CARMEL AREA WASTEWATER DISTRICT

2017

Sewer System Management Plan

(SSMP)

MARCH 2017

NPDS # CA0047996

WDID # 3SSO10244

(This page left blank intentionally)

Table of Contents

ABBREVIATIONS & DEFINITIONS

ABS – Acrylonitrile Butadiene Styrene
AC – Alternating Current
CAWD – Carmel Area Wastewater District
CCTV – Closed-Circuit Televise
CIP – Capital Improvement Plan
CIWQS – California Integrated Water Quality System
CP – Concrete Pipe
Enrollee – The legal public entity that owns a sanitary sewer system, as defined by the GWDR, which has submitted a complete and approved application for coverage under the GWDR. This is also called a sewer system agency or wastewater collection system agency, and in the case of this SSMP, is CAWD.
FOG – Fats, Oils, and Grease
FSE – Food Service Establishments
FT – Feet
GIS – Geographical Information System: A database linked with mapping, which includes various layers of information used by government officials. Examples of information found on a GIS can include a sewer map; sewer features such as pipe location, diameter, material, condition, last date cleaned or repaired. The GIS also typically contains base information such as streets and parcels.
GPM – Gallons Per Minute
GWDR – General Waste Discharge Requirements: See WDR.
HDPE – High Density Polyethylene
HP – Horsepower
I/I – Infiltration and Inflow
ICOM – Carmel Area Wastewater District's Collection System Database
LRO – Legally Responsible Official
MRP – Monitoring and Reporting Program
NPDES – National Pollution Discharge Elimination System
O&M – Operations and Maintenance
OERP – Overflow Emergency Response Plan
PBCSD – Pebble Beach Community Services District
POTW – Publicly Owned Treatment Works
PVC – Polyvinyl Chloride
RPM – Revolutions Per Minute
Sanitary Sewer System – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities are considered to be part of the sanitary sewer system and discharges into these temporary storage facilities are not to be considered SSOs.
SCADA – Supervisory Control and Data Acquisition
SHARE POINT – Carmel Area Wastewater District's Information Systems Database
SSMP – Sewer System Management Plan: A series of written site specific programs that address how a collection system owner/operator conducts their daily business as is outlined in the WDR. Each SSMP is unique for an individual discharger, and includes provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. It also must contain a spill response plan. Certification is offered by technically qualified and experienced persons and provides a useful cost effective means for ensuring that SSMPs are developed and implemented appropriately.
SSO – Sanitary Sewer Overflow
SSS WDR – Sanitary Sewer Systems Waste Discharge Requirements
SWRCB – California State Water Resources Control Board
TDH – Total Dynamic Head
UPS – Uninterruptable Power Supply
VCP – Vitrified Clay Pipe
Wastewater Collection System – See Sanitary

Sewer System.

WDR – Waste Discharge Requirements: Similar to a NPDES permit, but with significant differences. A WDR is an authorization to discharge waste with certain conditions, which can be issued on an individual basis or to a group of dischargers. WDRs do not sunset, unlike NPDES permits, and are most commonly issued by the Regional Water Boards. The Statewide General WDR for Sanitary Sewer Systems was adopted by the SWCRB and will be implemented by the Regional Water Boards and SWRCB.

CARMEL AREA WASTEWATER DISTRICT Sewer System Management Plan (SSMP)

(Attachments shown in parentheses)

1. INTRODUCTION

In May 2006, the California State Water Resources Control Board adopted order No.2006-003, Statewide General Waste Discharge Requirements for Wastewater Collection Agencies. The WDR affects all sewer agencies in the state and regulates the discharge of sanitary sewer overflows to receiving waters. The WDR requires the electronic reporting of all sanitary sewer overflows as well as the development of a Sewer System Management Plan and specifies monitoring, reporting and SSMP implantation requirements. The Carmel Area Wastewater District began electronic reporting on May 9, 2007.

During the past two decades, the District has successfully developed, refined and implemented numerous processes and practices to improve the management of its collection system. The actual processes and procedures are voluminous, so the District has used this document to summarize its activities and core documents as they relate to each of the ten elements required to be addressed in the SSMP.

