N/A	N/A
Number of FOG inspections completed	6	12	12	12	9

- Does the SSMP contain up-to-date information about the District's FOG control program?
- Considering the information in Table 6, is the current FOG program effective in documenting and controlling FOG sources?

Audit Findings

Yes, the SSMP contains up-to-date information about the District's FOG control program and this program is effective in documenting and controlling FOG sources. Documentation protocols were updated upon recommendation of the 2014 Audit Report and a highly formalized program has been instituted, wherein District staff works in cooperation with FSEs to ensure effective FOG control to prevent SSOs. District staff inspects all of the FOG removal devices within the District's service area on a monthly basis and documents all inspections and defects of FOG removal devices.

Element 8. System Evaluation and Capacity Assurance Plan

Reference Material

Capacity assessment reports

Capital improvement plan

SSO Data

Table 7. SSOs Caused by Hydraulic Limitations

Number of SSOs Caused by capacity limitations	2018	2019	2020	2021	2022
	1	0	0	0	0

- Does the SSMP contain up-to-date information about the District's capacity assessment?
- Has the District completed a capacity assessment and identified and addressed any hydraulic deficiencies in the system?

Audit Findings

Yes, a Capital Improvements Plan (CIP) for the District was adopted on May 10, 2014 by the District. The KMPUD Water and Sewer Master CIP includes in the budget dedicated funds to identify and mitigate infiltration and inflow. Additionally, the District has adopted Design Standards as outlined in Element 5 which are sufficient to meet the needs of the District.

Element 9. Monitoring, Measurement, and Program Modifications

- Does the SSMP contain up-to-date information about the District's data collection and organization?
- Is the District's data collection and organization sufficient to evaluate the effectiveness of your SSMP?

Audit Findings

Yes, the SSMP contains up-to-date information of data collection and organization that is sufficient to evaluate the effectiveness of the SSMP. Review of the lack of SSO occurrences from the past two years supports that the SSMP is successful in maintaining minimal SSOs.

Element 10. SSMP Audits

- Discuss the effectiveness of this audit format and provide any suggestions for changes.
- Will a copy of this SSMP Audit be included in the SSMP document as an appendix?

Audit Findings

This 2022 SSMP Audit was conducted in a similar format to the 2020 Audit. The current format was found to be effective in that it required a more thorough examination of the SSMP and included increased participation from operations staff. A copy of this SSMP Audit will be included in the SSMP document as an appendix and will serve as a template for future Audits.

Element 11. Communication Program

Reference Material

Mailings and mailing list

Website

Other communication records such as newspaper ads, site postings, or other outreach

Customer feedback

- Does the SSMP contain up-to-date information about the District's public outreach activities?
- Does the SSMP contain up-to-date information about the District's communications with satellite and tributary agencies?
- Has the District effectively communicated with the public about the SSMP, and addressed feedback?

Audit Findings

Yes, the SSMP document is available for public viewing at the District Office, and copies of the document (or portions of) are available upon request, at the regular charge for copies. The final SSMP document is posted on the District's web site for viewing by the general public. The 2020 Audit Review will also be available by all aforementioned means. The District's sewer collection system does not have any tributary or satellite collection systems which contribute wastewater to District facilities. The District constantly strives to communicate with the public about the SSMP and addresses all feedback through public hearings or the District web site. Additional outreach efforts are addressed by the District's monthly newsletter which often includes articles related to SSO prevention measures that can be aided by public awareness and participation.