(District Map Book)
(State Water Resources Control Board - Waste Discharge Requirements)
(National Pollutant Discharge Elimination System (NPDES) Permit)

2. DISTRICT OVERVIEW

The Carmel Sanitary District (District) was organized in 1908 to provide for the collection, treatment and disposal of wastewater from the developed area in Carmel-By-The-Sea. The area remained relatively rural until experiencing significant residential growth in the late 1920s and 1930s. Extensive development took place again following the end of World War II. The District boundaries expanded to those of today, and in January 1990 the District was renamed the Carmel Area Wastewater District. The District currently serves about 11,000 people with a total of about 6700 sewer connections. The present service area of the District comprises 4.9 square miles and includes Carmel-By-The-Sea and some unincorporated areas in Monterey County. The sewage collection system includes 83 miles of collection lines and seven pump stations. The primary elements of this collection system are the public main sewers and the private sewer laterals. The District owns and has maintenance responsibility for the main sewers located in the public right-of-way and in easements on private property. Individual property owners own and have maintenance responsibility for their private sewer laterals that connect the plumbing in a home or business up to and including the connection at the main sewer. Wastewater collected in the District system flows to the District run treatment plant located south of the Carmel River and west of Highway One. The only areas of expected growth within the District are Carmel Highlands, Carmel Valley to the easts and on the few remaining vacant parcels and though commercial area redevelopment. Average annual rainfall is 18.5 inches and generally occurs between November through April.

As of 2016, the average age of the collection system is 58 years. The oldest lines in the District are avarage 90 years old. District main lines are predominantly vitrified clay pipe (VCP) with cement mortar joints, and six inches in diameter. Over 90% of the VCP sewers were installed prior to the introduction of modern pipe joints such as compression gaskets, which were not available until the 1960's and the introduction of improved VCP manufacturing standards initiated in the mid l950's.

The District has had a very active collection system management program since 1991, and has had a significant reduction in SSOs since that time. Stoppages and overflows have been on a steady decline since l992 when the District focused its efforts on aggressive line cleaning, and began to dedicate funds to repair or rehabilitate sewer line defects that could potentially result in a service interruption.

Additionally the District provides sewer treatment services to the Del Monte Forest development area which includes the Pebble Beach resorts and residences. The Pebble Beach Community Service District provides all sewer collection services within their district boundaries. Their collection system is independent of the CAWD collection system and managed independently of the District.

(Summary Table of the Age of District Main Sewers)

3. GOALS

The District intends to provide service in accordance with the following goals:

- Employ best practices to manage, operate and maintain all parts of the wastewater collection system
- Provide adequate capacity to convey peak wastewater flows
- Eliminate the occurrence of SSOs and reduce or minimize the impact of any which occur.
- Improve, fund and manage a Capital Improvement Plan consistent with the goals of eliminating SSOs.
- Comply with all applicable state and federal regulations, including the approved National Pollutant Discharge Elimination System (NPDES) permit and the California General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems.

4. ORGANIZATION

Reporting Structure

The Engineering and Maintenance staff independently report directly to the District Manager. The purpose is to ensure that the Manager receives an unfiltered flow of information from both groups. In most cases, the two groups have consensus on the need for and progress on various pipeline projects. The District Manager reports directly to the five member, elected Board of Directors.

District Manager

The District Manager is ultimately responsible for all District operations and activities, including reporting to regulatory agencies and other external organizations.

Engineer

The Engineer is responsible for the planning, design, construction and inspection of District lines, as well as the inspection and permitting of private sewer lines within District boundaries.

Collection System Superintendent

The Collection System Superintendent is responsible for all field maintenance work and activities including line cleaning, video work, SSO and emergency response, immediate reporting (when necessary) to regulatory agencies, and recordkeeping of all maintenance activities.

Collection System Workers

The Collection System Workers are responsible for the maintenance and cleaning of District main lines and recordkeeping of all maintenance activities.

Lab Analyst/Environmental Compliance Inspector

The District Lab Analysts are trained to serve as the Environmental Compliance officers. They implement and manage the District pre-treatment ordinance and source control program.

STAFF RESPONSIBLE FOR IMPLEMENTING SSMP ELEMENT 2.1

ELEMENT	TITLE	NAME	PHONE
Goals	District Manager	Barbara Buikema	(831) 624-1248
Organization	District Manager	Barbara Buikema	(831) 624-1248
Overflow Emergency Response Plan	Collection System Superintendent	Daryl Lauer	(831) 624-1248
Fats, Oils, and Grease (FOG) Control Program	Lab Analyst/Enviro Compliance	Trever Holland, Ray DeCampo	(831) 624-1248
Legal Authority	Collection System Superintendent	Daryl Lauer	(831) 624-1248
Measures and Activities	Collection System Superintendent	Daryl Lauer	(831) 624-1248
Design and Construction Standards	Principal Engineer	Drew Lander	(831) 624-1248
Capacity Management	Principal Engineer	Drew Lander	(831) 624-1248
Monitoring, Measurement, and Program Modifications	Collection System Superintendent	Daryl Lauer	(831) 624-1248
SSMP Audits	Collection System Superintendent	Daryl Lauer	(831) 624-1248
Communication Program	District Manager	Barbara Buikema	(831) 624-1248

(Organizational Chart)
(Job Descriptions – Employees pertinent to the Collection system program)

5. OVERFLOW EMERGENCY RESPONSE PLAN (OERP)

Overflow Response

The District revised its Sewer Overflow Response Plan (SORP) in December 2013 to meet the original requirements of the WDR's (OERP) and the revisions to the MRP that took effect on September 9, 2013. The plan outlines policies and procedures for handling service calls and SSOs caused by problems in District facilities and sewer main lines. The plan will be reviewed periodically and updated as needed. The plan includes procedures for overflow mitigation, emergency response, clean-up, spill recovery, and remediation of damaged dwellings and buildings. They also include internal resources, external resources and provisions for state regulatory agency notification/reporting. Public notification and contamination testing procedures are also outlined. District Maintenance Procedure 7.1 in the OERP provides response and claims handling guidance to Maintenance crew and Administrative staff in the event of a District main sewer line backup into a home or business.

Overflow Reporting Policy

The OERP includes: a system to notify responders, a response time goal of thirty (30) minutes, instructions to determine overflow start time, three methods of overflow volume estimation, and training record documentation. The District defines an overflow as untreated sewage escaping from the sewer system onto public or private property due to a problem in District main sewer lines. All SSOs are reported electronically in the California Integrated Water Quality System (CIWQS) by the deadlines established in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order 200S-0D03-DWQ). All overflows are investigated as to cause and corrective action required to prevent future incidents. District regulatory notifications packet (Appendix A in the OERP) provides guidance for overflow response, and for State regulatory agency overflow reporting procedures. District Collection system failure analysis form (B-12 a,b in the OERP) defines a procedure to document and to correct conditions that may have caused an SSO in accordance with applicable regulations. All information related to SSOs is documented on internal service call/overflow report forms.

Service Calls

District offices are open Monday through Friday from 8:00 a.m. to 5:00 p.m. During these working hours, service calls are referred directly to Collections staff. After working hours, service calls are taken by 911 that relay the information to the standby Collection System Worker by telephone. The standby Collection System Worker makes a determination about the service call, and, if necessary, summons additional help. The ability of the police, fire department, or citizen to be able to talk to a live person 24 hours/day adds the positive benefit of human interaction; significantly reducing the possibility of a missed call or a misunderstanding about the nature of a problem.

Service Call/Overflow Reports

Collection System Personnel prepare reports for every SSO. The Service Call/Overflow Report form

documents the probable cause of the SSO and any steps taken by the District to correct or prevent subsequent SSOs in that location. All reports are reviewed by the District Manager, who ensures that basic SSO information is reported to the District Board of Directors on a monthly basis, and is reported to the appropriate regulatory agencies in accordance with applicable regulations.

Business Response Plan/Emergency Action Plan

The District follows an emergency operations plan, or contingency plan, that summarizes how the District responds to major emergencies.

(Overflow Emergency Response Plan)
(Service Call/Overflow Report Form)
(Example of Monthly Manager's Report)
(Emergency Operations Plan)

6. FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

The FOG Control Program is operated by the CAWD pretreatment department, in conjunction with the Southern Monterey Bay Dischargers Group. The program was established to reduce FOG related blockages and consists of FOG hotspot investigations, food service establishment (FSE) reviews, gravity grease interceptor (GI) inspections, enforcement support, hotspot reporting, FOG information database management, and outreach. The District Code of Regulations (Ordinance Code) requires FSEs to install grease interceptors under certain circumstances, and maintain such grease removal devices at their facilities, including the retention of records for certain maintenance activities.

A key element of the program includes hotspot response which is a targeted response to grease-related blockages and consequent SSOs. Response activities include facility inspections at FSEs upstream of the problem area, camera investigations, recommendations for corrective actions and enforcement procedures, as needed.

Program Elements

The following program elements are outlined below:

- Source Identification
- Legal Authority
- Program Structure/requirements
- Grease Removal Device Technology for FSEs
- Inspections and Monitoring for FSEs
- Enforcement for FSEs
- FOG Disposal
- Public Education and Outreach

Source Identification

Staff investigates and locates the origin of any FOG related event that causes a maintenance issue or event within the District sewer system. Sources typically include:

- Food Service Establishments (FSEs) (includes restaurants, hospitals, nursing homes, grocery stores, caterers & commissaries)
- Residential Properties
- Food Manufacturing Facilities

Sources are categorized as “Hotspots” – FSEs causing or contributing to grease-related SSOs or blockages, and “Non Hotspots”.

Legal Authority

CAWD Pretreatment Ordinance 91-03 includes the following provisions:

- Prohibited substances – those that cause or threaten to cause obstruction of flows in community sewers or interceptors
- Authority to require pretreatment prior to discharge to the community sewer
- Authority to inspect dischargers and sample discharge
- Enforcement and penalties for failure to adhere to the Ordinance

Also, the District Ordinance Code contains similar provisions. The Uniform Plumbing Code (UPC) also contains provisions related to grease, such as the sizing of interceptor facilities. The District has adopted the UPC by reference through its Ordinance Code. Additionally, there are local health codes that may be applicable in cases where FOG blockages cause overflows that might affect public health.

Program Structure/Requirements

The District Ordinance Code has the following requirements for FSEs:

- Installation of grease interceptors for all new FSEs, and for all FSEs causing or contributing to an SSO or blockage (hotspot).
- Maintenance is required, at a minimum of every three months, or more frequently as necessary, to ensure FSE discharges do not cause or contribute to SSOs or blockages. Also, a complete pump out of grease interceptor is required each time an interceptor is pumped.
- Maintenance records are required to be kept on site, and only approved grease haulers shall be used.
- A residential FOG program has been developed which includes educational outreach efforts by CAWD staff to inform customers about best practices for the disposal of household grease.

Grease Removal Device Technology for FSEs

Grease interceptor installation, design and sizing shall be as per the Uniform Plumbing Code. Grease interceptor waivers and variances may be considered depending upon the business type, the grease generating capability (and/or probability) of a FSE, and difficulties with interceptor installations due to conflicts with site conditions.

Alternative grease removal devices, installation, design and sizing may be used as an alternative to grease interceptors in instances where a grease interceptor cannot be installed due to preexisting building constraints (ex: limited space between existing building and District sewer, and slope restrictions.) The installation of these shall be coordinated with local health authorities and building/planning departments.

Inspections/Monitoring – for FSEs

CAWD staff monitors "Non-hotspot areas" as follows:

- All FSEs are inspected annually.
- Grease interceptors are inspected – a measurement of grease/water/solids is done and maintenance documentation is reviewed.
- Educational materials are distributed to mangers/employees.

Follow-up tasks (as needed) are performed by CAWD to determine if the grease interceptor pumping frequency needs to be increased and/or if grease interceptor repairs are required.

Hotspots

District staff monitors areas that have been identified to have a history of grease- related SSOs and blockages, based upon field experience and maintenance records. CAWD also investigates conditions in these areas in an effort to determine the origin of any FOG discharges. Actions in these investigations may include:

- Targeted inspections of FSEs upstream of a reported hotspot.
- Video inspections of main lines.
- Video inspections of laterals.
- Distribution of educational outreach materials.

Follow-up tasks may be done as a result of these inspections. If it is determined that an FSE is the source of the grease related SSO or blockage, then staff shall proceed with the activities outlined in the section Inspections/Monitoring – for FSEs, above. If it is determined that the source is a residential property, then educational outreach materials may be distributed or targeted meetings with property owners and/or homeowners' associations may be scheduled.

Enforcement – for FSEs

The District utilizes an escalating (progressive) enforcement structure as detailed in its pretreatment ordinance.

FOG Disposal (grease trap and grease interceptor waste)

The MRWPCA wastewater treatment plant is a receiving facility for waste grease from both inside and outside of the CAWD service area. All approved haulers are informed about MRWPCA's FOG disposal policies.

Public Education and Outreach

The District currently provides materials for use in residential situations which include informational brochures and informational flyers. Staff and Board members also present FOG materials and information at public events and fairs.

The District also participates in and provides funding for educational outreach performed by the Southern Monterey Bay Dischargers group. This outreach includes radio messages, television spots, printed material and informational website (www.clogbusters.org) which provides the public with resources to prevent grease related sewer issues.

(FOG Outreach)
(FOG Sanitary Sewer Overflow (SSO) and Blockage Report Form)

7. LEGAL AUTHORITY

District Ordinances

The District Ordinance No. 91-06 regulates the use of District wastewater facilities, their construction, permits required for work on these facilities, easements, charges, approved materials, and enforcement of these requirements. CAWD pretreatment Ordinance No. 91-03 regulates the discharge of wastewater into its system. This ordinance helps to protect the treatment plant from non-wastewater discharges. All District customers are subject to both of these ordinances.

Control of Inflow and Infiltration (I/I)

The Code prohibits the discharge of storm water or non-wastewater inflow, I/I, to District sewers, either directly or indirectly.

Proper Design & Construction, Installation & Testing of Facilities

The Code requires that District standards are followed in the design, construction and testing of all wastewater facilities. This includes private sewer laterals as well as District main lines and facilities.

Enforcement

The District has many avenues of enforcement available through its Ordinance, including cease and desist orders, conduct of corrective work, termination of service, and assessment of civil and criminal penalties.

(District Ordinance Code)

8. MEASURES AND ACTIVITIES

Collection System Maps

The District maintains a map of its service area that is digitized and formatted into a Computer Aided Drafting (CAD) system. The maps and associated database include background information on all District manholes (which are given a code identification number,) line segments (which are identified by the upstream manhole number,) and other items like pipe size, length, and year of construction/rehabilitation. These items are part of a Geographical Information System (GIS) tracking database. This system is linked to the other District databases that include information on service calls, repairs, rehabilitations, video inspections and images, and permitting. Maps are updated by CAWD staff as facilities are constructed or modified by the District. Map corrections are also submitted by Maintenance staff when discovered during routine maintenance. Engineering staff provides updated map books on a regular basis.

Resources and Budget

The District develops and uses an annual Operations & Capital Improvement budget to guide its on-going operations and capital expenses and projects. The operating budget for fiscal year 2016-17 is $1.4 million for operations and $948,508 for capital. The budget is established on a District Board approved philosophy of “pay-as-you-go”. The District currently adjusts and increases sewer rates to continue to pay for and fully fund the improvements needed on an annual basis. Service rates support all operating concerns. Rates are assessed annually to rate payers through the County property tax rolls.

The District maintains its collection system with one Supervisor and four collection system workers. This group is typically split into two crews of two workers, but sometimes three person crews may be used in easement areas or in other special situations. The Supervisor often acts as an additional (fifth) crew member. Maintenance crews utilize modern equipment including a combination hydroflush/vacuum truck, hydroflush truck, one rodding trucks, a TV van, three pickups, and a flatbed dump truck. The District’s primary cleaning activity is hydroflush, due to the nature of the area and the fact that roots in hilly areas are a key contributing problem associated with sewer maintenance. The Maintenance crew provides emergency standby service on a continuous, twenty four hour per day basis, so that all emergency calls can be handled with a thirty (30) minute response time goal.

A summary of the major line items of a typical District annual budget for fiscal year 2016-17 are as follows:

Operations & Maintenance	$1,446,431
Administration	$1,115,626
Main Line Replacement	$470,508
Vac-con Dump Pit	$50,000
Pump Station Rehabilitation	$100,000
Construction Plans	$35,000
Force Main Assessment	$200,000
Hatton Cyn Trail Rehab	$75,000
Total Operating Budget	$1446,431
Total Capital Budget (Collections)	$948,508

Preventive Maintenance

The Maintenance staff maintains an average of approximately 50,000 feet of pipe per month through a combination of CCTV, rodding and/or hydro-flushing activities. Cleaning is followed by CCTV inspection to ensure that crews perform all cleaning activities properly and thoroughly. Maintenance staff notes the condition of every line segment they maintain on a cleaning report form and schedule future line cleaning depending upon what they find along with the history of the line. Frequencies are generally on a 1 to 24 month basis, as follows:

High Frequency (Hot Spot)	up to 3 Months
Regular Frequency	6 to 24 Month

Maintenance staff are encouraged to include all observations about unusual or irregular items associated with District assets on their cleaning report form. Maintenance staff is also encouraged to bring these items up in direct conversation with the Collections Superintendent, Engineering staff and the General Manager, particularly if the items may be significant or need attention or correction in the near future. Included in the cleaning report is a section at the bottom of the form where field crews can record recommended future actions including rodding, hydroflushing, CCTV inspection, chemical root foaming, "fats, oils, and grease" (FOG) enforcement, proper "flushable" wipe disposal notice, repair and/or rehabilitation. This information is typically communicated to appropriate staff on a daily basis but can also be queried from the data and reports produced as needed.

The "work orders" distributed to the collection system workers are created by the District's CMMS program, (ICOM) which provides routes based on maintenance need and condition. Routing maintenance is scheduled on a 6 month interval with work orders issued electronically to the collection workers.

High frequency or "hot spot" cleaning is done at a 3 month interval or less in areas with an increased potential for an SSO. Cleaning is done as described in the Preventative Maintenance section above. The line schedules recognized under this category are continuously updated as Maintenance staff evaluates changing line conditions and updates the database. Also, lines in this category can be on a priority list to be repaired or rehabilitated and as each line segment condition is improved a line previously designated as a hot spot can be moved off this list once the work is completed.

The District chemically treats with foam about 40,000 feet of lines annually to control excessive roots on a three year cycle for a total of 120,000 feet. The lines that receive this foaming treatment are determined by the field crews based on field observations and CCTV inspection work. Effectiveness of the root control treatment is enhanced by the strategic cleaning of the lines and cutting of roots about 4 to 6 weeks in advance of the treatment. This has been proven to increase effectiveness of the root foaming process. The root control treatment is done on a contract basis and accomplished every year typically in June and July. This program has proved to be very effective, in that SSOs due to roots have been reduced in these areas where root control treatment has occurred.

Scheduled Inspections and Condition Assessment

Condition assessment is performed daily by Maintenance staff. During line cleaning or other field activities staff will perform visual observation of manholes and other facilities as part of their proactive and preventive maintenance responsibilities. The most significant assessment or inspection activity in terms of time and expense is the closed-circuit television (CCTV) inspection of District main lines and manholes. All 83 miles of main lines throughout the District were CCTV inspected over the seven year period from 2007-2013 and are on a 10 year inspection cycle.

Pipe line segments are rated using the National Association of Sewer Service Companies (NASSCO) CCTV rating system. Staff is trained in application of the Pipeline Assessment & Certification Program (PACP). A "damage severity index" (DSI), which is the total rating for a line segment divided by the line length is used to determine how to better apply and fund the District long term capital program. The DSI is used to rank line segments in order of the severity of their defects and serves to help prioritize which lines will be repaired or rehabilitated. This DSI rating system has been in use since 2007 and as of December 2016, 98% of the system has been assigned a DSI rating.

Sewer Rehabilitation Plan

The District began a sewer system rehabilitation plan in 1997, followed by an I/I Study by V&A Consulting Engineers. Engineering staff uses condition assessment data to determine the priority in which main lines are rehabilitated. In addition, Maintenance staff also provides current field conditions and access constraints, which assist in the decision making process. The District has a long term Capital Improvement Plan to upgrade and rehabilitate the existing infrastructure within the collection system. The CIP provides a detailed outline of CAWD's capital improvement requirements for the next 15 years. Included in the CIP budget is an annual allocation up to $700,000 for sewer line replacement projects. CAWD staff reviews the history of SSOs and the DSI rating to identify sewer lines to be replaced each year. The long-range CIP is reviewed and updated on an annual basis by the Collection Superintendent, Principal Engineer and General Manager.

Maintenance Management System (MMS)

The District Uses a maintenance management system called ICOM which is used to electronically store and manage all maintenance system data such as cleaning reports, line conditions, repairs, service calls, and cleaning schedules. This District CMMS program also incorporates the District's electronically digitized mapping system. There is daily interaction between the field crews and the Principal Engineer in discussions about system information. The databases are easily queried by engineering staff for any information contained in the databases.

Pump stations are monitored 24/7 using an alarm system. Auto-dialers transmit alarms to the District office and the answering service 24hrs/day in case of emergency.

Training

The District is a member of the California Sanitation Risk Management Authority (CSRMA - a risk pool with 62 other sanitation districts.) One of the services provided by CSRMA is an extensive set of on-line training modules which is actively utilized by the District. Also CSRMA provides periodic webinars on safety and collection system topics.

Collection System and Engineering staff also participate in CWEA programs and vendor-sponsored training courses. The District provides staff with the opportunity to attend CWEA sponsored industry

related conferences and educational opportunities.

In addition, Collection system workers also participate in bi-monthly tailgate safety trainings, as well as on-going, "on-the-job" training efforts. District staff regularly trains on standard procedures or other special programs. These programs include traffic safety, bypass pumping, CPR/First Aid, and confined space entry.

Contingency Equipment and Replacement Inventories

The District maintains two trailer-mounted portable electric generators, a 25 KW and a 45 KW capacity unit. Emergency response equipment was assembled in 2013, and it contains two portable submersible pumps, seven hundred feet of collapsible hose, confined space entry equipment, plugs, and various other equipment and items that are used in response to SSOs and other emergency situations. This allows staff to respond quickly to SSOs, including the full recovery of SSOs from storm drains or ditches if the need arises. A sufficient inventory of clay pipe, fittings and couplings is maintained in the District storage yard to make emergency repairs expeditiously. Contractors are used to make routine and emergency repairs and line replacements, and the District has agreements in place with contractors for these services if the need arises.

(Fiscal Year Budget)

(Rehabilitation Program Update)

(Inventory List)

(Training Records)

9. DESIGN AND CONSTRUCTION STANDARDS

Standards for Installation, Rehabilitation and Repair

The District, through its Engineering Department, maintains the Carmel Area Wastewater District Construction Specifications and Details (Standard Specifications). The Standard Specifications govern the requirements, design, and the manner in which all work in connection with sewer construction within the jurisdiction of the Carmel Area Wastewater District is performed. The Standard Specifications are required by the District's Ordinance, for use in both new installations and replacement of existing facilities. They are available online to contractors and citizens at no charge and are updated periodically, as necessary.

Standards for Inspection and Testing of New and Rehabilitated Facilities

The District's Collection Superintendent or Principal Engineer inspects both new construction and repairs. The inspector ensures that all construction is in accordance with the District's Standard Specifications and other applicable codes. A District issued permit is required for all work on wastewater facilities in the District. No facility is accepted unless it is permitted, inspected and tested in accordance with the Standard Specifications.

(Carmel Area Wastewater District Construction Specifications and Details)

10. CAPACITY MANAGEMENT

Collection System Hydraulic Model

In April 1999, the District contracted with V&A Consulting Engineers for the development of a hydraulic model. The development efforts included dry and wet weather flow inputs, data and model assumptions. A more in depth hydraulic model was created in December 2016, by West Yost Associates Engineering. The second model, which monitored flows for a complete year, utilized state of the art "real time" flow monitor devices and GPS coordinates gathered by Turf Image Company, a GPS survey contractor hired by the District in the Spring of 2016. These sets of data provided a more accurate modeling for evaluation.

System Evaluation and Capacity Assurance Plan

The District's capacity assurance efforts are based on its 1999 and 2016 collection system condition assessment study. Any deficiencies outlined in the study have been addressed or will be addressed in future capital improvement projects.

Capacity Studies

Developers are required to hire an independent engineer to conduct a hydraulic capacity study for residential developments of ten units or more, and for commercial developments of 10,000 square feet or more. This is also required for restaurants over 1000 square feet and for all Laundromats and industrial laundries. These studies are required to examine both existing downstream line capacity and capacity at projected build-out. These studies are kept on file by the District and are available for inspection.

Permit Activity

The Principal Engineer uses the model information to check downstream line capacity anytime a permit is written for new residential or commercial connections, except for the situations noted above when developers are responsible for this study. The permittees are responsible for the construction of any necessary capacity increases outlined by the sanitary sewer capacity study results.

Flow Monitoring

The District uses flow data in conjunction with its capacity model to determine current sewer system capacity and adequacy. The District completed several capacity improvements in the 2000's as a result of its capacity problems found during the condition assessment study.

(1999 Sewer System Condition Assessment Study) *(2016 Hydraulic Model Report)*

11. MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

District Collections Superintendent monitors the effectiveness and implementation of SSMP through various measures and activities. Effectiveness is measured by tracking performance indicators on a regular basis. A monthly "Collections Department Report" is prepared and submitted to the District Board of Directors. This report provides detailed information on overflows, service calls, footage of main lines cleaned and videoed, and amount of lines repaired and/or replaced. This information is also illustrated on charts and graphs that show historical as well as current information.

The data used for these summary reports is obtained from the CMMS previously described in the Measures and Activities element. The summary reports on system performance are reviewed monthly by Management, Engineering and Maintenance staff to determine the effectiveness of District activities and operations. Staff uses this information on a "realtime" basis to assess its operations and make changes to maintenance practices and capital activities. These changes are determined from the results of its programs.

(Monthly Collections Department Report)

(Annual Performance Report)

12. SSMP AUDITS

The District conducts a biennial audit of its SSMP and will identify any deficiencies and take subsequent actions to correct them. This audit will be performed to cover the previous 2 calendar years. The audit will be under the supervision of the Collections Superintendent and be completed no later than May of the following year. The audit will generally follow the format of the draft SSMP Annual Audit Report form.

LAST SSMP AUDIT COMPLETED: OCTOBER 2013

(Sewer System Management Plan Audit Report

13. COMMUNICATION PROGRAM

The District has an active communication program to inform the public about its SSMP, as well as other District activities. The District publishes newsletters on various District activities and mails the letters to every property owner in the District's service area. The District also has a web site, www.cawd.org, to inform its customers about District business, events, meetings, regulations, and programs. The SSMP is available for all to read and review through a link on the web site. Similarly, there are links to the current Board meeting agenda, including meeting minutes (archived for three years), and many of the components that comprise the SSMP such as the District Ordinance and District Standard Specifications and Details. All Board meetings are open to the public and the public is invited to comment on any District business items, including the SSMP.

District staff routinely informs customers and citizens in affected areas about future work activities. For example, pamphlets and letters are provided to residents of potentially affected properties prior to any sewer line repair or construction activities. The initial notice is provided two weeks in advance of work, and a second notice is given one to two days prior to the work. The Principal Engineer and contractors provide notice in a similar manner by using door hangers prior to the repair or replacement of District main lines. Field crews also make an effort to inform residents about line cleaning activities which may impact the resident's properties.

(Newsletter)

(Webpage Sample)

(Sample Construction Notice to Residents)

(Door Hanger

14. CHANGE LOG

DATE	DESCRIPTION	BY
MARCH 2012	SSMP audit completed by staff.	David Sollid
OCTOBER 2013	The District requested an external audit of our SSMP, conducted by Paul Causey of Causey Consulting. SSMP amended in accordance with recommended changes and updated to meet the Statewide Monitoring and Reporting Program (MRP) requirements of the Statewide General Waste Discharge for Sanitary Sewer Systems that took effect on September 9, 2013.	Daryl Lauer
MARCH 2017	Collection System Hydraulic Modeling conducted by West Yost Engineering Consultants. An evaluation analyzing the system performance utilizing state of the art “realtime" flow meters and GPS elevations of manholes and invert depths.	Daryl Lauer